

Chapter 1

Purpose and Need for the Action

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1.0 Purpose and Need for the Action

1.1 Introduction

The Bureau of Reclamation, Lower Colorado Region (Reclamation)¹ and the National Park Service (NPS), Lake Mead National Recreation Area (LMNRA), propose to prepare an Environmental Impact Statement (EIS). Reclamation and the NPS are preparing the EIS as joint-lead federal agencies to evaluate the potential impacts associated with the construction, operation, and maintenance of the Systems Conveyance and Operations Program (SCOP).

Wastewater generated in the Las Vegas Valley (Valley) is currently treated and discharged by three agencies: the City of Las Vegas (CLV), the Clark County Water Reclamation District (CCWRD), and the City of Henderson (COH). These agencies discharge highly treated municipal wastewater (effluent) into the Las Vegas Wash, which flows into the Las Vegas Bay of Lake Mead. Treated wastewater has been discharged to the Las Vegas Wash since 1956. The Las Vegas Wash is a tributary to the Colorado River, and the Las Vegas Bay and Lake Mead are part of the Colorado River System. The quantity of the effluent treated and discharged in the Valley will increase as the population increases. The CLV, CCWRD, and COH comprise the Clean Water Coalition (CWC), which was created to address the management of the increasing wastewater flows in the Valley. The CWC's mission is to:

Determine the most feasible method(s) to return that effluent not being reused (including future flows) to the Colorado River System, that is consistent with the CAMP (*Comprehensive Adaptive Management Plan for the Las Vegas Wash*); that includes strategies for a flexible program to address the water quality issues of the Las Vegas Wash, the Las Vegas Bay and Boulder Basin; that includes strategies to enhance the protection of the municipal drinking water source; and that is implementable, reasonably cost effective, environmentally sound, and publicly and politically acceptable.

The CWC proposes to implement the SCOP. The SCOP would be located in Clark County, Nevada (Figure 1.1-1). The SCOP includes activities and infrastructure that would be located on lands owned and/or managed by the CLV, COH, Clark County, United States (U.S.) Bureau of Land Management (BLM), Reclamation, and NPS (Figure 1.1-2).

¹ A list of the acronyms used in this document is provided in **Appendix O**. The List of Acronyms is printed on the right side of 11X17 paper. This allows the reader to unfold the List of Acronym pages and have the list visible while reading the EIS. The glossary in Chapter 11 provides definitions of words and terminology that the reader may need.

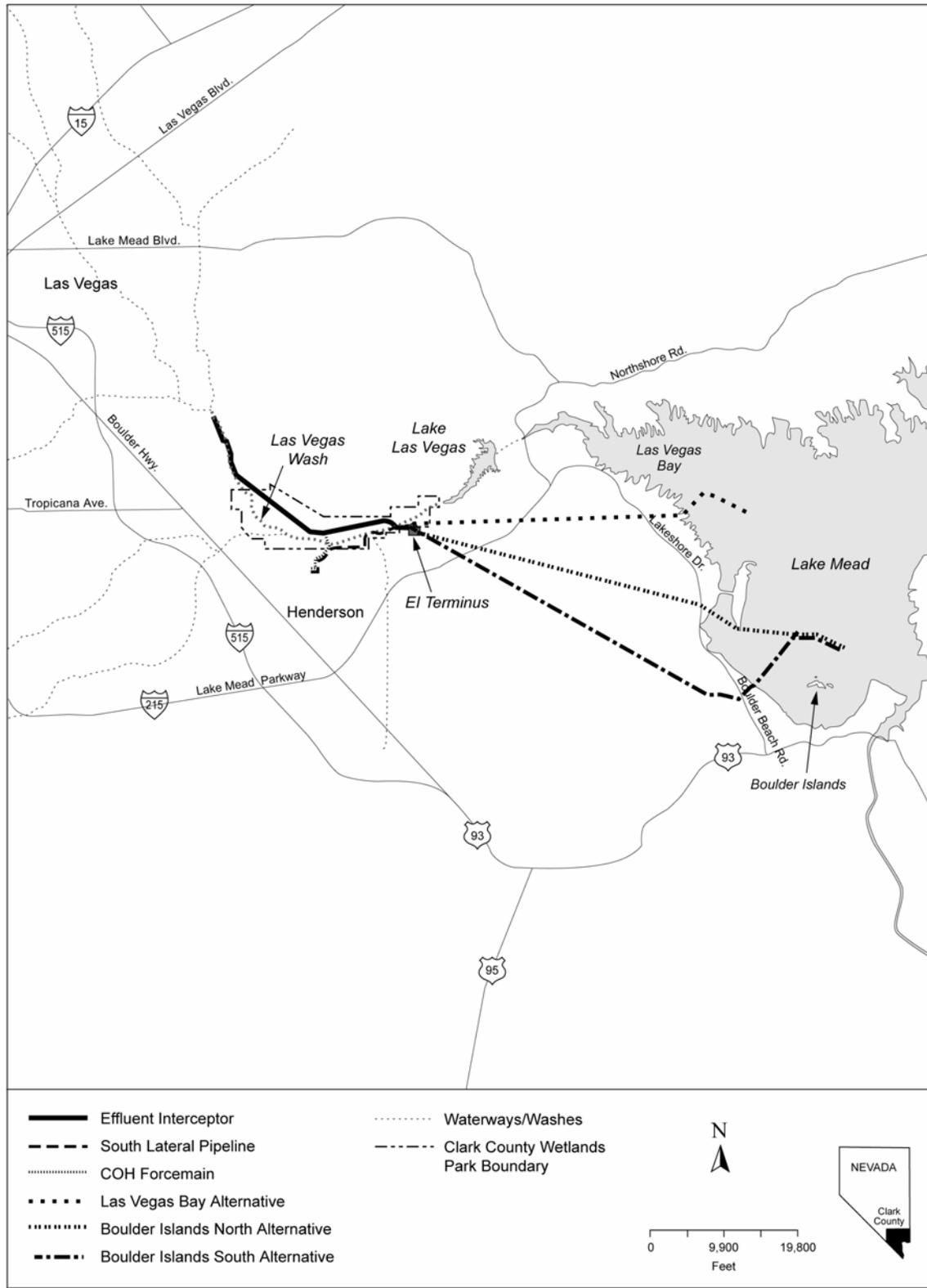


Figure 1.1-1 Project Location.

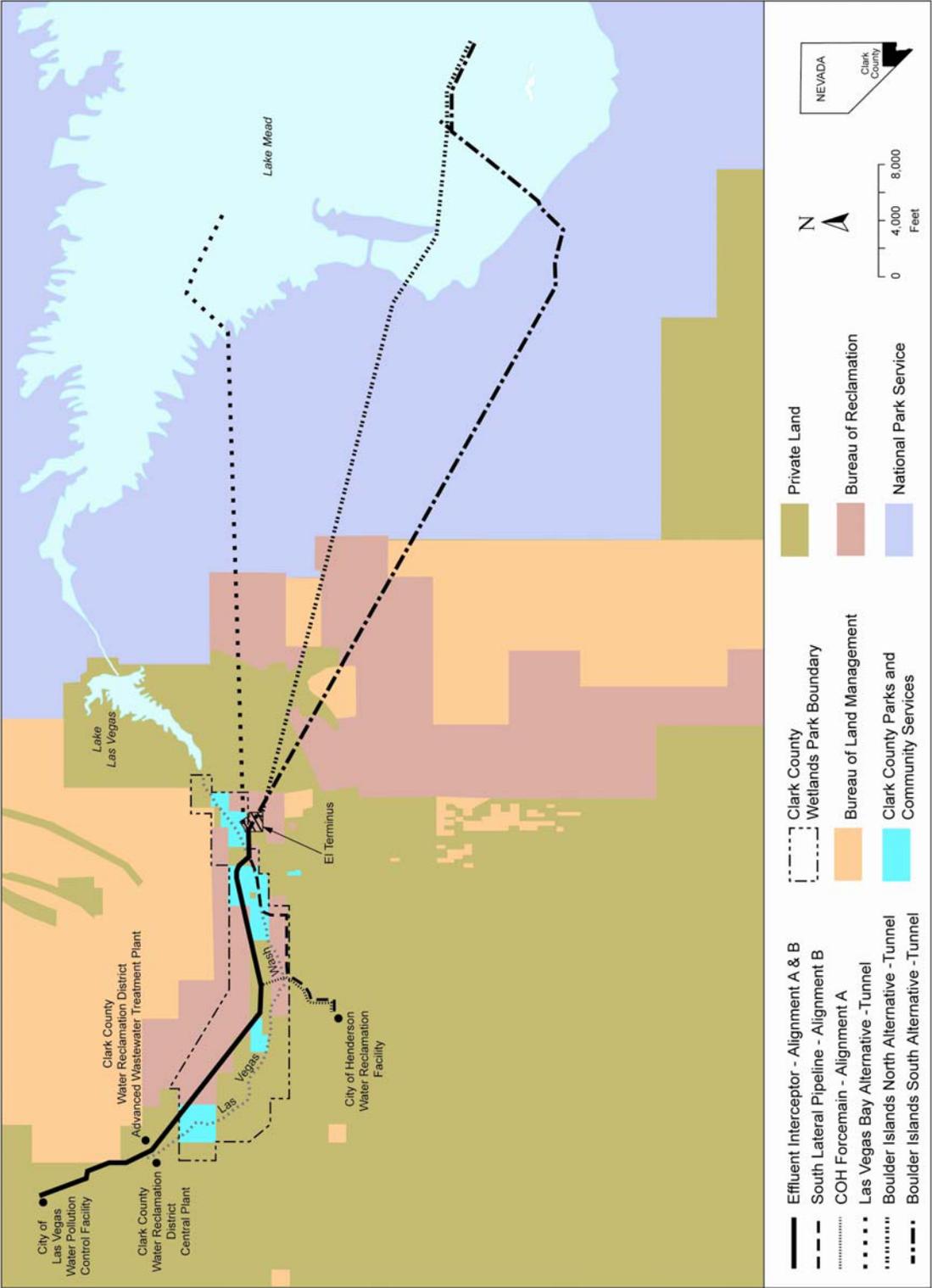


Figure 1.1-2 Land Ownership.

The SCOP would be a combination of plant optimization, increased treatment processes (as needed) and a system of pipelines and tunnels that discharges highly treated effluent to an alternate location. The pipeline and tunnels would be designed to collect the treated effluent flows from the CLV, CCWRD, and COH treatment facilities, for conveyance to an area in the lower Colorado River system, while the majority of the flows bypass the Las Vegas Wash.

The SCOP would be located on lands managed by the NPS, Reclamation, and BLM. Therefore, the federal agencies would be required to issue permits. Issuance of a permit is a federal action that requires National Environmental Policy Act (NEPA) of 1969 documentation, which in this case is an EIS (42 United States Code [USC] 4321 et seq.; Public Law [PL] 91-190). The EIS is prepared in compliance with NEPA (42 USC 4321 et seq. PL 91-190, 1969, as amended), the *Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA* (40 Code of Federal Regulations [CFR] 1500-1508), and NPS and Reclamation implementing regulations and guidance.

1.2 Lead and Cooperating Agencies

The NPS and Reclamation are the lead federal agencies for the preparation of this EIS. The NPS and Reclamation have land-management responsibilities for much of the land that would be traversed for the proposed project. Numerous federal, state, and local agencies were invited to participate in the preparation of this EIS as cooperating agencies. Four agencies expressed an interest in being a cooperating agency for this project. The cooperating agencies involved in the preparation of this EIS include the BLM, U.S. Army Corps of Engineers (USACE), Metropolitan Water District of Southern California (MWD), and Colorado River Commission of Nevada. The NPS and Reclamation sought cooperation and expertise from these agencies to help identify potential impacts as a result of implementing one of the proposed alternatives. The CEQ regulations recommend that a lead federal agency cooperate with other federal, state, and local governments with jurisdiction by law or special expertise (40 CFR 1501.6). The benefits of cooperating agency participation include:

- Disclosing relevant information early in the process;
- Applying available technical expertise and staff support;
- Avoiding duplication with other federal, state, tribal, and local procedures; and
- Establishing a mechanism for addressing intergovernmental issues (Connaughton 2002).

1.3 Project History

Currently, the three wastewater treatment agencies in the Valley are the CLV, CCWRD, and COH. The CLV, CCWRD, and COH are members of the Southern Nevada Water Authority (SNWA). The three treatment facilities are shown in Figures 1.3-1, 1.3-2, and 1.3-3.



Figure 1.3-1 City of Las Vegas Water Pollution Control Facility.



Figure 1.3-2 Clark County Water Reclamation Central Plant.



Figure 1.3-3 City of Henderson Water Reclamation Facility.

The *Las Vegas Valley Watershed Needs Assessment Study (Needs Assessment Study)* was commissioned by the three wastewater treatment agencies in 1995. The goal of the study was to develop a 30-year plan to address the long-term needs of these agencies and to identify alternative methods to accommodate existing and projected wastewater flows of the Valley. A continuation of this effort was to expand the findings to provide guidance regarding the engineering, scientific, and environmental solutions for effluent disposal, and to provide a plan that will be acceptable to the wastewater treatment agencies and stakeholders (Las Vegas Wash Coordination Committee [LVWCC] 2000).

The *Needs Assessment Study* resulted in a series of recommendations to improve water quality throughout the Las Vegas Wash, Las Vegas Bay, and Lake Mead. One recommendation addressed the increasing volume of highly treated effluent discharged into the Las Vegas Wash by calling for a feasibility study of alternate discharge locations (CWC 2001). The study identified and developed potential long-term solutions for the increasing flows. The *Needs Assessment Study* was completed and was incorporated into the *Las Vegas Valley 208 Water Quality Management Plan* (Montgomery Watson 1997a) in July 1997.

In 1999, the three wastewater treatment agencies again teamed and started work on the recommendations presented in the *Needs Assessment Study*. Working together, the three wastewater treatment agencies informally created the CWC (CWC 2001). The CWC became a legal entity in November 2002.

The CWC's member agencies are also members of the LVWCC, which consists of approximately 27 agencies and organizations with various Las Vegas Wash responsibilities. The LVWCC serves to help coordinate activities of the member agencies in regard to controlling erosion,

restoring vegetation, and meeting water quality standards. The LVWCC formed and assigned the Alternate Discharge Study Team (ADST) with the task of assisting the CWC with the first phases of the Alternate Discharge Study.

Phases I and II of the Alternate Discharge Study began in October 1999 and included a series of workshops; stakeholder interviews; and technical, regulatory, and engineering analyses. Working from the list of alternatives developed by the ADST, the CWC members began the process of studying, and eventually reducing, the number of alternatives. A stakeholder group of 33 parties was formed. The stakeholder group was composed of members representing local, state, and federal agencies, along with representatives of businesses, citizens, and downstream users. A formal workshop was held in March 2000. Based on that workshop, a second round of interviews and technical analysis was performed. A second workshop was held in November 2000. Nationally recognized technical experts participated in the second workshop, which resulted in an implementation plan that recommended the following actions:

- Construct the Effluent Interceptor (EI),
- Conduct the Lake Mead water-quality modeling,
- Analyze Colorado River Outfall locations,
- Conduct the Colorado River Outfall water-quality modeling, and
- Prepare a Water Quality Criteria Assessment.

In July 2000, the CWC member agencies and other agencies charged with the stewardship of water resources in the Valley completed an *Area Wide Reuse Study* (COH et al. 2000). The *Area Wide Reuse Study* is the first area wide compilation of water-reuse demands and effluent-discharge supplies, including both existing and future scenarios. This study identified potential water reuse within the Las Vegas Basin through the year 2020. Additional reuse includes the use of reclaimed water for industrial purposes and irrigation of golf courses, parks, and other landscaping.

In June 2001, Phase IIIA of the Alternate Discharge Study was initiated. At this time, the project began to be known as the “Systems Conveyance and Operations Program” to indicate the broader implications of the project beyond the initial studies. The major work throughout the Phase IIIA studies was to:

- Perform predictive water quality modeling of the Las Vegas Wash, Boulder Basin of Lake Mead, and Lake Mohave;
- Assess water quality impacts of various alternatives;
- Prepare preliminary designs of alternatives; and
- Estimate costs for improved treatment processes at the existing treatment facilities and for pipelines to alternate locations in Lake Mead.

1.4 Additional Background Information

Water is an essential and limited resource in the Valley. It is important to understand the water cycle and the water quality issues as they relate to southern Nevada and the SCOP.

1.4.1 Las Vegas Valley Water Cycle

The Valley acquires water from groundwater and surface water. Groundwater accounts for 12 percent of the total annual water supply and is obtained from the principal aquifer located beneath the Valley. Water collects in the aquifer from rain and melted snow filtering down through the mountains. The other 88 percent comes from the Colorado River.

The Las Vegas water cycle illustrated in Figure 1.4-1 begins with precipitation in the form of snowmelt and rain in the Rocky Mountains of Colorado. The precipitation in the Rocky Mountains flows into Lake Mead via the Colorado River. Water is removed from Lake Mead and treated to meet drinking water standards at the Southern Nevada Water System (SNWS) treatment plants. The COH also treats and provides drinking water to homes and businesses. Following treatment by the SNWS, the water is sold by SNWA to the Las Vegas Valley Water District (LVVWD), Nellis Air Force Base, City of North Las Vegas (CNLV), COH, and Boulder City for distribution to homes and businesses. Wastewater is generated then collected in municipal sewer systems and transported to the wastewater treatment facilities. A portion of the reclaimed water is used for urban irrigation of golf courses, dust control, landscapes, and wildlife habitat.

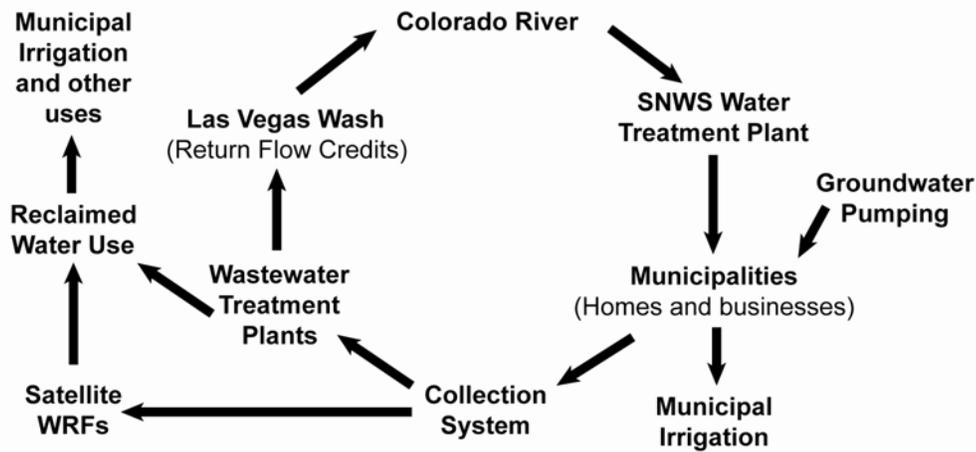


Figure 1.4-1 Las Vegas Water Cycle.

A series of laws and court cases known as the “Law of the River” governs how and where Colorado River water is used. The 1922 Colorado River Compact and the 1928 Boulder Canyon Project Act defined all apportionments of Colorado River water in “consumptive use” units. Consumptive use is defined as water diversions minus any water that is returned to the river (the latter is referred to as “return-flow credits”). This means that southern Nevada can actually divert more water than its apportionment, as long as the water is returned to the river. When water is used indoors or at a commercial car-wash facility, the unused water flows into the sanitary sewer. This sewer water travels to a wastewater treatment facility, where it is treated. The highly treated wastewater is returned to the Colorado River via the Las Vegas Wash, which flows into Lake Mead. The water returned earns the Valley return-flow credits. By treating Colorado River water after it is used and returning it to Lake Mead, southern Nevada is able to expand its Colorado River resources. Because water that is "wasted" indoors flows into the sanitary sewer, it has an opportunity to be treated and used again. It has not been "consumed" but recycled, and provides the opportunity for return-flow credits. Water that is wasted outdoors evaporates and cannot be used again (SNWA 2006a).

Return flow credits are important to Nevada because Colorado River water usage in the state cannot be sustained without return flow credits. Therefore, it is important to protect Nevada’s return flow credits. The components of the Valley water cycle are described further in the following subsections.

1.4.1.1 Lake Mead

Lake Mead, America’s largest man-made reservoir, was formed in 1935 after the completion of Hoover Dam. Lake Mead has the capacity to store up to 28.5 million acre-feet (AF) of water. An AF is the amount of water it would take to cover 1 acre of land to a depth of 1 foot (ft). Nearly 97 percent of the water flowing into Lake Mead comes from the Colorado River. The remaining 3 percent of the water in Lake Mead comes from the Muddy and Virgin rivers and the Las Vegas Wash.

1.4.1.2 Las Vegas Wash

The Valley is drained by the Las Vegas Wash, which is a tributary of the Colorado River. The Las Vegas Wash drains 1,600 square miles (4,160 square kilometers [km]) of the Valley and channels urban runoff and stormwater, shallow groundwater, and reclaimed water into the Las Vegas Bay at Lake Mead. Urban runoff is considered a non-point source of pollution and is generally attributed to irrigating of landscapes and golf courses, draining pools to streets, washing vehicles in streets, and hosing down driveways. Rainwater flows to the Las Vegas Wash and Lake Mead through gutters, storm drains, channels, and washes.

Shallow groundwater located less than 30 ft (9 meters [m]) below land surface in the central and southeast parts of the Valley flows towards and seeps into the Las Vegas Wash. The shallow groundwater system is primarily created from landscape irrigation runoff that is trapped near the land surface by impermeable clay and caliche.

Highly treated effluent is the largest and most predictable contribution of water to the Las Vegas Wash. Currently, a large portion of the indoor water used in the Valley goes to the wastewater treatment facilities at the CCWRD Central Plant (CP), the CLV Water Pollution Control Facility (WPCF), or the COH Water Reclamation Facility (WRF). The wastewater is highly treated to meet federal and state water quality regulations and is then reused for irrigation or is released into the Las Vegas Wash.

1.4.1.3 Treatment and Distribution of Drinking Water

Water is withdrawn from Lake Mead via two shafts located at 1,000 ft (305 m) above mean sea level (msl) near Saddle Island (SNWA 1996). This water is pumped to the SNWS Alfred Merritt Smith Water Treatment Facility (AMSWTF) on the shore of Lake Mead and to the River Mountains Water Treatment Facility in Henderson. The water is treated and delivered to Boulder City, the COH, the CNLV, the LVVWD, and Nellis Air Force Base. Each of these entities is responsible for storing and distributing water to users in their jurisdictions.

In addition to drinking water provided by SNWA, the COH purchases raw water from Basic Management, Inc (BMI). The BMI raw water intake is located near Saddle Island in Lake Mead. The raw water is treated at the COH Water Treatment Plant, then distributed for use in the COH.

Water is then used by homes and businesses and again enters the sanitary sewer system or gutters and storm drains and flows back into the Valley water cycle.

In response to severe drought conditions affecting the entire Colorado River Basin, the SNWA Board of Directors adopted the *Drought Plan* on February 20, 2003. The plan identified drought response measures that can be taken by the community to reduce water demand during drought conditions. The measures were intended to spread the burden of drought response as much as possible across all sectors of the community while targeting those water uses with the greatest potential for water savings (SNWA 2004). The *Drought Plan* is evaluated periodically to reflect current conditions and levels of action required. The tools and techniques implemented to reduce water use include:

- Landscape watering restrictions for residential and non-residential properties;
- Surface, building, equipment, and vehicle washing restrictions;
- Landscape development code restrictions for ornamental turf;
- Commercial use of mist systems restrictions – limited to June, July, and August;
- Irrigation restrictions on golf courses, schools, parks, and government facilities;
- Operation of ornamental fountain and water feature restrictions;
- Drought surcharges and rate incentives;
- Water waste enforcement;
- Incentive programs; and
- Public involvement and awareness (SNWA 2004).

1.4.1.4 Reuse of Highly Treated Effluent

The three member agencies of the CWC acknowledge the benefits of substituting reclaimed wastewater for potable water, when feasible and economical, as all three agencies currently produce and distribute reclaimed water. The *Area-Wide Reuse Study* (COH et al. 2000) was developed to assess a regional wastewater reclamation system plan to economically meet future demands and develop a phased implementation of this plan through the year 2020 in the Valley. The *Area-Wide Reuse Study* reviewed the regulatory requirements of reclaimed water treatment and use, compiled existing and proposed facility information, analyzed reclaimed water demand and wastewater supply, recommended systems that could service the existing as well as the high probability future demands, and suggested an implementation plan for sequencing the systems.

The recycling of treated wastewater is not a new concept in this country or in Nevada. Direct wastewater reuse began in southern Nevada in 1931 when the CLV built its first wastewater treatment plant (WWTP). The reclaimed water from this facility was used by the Stewart family to irrigate their ranch (COH et al. 2000).

The Valley currently reuses treated effluent for golf courses, cemeteries, parks, landscape medians, and cooling water for power plants. However, the amount of area available to reuse the treated effluent represents only about 20 percent of the effluent that is produced. The other 80 percent of the treated effluent is sent to the Colorado River, where it produces return flow credits for Nevada.

1.4.2 Water Quality Issues

The water in the Las Vegas Wash and Lake Mead must meet water quality standards conforming to the Clean Water Act (CWA) (Federal Water Pollution Control Act of 1972 as amended 33 USC 1251-1387; PL 92-500) and established by the Nevada Division of Environmental Protection (NDEP). The CWA requires that water quality standards be adopted by individual states and authorized tribes and territories, and then be approved by the U.S. Environmental Protection Agency (EPA). The three major components of the water quality standards program are designated uses, water quality criteria, and the anti-degradation policy. Designated uses include, but are not limited to, drinking water, water-based recreation, aquatic life, and agricultural and industrial water supplies. Water quality criteria are the set of conditions to be met in order to safely fulfill designated uses. Water quality standards are usually expressed quantitatively such as scientific measurements of pollutant concentrations, toxicity, or temperature. Anti-degradation policies are focused on maintaining water bodies that already have high water quality.

1.4.2.1 Total Maximum Daily Loads

The state, tribe, or territory responsible for a water body that is on the *303(d) Impaired Waters List* is required to develop a plan that would result in the attainment of the required water quality standards. The plan should include the establishment of a total maximum daily load (TMDL) for the water body, which is the maximum amount of pollutant(s) that can be discharged while still meeting water quality standards. The TMDLs provide a way to integrate the management of

point sources and non-point sources of pollution through the establishment of waste load allocations (WLAs) for point source discharges, and load allocations for non-point sources of pollution (NDEP 2003a, EPA 2003a). One or more TMDLs must be assigned to each impaired water body or segment of the water body. The TMDLs are set for individual pollutants such as clean sediments, nutrients, heat, acids/bases, synthetic organic chemicals, and metals. Responsible entities are required to submit all TMDLs to the EPA for approval.

The allowable load of any one pollutant is called the “cap.” Loading caps are calculated using a margin of safety. Once a loading cap for a specific pollutant is set, the load is then allocated among all of the contributing point sources in the water body. The EPA does not specify how the pollutant cap of the TMDL should be allocated, only that the sum of the amount allocated does not exceed the amount of the loading cap.

In 1987, the NDEP established water quality standards for chlorophyll *a* and un-ionized ammonia (NH₃) for the Las Vegas Bay. Monitoring data showed that the Las Vegas Bay did not achieve these standards in 1986 and 1987. In order to address the water quality problems in the Las Vegas Bay, TMDLs for phosphorus and ammonia were developed for the Las Vegas Wash and established in 1989. These TMDLs became fully effective in 1994 and 1995, respectively. The three treatment facilities underwent upgrades throughout the late 1980s into the mid-1990s to provide treatment for these two constituents. The COH was not discharging into the Las Vegas Wash when the original TMDLs were established so the original WLAs were divided between the CLV WPCF and CCWRD plants. In 1994, the COH received a discharge permit including WLAs for total phosphorus (TP) and ammonia (NDEP 2003b).

1.4.2.2 Stormwater and Urban Runoff

The stormwater and urban runoff that flows to the Las Vegas Wash are considered sources of pollution because they carry pollutants found on the ground. These pollutants include pesticides from lawns and golf courses, bacteria from pet waste, and oil and chemicals from cars, driveways, and roadways (LVWCC 2003a).

1.4.2.3 Erosion and Sediments

The flows in the Las Vegas Wash have increased dramatically because of the increasing urban runoff and effluent flows in the Valley. The quantity of sediments and total suspended solids (TSS) has increased as the flows have increased (LVWCC 2003a). The TSS are solid fragments of inorganic or organic material that come from the erosion (or wearing away) of the earth’s surface and are carried and deposited by natural processes such as water, wind, or ice (Houghton Mifflin Company 2000; MICRA, Inc. 1998). The TSS in the Las Vegas Wash are primarily inorganic material eroded from the bottom and sides of the channel (LVWCC 2003a).

Eleven of 26 planned erosion control structures (ECS) in the Las Vegas Wash have been built by SNWA and the NPS. The ECSs are designed and constructed to reduce the impacts of storm flows on the Las Vegas Wash. Bank stabilization activities are also occurring in the Las Vegas Wash. The ECSs have reduced erosion by aiding in the stabilization of the Las Vegas Wash.

Additional ECSs are planned and will further reduce the impacts of erosion in the Las Vegas Wash and Inner Las Vegas Bay.

1.4.2.4 Perchlorate, N-nitrosodimethylamine, and Pathogens

Perchlorate has been detected in shallow groundwater that seeps into the southeast end of the Las Vegas Wash. Perchlorate was manufactured for use in rocket fuel in the southeast part of the Valley for many years. This pollutant is a concern because it has been potentially linked to adverse effects on the thyroid gland and metabolism (EPA 1999, 2003). On February 18, 2005, EPA issued a safety standard of 24.5 parts per billion (ppb) for perchlorate. The SNWA uses the perchlorate concentration of 18 ppb as a public notification level.

Another chemical of potential concern is N-nitrosodimethylamine (NDMA). N-nitrosodimethylamine is a contaminant that is an inadvertent by-product of some industrial processes such as rubber manufacturing, organic chemical manufacturing, food processing, dye manufacturing, and municipal wastewater treatment (Government of Canada 2002). N-nitrosodimethylamine is also present in many other products such as tobacco smoke and a variety of foods such as cheeses, soybean oil, canned fruit, various meat products, bacon, various cured meat, cooked ham, milk, fish and fish products, apple brandy, and other alcoholic beverages including beer (Calgon Carbon 2003). The EPA has classified NDMA as a probable carcinogen. However, EPA has not yet established a regulation, or "Maximum Contaminant Level" for NDMA. This is because NDMA is just now being detected and understood. There is not enough information yet for EPA to set an appropriate Maximum Contaminant Level. At the present time, there are very few laboratories that can detect NDMA at these low levels, and there is no laboratory method that has been approved by EPA. Samples from the Las Vegas Wash have been analyzed for NDMA. Analysis results for one sample indicated the presence of NDMA at the very lowest measurable concentration of 2 nanograms per liter.

Pathogens, which are living microorganisms such as a bacterium or fungus, are found in raw sewage. Based on EPA Guidelines, wastewater in the U.S. that will be used for landscape and golf course irrigation, toilet flushing, unrestricted recreational impoundment, or indirect potable reuses such as reservoir augmentation requires advanced or tertiary treatment (BMZ 2000). The three facilities currently responsible for wastewater treatment in the Valley implement tertiary treatment. Destruction of pathogens occurs during the disinfection process at the wastewater treatment facilities. The CLV and COH use sodium hypochlorite for disinfection. The CCWRD uses ultraviolet light.

1.4.2.5 Pharmaceuticals and Personal Care Products, and Endocrine Disrupting Chemicals

The use and disposal of consumer chemicals have become a global issue in recent years. In the last 10 to 12 years, a more concerted effort has been made to research the multitude of pollutants, including contaminants of emerging concern such as pharmaceuticals and personal care products (PPCPs) and endocrine disrupting chemicals (EDCs), in the environment. The presence of PPCPs and EDCs in water is not a new phenomenon. It is reasonable to assume that PPCPs have been discharged to groundwater and surface waters for as long as people have been using them.

Likewise, endocrine disrupting steroid hormones were reported to occur in surface water as early as 1965 (Stumm-Zollinger and Fair 1965). However, recent advances in analytical chemistry methods and instrumentation have allowed the detection of progressively smaller concentrations of some EDCs and PPCPs in the environment, and particularly in surface water and effluents from municipal and industrial WWTPs.

A literature review of studies and reports addressing EDCs and PPCPs was conducted as part of this EIS. The results of the review are presented in Appendix K. The focus of the report presented in Appendix K is the potential risk to humans and ecological receptors (primarily fish) as a result of exposure to EDCs and PPCPs in surface waters of the Las Vegas Wash and Boulder Basin of Lake Mead. Additionally, the report addresses the potential risks related to exposure of humans to these same chemicals through drinking water drawn from the Boulder Basin as a source.

The conclusions drawn upon completion of the literature review are presented in Section 5 of Appendix K. In summary, the toxicological relevance of the occurrence of EDCs and PPCPs in Lake Mead is under study at this time to determine whether these chemicals are capable of producing adverse effects in the aquatic environment at environmentally relevant concentrations. There is little evidence to suggest that EDCs and PPCPs in wastewater are having an effect on human populations anywhere. Substantial evidence from laboratory studies and from field studies in other locations indicates that EDCs at concentrations that occur in some municipal WWTP effluents can adversely affect fish. However, no causative chemical agents or specific sources have been identified.

1.4.2.6 Selenium

Selenium is a chemical element found almost everywhere on earth. It is a naturally occurring element found in rocks, soil, and water. Its original source was probably volcanic activity. Selenium is nutritionally essential, but can be toxic to aquatic life at certain concentrations. Selenium enters the Las Vegas Wash through tributaries, shallow groundwater, and treated wastewater effluent. The EPA-recommended water quality criterion for bioaccumulation (accumulation in the tissues of organisms) in aquatic life is 5 micrograms per liter ($\mu\text{g/L}$). However, the appropriate concentration for protecting birds is complex and outside the scope of EPA's recommended aquatic life criterion (EPA 2006).

1.5 Purpose of and Need for the Action

The purpose of implementing one of the action alternatives is to maintain water quality standards and NPS recreational and resource values throughout the LMNRA by operating a system that would allow for flexible management of wastewater flow from the Valley to Lake Mead while protecting and maximizing Nevada's return flow credits and future augmentation credits.

Clark County, Nevada is one of the fastest growing counties in the U.S. It is projected that the population in the area will be approximately 3,130,000 by 2035 (University of Nevada, Las Vegas [UNLV] 2004). The quantity of effluent treated and discharged in the Valley will increase as the population of the Valley increases. Forecasts indicate that a combined maximum

month flow of approximately 400 million gallons per day (mgd) (619 cubic feet per second [cfs]) of municipal wastewater will need to be treated and managed in the Valley by 2050 (Black & Veatch 2004a). The year 2050 flows were extrapolated from the treatment plant projections. The treatment and conveyance facilities must accommodate the additional flows while continuing to meet current or future water quality standards for the Las Vegas Wash, Las Vegas Bay, and Lake Mead.

The CWC needs a system that:

- Provides maximum flexibility for management of increasing amounts of treated effluent flows between the current discharge location at the Las Vegas Wash and Las Vegas Bay, and other locations in Lake Mead;
- Provides flexibility to meet current and future water quality standards for known pollutants, and as yet unknown standards for additional contaminants that may be regulated in the future;
- Enhances the Las Vegas Bay area of the LMNRA by protecting and maintaining the recreational and resource values of the entire LMNRA and continuing to meet beneficial uses, while more than doubling the treated effluent flows discharged to Lake Mead;
- Accommodates Lake Mead's lowering water levels because the amount of mixing and dilution available in the inner Las Vegas Bay would decrease as the Lake level decreases;
- Provides flexibility to avoid possible impacts to source-water quality at the SNWS intake structures; and
- Avoids the ratcheting-down effects of Nevada's requirements to maintain existing higher quality (RMHQ) anti-degradation system that happens in effluent-dominated waterways such as the Las Vegas Wash, by removing the effluent to a natural, non-effluent dominated waterway in which the existing water quality is set by the natural flow conditions, not the effluent itself.

In addition to protecting water quality in the Las Vegas Wash and Las Vegas Bay, and the need for effluent-management flexibility, a number of additional factors have been identified as relevant to this project. These factors include:

- Adapting to potential changes in the Las Vegas Wash resulting from development of ECSs and Clark County Wetlands Park (Wetlands Park) facilities;
- Integrating with southern Nevada's overall water resource plan, including return-flow credits, direct effluent reuse, credits for water from new in-state sources (augmentation credits), and protection of the environment while augmenting southern Nevada's water resources;
- Protecting water quality for downstream users;
- Addressing public perception issues regarding the location of the drinking water intakes in relation to the wastewater discharge location;
- Maintaining and managing effluent flows through the Las Vegas Wash to allow others to maintain wildlife habitat and recreational values in the Wetlands Park; and
- Reducing flows in the Las Vegas Wash that would make treatment of non-point source flows more feasible.

In 1986 and 1987, the Las Vegas Bay was found to be impaired for chlorophyll *a* and NH₃. In 1989, the NDEP established TMDLs for TP and total ammonia in the Las Vegas Wash at Northshore Road as needed to meet the Las Vegas Bay water quality standards. By 1994-95, the treatment plants were upgraded to remove ammonia and additional phosphorus, and the Las Vegas Bay achieved compliance with its water quality standards. Although the Las Vegas Bay has since been removed from the impaired waters list, the TMDLs and WLAs have remained in effect. Since the establishment of TMDLs in 1989, wastewater flows to the three treatment plants have doubled and are expected to double again over the next 25 years. These increased flows have resulted in decreasing concentrations of allowable TP and total ammonia.

In 2002, the Las Vegas Wash was listed as impaired for iron and TSS. The TSS impairment was related to erosion of the streambed due to increasing combined effluent and non-point source flows in the Las Vegas Wash. The TSS levels have improved following the construction of ECSs, and the Las Vegas Wash has been delisted for TSS. Elevated iron levels are believed to be attributable to the iron naturally present in soil. Iron levels decreased following the construction of ECSs, and delisting for iron is in progress.

A re-listing of impairment in the Las Vegas Bay could result in a further reduction of the existing TMDLs for phosphorus and ammonia. Additionally, water quality standards for total inorganic nitrogen (TIN) and iron in the Las Vegas Wash and Las Vegas Bay were exceeded in 2001, 2002, and 2003. Therefore, exceedances in the future would be expected with the absence of additional initial mixing and dilution at the point of discharge.

The current decrease in Lake elevation from 1,200 ft (366 m), which was the approximate water level when the 1989 TMDLs were set, to 1,125 ft (343 m) has reduced the volume of available water for mixing and dilution in the Las Vegas Bay to approximately 35 percent. This is a decrease from 1 million AF to 350,000 AF. Further expected decreases in water levels to approximately 1,050 ft (320 m) would result in a volume in the Las Vegas Bay of 200,000 AF, or 20 percent of its former level. The 1,000-ft (305-m) Lake level is used for planning purposes in this EIS because it is the level that has been discussed by the Colorado River states to be “protected” in future drought conditions, and has most recently been agreed to in the *Seven Basin States’ Preliminary Proposal Regarding the Colorado River Interim Operations*. Estimates of 1,000-ft (305-m) Lake levels would result in the volume of the Las Vegas Bay being 10 percent of its former volume.

Currently, the treatment plants are able to remove phosphorus down to a combined level near 0.14 milligrams per liter (mg/L), and TIN down to a level between 14 and 20 mg/L with existing or reasonably foreseeable improvements to their current technologies. The TIN standards are already being occasionally exceeded in the Las Vegas Wash and Las Vegas Bay. In addition, computer modeling results indicate exceedances of water quality standards for chlorophyll *a* in the Las Vegas Bay is highly probable at Lake levels near 1,000 ft (305 m). In 2001, an algal bloom occurred in the Las Vegas Bay when existing TMDL requirements were being met, and the Lake level was at 1,180 ft (360 m). These conditions are not nearly as severe as those predicted for the next several years. Although the 2001 algal bloom did not result in water quality standard violations, the bloom caused tremendous public concern because of its highly visible propagation at the water surface.

The SCOP was initiated to address the need to provide discharge location alternatives in open, well-mixed areas of Lake Mead. These discharge locations would replace or augment the existing discharge to the Las Vegas Wash to protect current and future water quality in the Las Vegas Wash and Las Vegas Bay. The effects at the new discharge locations would be analyzed and monitored regularly to ensure that no significant degradation of water quality is occurring in those areas. The SCOP was initiated as a proactive effort to improve and protect the water resources of southern Nevada, and to prevent possible re-listing of the Las Vegas Bay as impaired under Nevada's 303(d) listing process. An impairment listing could lead to construction of additional facilities under mandatory compliance schedules, instead of a more efficient planning timeframe.

1.6 Scoping and Public Participation Relating to the EIS

The CEQ regulations require that "agencies shall make diligent efforts to involve the public in preparing and implementing their NEPA procedures" (40 CFR 1506.6). Scoping is the first opportunity in the NEPA process for the public to provide input regarding a proposed action. Scoping is the process used to identify the proposed alternatives and significant issues to be addressed in the EIS. Comments and suggestions received as a result of the scoping process are used to prepare the Draft and Final EIS.

Additionally, public involvement occurs throughout the NEPA process. A common method for soliciting public input is to form a citizen's advisory committee such as the committee discussed in Section 1.6.2. Public input is also solicited when the Draft EIS is made available for public and agency review and comment. Comments regarding the Draft EIS will be addressed in the Final EIS.

1.6.1 Scoping

The *CEQ Regulations for Implementing the Procedural Provisions of NEPA*, 40 CFR 1501.7 states that:

There shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This process shall be termed scoping. As soon as practicable after its decision to prepare an environmental impact statement and before the scoping process the lead agency shall publish a notice of intent in the *Federal Register*.

The Notice of Intent (NOI) to prepare an EIS for the SCOP was published in the *Federal Register*/Vol. 67, No. 144 on July 26, 2002 (Appendix A). The NOI contains:

- A brief description of the proposed project;
- The location, date, and time of the scoping meetings;
- Mailing addresses for submittal of written comments; and
- The deadline for submittal of comments.

Notices were also published in local and regional newspapers including the *Las Vegas Review Journal*, *Henderson Home News*, *Arizona Republic*, *Desert Sun*, *Los Angeles Times*, and *San Diego Union-Tribune*. Postcards were mailed to residents in southern Nevada, Arizona, and California notifying them of the scoping meetings. The information provided in the newspaper notices and on the postcards included the meeting locations, dates, and times, as well as a brief description of the proposed project.

Scoping meetings were conducted to give the public an opportunity to review the possible project alternatives, identify significant environmental and other issues, and to provide comments and suggestions on the proposed SCOP for consideration in the associated EIS.

Scoping meetings were held in eight locations in Nevada, Arizona, and California. The meeting locations included:

- Henderson Convention Center, 200 S. Water St., Henderson, NV – August 12, 2002,
- Winchester Community Center, 3130 S. McLeod Dr., Las Vegas, NV – August 13, 2002,
- West Flamingo Senior Center, 6255 W. Flamingo Rd., Las Vegas, NV – August 14, 2002,
- West Sahara Library, 9600 W. Sahara Ave., Las Vegas, NV – August 15, 2002,
- Tempe Mission Palms Resort, 60 E. 5 St., Tempe, AZ – August 19, 2002,
- Black Canyon Conference Center, 9440 N. 25th Ave., Phoenix, AZ – August 20, 2002,
- Radisson in Mission Valley, 1433 Camino del Rio So, San Diego, CA – August 22, 2002, and
- Hyatt Regency Conference Center, 285 N. Palm Canyon Dr., Palm Springs, CA – August 23, 2002.

Appendix B contains the comments that were received during the scoping process. Some of the issues and concerns that were identified during the scoping process included:

- Identification of funding sources for the project;
- Impacts on the Wetlands Park including the impacts resulting from construction and operation of the EI and the amount of effluent and flood waters that will flow through the wetlands on a daily, seasonal, and annual basis;
- Sediment flows into Lake Mead;
- Discharge of effluent below Hoover Dam;
- Water quality including salinity loads, turbidity levels, phosphate levels, and the presence (or absence) of metals, endocrine disruptors, personal care products, and pharmaceuticals;
- Water quantity;
- Indirect environmental impacts;
- Impacts to Las Vegas drinking water;
- Impacts to downstream users;
- Impacts to recreation at Lake Mead and downstream of Hoover Dam;
- Return flow credits; and
- Visual impacts.

1.6.2 Clean Water Coalition Citizens Advisory Committee

The governing board of the CWC, on December 5, 2002, established the CWC Citizens Advisory Committee (CWCCAC) to gather public input on water- and wastewater-related issues impacting the southern Nevada watershed and parts of the lower Colorado River. On December 19, 2002, the CWC Board appointed members to serve on the CWCCAC. The CWCCAC was asked to provide guidance to the CWC in their effort to identify and implement acceptable long-term solutions for the treatment, discharge, and reuse of the community's wastewater. During 11 meetings and a facilities tour, CWCCAC members received educational information regarding water quality, regulatory limits, effects to the Las Vegas Wash, water quality modeling results, local and downstream water supply concerns, effluent reuse, drought effects, and the integration of all of the watershed issues.

The CWCCAC is composed of three CWC Board members and 24 stakeholders and community representatives who have worked to address the interests of the southern Nevada public, businesses, environmental and political leaders, and concerns of downstream users of the Colorado River water in Arizona and California.

The CWCCAC process included:

- Identification of the CWCCAC objectives;
- Development of understanding regarding the regional wastewater and water resource systems;
- Identification of the CWCCAC's Areas of Concern;
- Development of the CWCCAC's Problem Statement;
- Development of understanding regarding the potential solutions to the problem;
- Development of evaluation criteria based on the areas of concern;
- Application of weights and rating of alternative discharge locations against evaluation criteria; and
- Preparation and presentation of CWCCAC recommendations to the CWC.

The CWCCAC is part of the larger public input procedure required in any EIS. The CWCCAC interfaced with the public and provided an opportunity for open discussion and public participation in the overall process. After evaluation of the issues, the CWCCAC formulated potential solutions and made critical recommendations to the CWC Board regarding the alternatives that should be carried forward in the EIS. The CWCCAC ultimately assisted with the development of alternatives that would be analyzed in this EIS. The CWCCAC members assisted the CWC with alternatives development by providing knowledge, technical expertise, and the public's point of view. The CWC's selection of alternatives to be carried forward in the EIS was influenced by the CWCCAC's recommendations, as well as input from other stakeholders in the process. The alternatives development process is described in Section 2.6.

1.6.3 Coordination with Native Americans

Department of Interior (DOI), Secretarial Order (SO) 3175 (Departmental Responsibilities for Indian Trust Resources, 1993) established the policies, responsibilities, and procedures for

operating on a government-to-government basis with federally recognized Native American tribes for the identification, conservation, and protection of Native American and Alaska Native trust resources to ensure the fulfillment of the Federal Indian Trust Responsibility. Indian Trust Assets (ITA) are legal interests in property held in trust by the U.S. for federally recognized Native American Tribes. Among other directives of SO 3175, it is the DOI requirement to consult with Native American tribes when trust property may be affected. The ITA identification should be considered early in the NEPA process and involve consultation with tribes, Native American organizations, and the Bureau of Indian Affairs (BIA).

Letters notifying tribal members of the proposed project and upcoming Scoping Meetings were mailed on August 9, 2002, to 31 individual members representing 19 Native American Tribes located near and downstream of the proposed project. Attached to the letter was a copy of the Federal Register NOI to prepare an EIS. No tribal members attended the Scoping Meetings that were held in August 2002.

A Native American Coordination Meeting was held on March 31, 2004. Invitations were sent to the same tribal members mentioned previously. Three individuals representing the Ft. Mojave, Las Vegas Paiute Tribal Council, and Colorado River Indian Tribe (CRIT) attended the meeting. The tribal members were encouraged to provide comments. Appendix C contains the comments received from the Native American Tribes. Some of the issues and concerns that were identified included:

- Discharge of effluent below Hoover Dam;
- Water quality including salinity loads, turbidity levels, phosphate levels, and the presence (or absence) of metals, endocrine disruptors, personal care products, and pharmaceuticals;
- Water quantity; and
- Impacts to downstream users.

1.6.4 Draft EIS Public Hearings and Public Comment Period

The CEQ regulations (40 CFR 1503.1) invite the public to review and comment on the Draft EIS. A Notice of Availability (NOA) was published by the NPS/Reclamation in the *Federal Register* on October 5, 2005 (Vol. 70, No.192) and by the EPA on October 7, 2005 (Vol. 70, No. 194) announcing the availability of the Draft EIS for public review and comment.

The notices announcing the Draft EIS public hearings were published in the following newspapers on the following dates.

- Henderson *Home News*: September 29 and October 13, 2005.
- Las Vegas *Review Journal*: October 2 and 16, 2005.
- Kingman *Daily Miner*, Arizona *Republic*, Los Angeles *Times*, San Diego *Tribune*, and *Desert Sun*: October 9 and 23, 2005.

The NPS and Reclamation hosted nine public hearings in Nevada, Arizona, and California. The meeting locations included:

- Henderson Convention Center, 200 S. Water Street, Henderson, NV – October 17, 2005;
- West Las Vegas Library, 951 W. Lake Mead Drive, Las Vegas, NV – October 18, 2005;
- West Flamingo Senior Center, 6255 W. Flamingo Road, Las Vegas, NV – October 19, 2005;
- Summerlin Library, 1771 Inner Circle Drive, Las Vegas, NV – October 20, 2005;
- Powerhouse Visitors Conference Center, 120 W. Route 66, Kingman, AZ – October 24, 2005;
- Westside Multi-Gen Center, 715 West 5th Street, Tempe, AZ – October 25, 2005;
- Hilton Suites, 10 E. Thomas Road, Phoenix, AZ – October 26, 2005;
- Radisson in Mission Valley, 1433 Camino Del Rio South, San Diego, CA – October 27, 2005;
- Hyatt Regency Conference Center, 285 N. Palm Canyon Drive, Palm Springs, CA – October 28, 2005.

The public meetings were held to provide the public an opportunity to comment on the potential environmental impacts as described in the Draft EIS. The meeting format included a 15-minute open house followed by a presentation. The presentation included a brief description of the NEPA process, the proposed alternatives, and the results of the impacts analyses documented in the Draft EIS. Following the presentation, public participants were encouraged to submit oral or written comments regarding the Draft EIS. A court recorder was in attendance at several of the meetings to record comments received from members of the public. Written comments were accepted at the public hearings, via email, U.S. mail, and the CWC website. The official close of the comment period was December 7, 2005, but comments were accepted through January 30, 2006. All comments received and the associated responses are provided in Appendix L of this Final EIS.

1.7 Regulatory Requirements

This EIS is prepared in compliance with the NEPA and the CEQ *Regulations for Implementing the Procedural Provisions of NEPA*. Portions of the SCOP alignment traverse lands administered by the NPS, Reclamation, and BLM. Therefore, the CWC would need to obtain federal permits that allow the construction and operation of the SCOP on federal lands. The issuance of federal permits is a federal action and requires NEPA compliance. As previously stated, the NPS and Reclamation are the co-lead agencies for the preparation of this EIS. The NEPA requires federal agencies to consider the environmental consequences of all proposed actions in their decision-making process. The CEQ was established under NEPA to implement and oversee federal policy in this process.

A segment of the SCOP alignment would be located within the LMNRA. Therefore, compliance with the National Park Service Organic Act of 1916 is required (16 USC 1). The Organic Act of 1916 directs the NPS to manage units “to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner as will leave them unimpaired for the enjoyment of future generations.” The Organic Act prohibits actions that permanently impair park resources unless a law directly and specifically allows for

the actions. An action constitutes an impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources and values” (NPS 2001a).

The NPS Management Policies (NPS 2001a) require the analysis of potential effects under each alternative to determine if actions would impair park resources. The NPS must always seek ways to avoid or minimize, to the greatest degree practicable, adverse impacts on park resources and values. However, the laws give the NPS management discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment to the affected resources and values (NPS 2001a). This EIS analyzes the potential for resource impairment, as required by Director’s Order 12: *Conservation Planning, Environmental Impact Analysis and Decision Making* (NPS 2000).

The proposed alternatives are in conformance with BLM management objectives and directions of the *Las Vegas Resource Management Plan (RMP)* for rights-of-way (ROW). The BLM will continue to meet public demand for ROW access for transportation, utilities, and flood control facilities as specified in RW-1, RW-1-d, and RW-1-h. The Record of Decision (ROD) for the Las Vegas RMP was approved on October 5, 1998. The BLM standard stipulations for issuance of a ROW are included in Appendix J.

The following subsections provide a brief description of the laws, regulations, executive orders (EO), and other guidelines that may be applicable to the SCOP. Table 1.7-1 provides a summary of the permits and approvals that may be required for this project.

1.7.1 Environmental Policy

The NEPA of 1969 establishes national policy, sets goals, and provides the means to prevent or eliminate damage to the environment. The NEPA procedures ensure that information about environmental impacts is available to public officials and citizens before decisions are made on major federal actions that may significantly affect the environment. The CEQ regulations implement the procedural provisions of NEPA. In accordance with 40 CFR 1506.5, a disclosure statement is presented in Appendix N stating that PBS&J, as a third-party consultant, has no conflict of interest relating to this project.

The CEQ regulations require that a concise public ROD be prepared by the lead agency (ies). The ROD shall:

- State what the decision was.
- Identify all alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives which were considered to be environmentally preferable.
- State whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not. A monitoring and enforcement program shall be adopted and summarized where applicable for any mitigation (40 CFR 1505.2).

Table 1.7-1 Permit/Approval Summary.

Issuing Agency & Contact	Permit/Approval Required
Federal	
U.S. Bureau of Reclamation (Reclamation)	National Environmental Policy Act Decision Document (Record of Decision [ROD])
	Reclamation Right-of-entry Permit
	Reclamation Land Use License
U.S. Bureau of Land Management (BLM)	BLM Right-of-way (ROW) Temporary Use Permit
	BLM ROW Grant
U.S. Army Corps of Engineers (USACE)	Section 404 of the Clean Water Act (CWA) Permit
	Section 10 of the Rivers and Harbors Act
U.S. Fish and Wildlife Service (USFWS)	Endangered Species Act Section 7 Consultation with USFWS and Biological Assessment If it is determined that the project may adversely affect an endangered species, an incidental take permit may be required
National Park Service (NPS)	NPS ROW Grant
	National Environmental Policy Act Decision Document (ROD)
State	
State of Nevada Historic Preservation Office	National Historic Preservation Act of 1966, Section 106
Nevada Department of Wildlife	Scientific Collection of Wildlife Permit
Nevada Division of Forestry	Native cacti and yucca commercial salvaging permit and shipping or transportation permit
Nevada Division of Environmental Protection (NDEP), Bureau of Water Pollution Control	CWA, Section 401 Water Quality Certification
	National Pollutant Discharge Elimination System (NPDES) General Stormwater Permit for Construction
	NPDES Permanent Discharge Permit
	NPDES Temporary Discharge Permit
NDEP, Nevada Division of Water Resources	Waiver (dewatering well, monitoring well, and/or testing well waiver)
Nevada Department of Transportation (NDOT) District I	NDOT ROW Encroachment Permit
	Traffic Barricade Plan Approval

Table 1.7-1 Permit/Approval Summary (continued).

Issuing Agency & Contact	Permit/Approval Required
Nevada Department of Motor Vehicles and Public Safety, Nevada State Fire Marshall Division	Hazardous Material Permit or Roving Permit.
Clark County	
Air Quality & Environmental Management	Authority to Construct Certificate or Operating Permit Modification
	Dust Control Permit
Department of Public Works Community Development Division	Off-site Construction Permit
	Encroachment Permit
	Encroachment Permit (discharge water)
Department of Public Works Traffic Operations	Traffic Barricade Plan Approval
Development Services	Grading Permit
	Conditional Grading Plan
	Temporary Sign Permit
	Soils Report Submittal & Examination Declaration
	Block Wall/Fence Permit
	Pad Certification for Grading and Earthwork
Department of Comprehensive Planning	Multiple Species Habitat Conservation Plan Compliance Desert Tortoise "Take" Permit and collection of tortoise habitat remuneration fees.
Regional Flood Control District	Capital Improvement Program Coordination/Drainage Study Review (also check of Federal Emergency Management Agency Maps)
Fire Department	Above-ground Generator Permit
	Fire Department Permit
	Blasting Permit
City of Henderson	
Department of Public Works, Land Development	Excavation Permit/Grading Permit
	Barricade Plan Approval
	Revocable Permit and Encroachment Plan Approval
	Plans Check
Department of Building and Safety	Grading (Floodplain) Permit
Fire Prevention Division	Blasting Permit
	Above-ground storage tank permit for flammable liquid

Table 1.7-1 Permit/Approval Summary (continued).

Issuing Agency & Contact	Permit/Approval Required
City Council Notification	Interlocal Contract
City of Las Vegas	
Department of Building and Safety	Plans check
	Excavation Permit
Utility Services Coordination	
AT&T	Coordination only. No permit required.
Cal-Nev Pipeline	Coordination only. Occupancy Permit if required.
Nevada Power	Coordination only. No permit required.
Sprint	Coordination only. No permit required.
Southwest Gas	Coordination only. No permit required.

The *Protection and Enhancement of Environmental Quality* EO 11514 sets the policy for directing the federal government in providing leadership in protecting and enhancing the quality of the nation’s environment (1977).

1.7.2 Air Quality

The *Clean Air Act* (CAA) of 1970 establishes federal policy to protect and enhance the quality of the nation’s air resources to protect human health and the environment (42 USC 7401 et seq.; 42 USC 1857h-7 et seq; PL 91-604). The CAA sets national primary and secondary ambient air quality standards as a framework for air pollution control.

The CAA Amendments of 1977 initiated the association of federal department activities with a State Implementation Plan (SIP). The 1977 provisions stated that no federal agency could engage in, support in any way, or provide financial assistance for, license, permit, or approve any activity which did not conform to a SIP after its approval or promulgation. Two SIPs for Clark County were approved by EPA in early 2004: *Clark County Serious Area Carbon Monoxide Plan for the Las Vegas Metropolitan Nonattainment Area*, and *Clark County Serious Area PM-10 Plan for the Las Vegas Metropolitan Nonattainment Area*.

Section 176(c) of the CAA Amendments of 1990 expanded the scope and content of the conformity provisions by defining conformity to an implementation plan. Specifically, the language asserts that a federal agency cannot approve or support an action that causes or contributes to new violations of any National Ambient Air Quality Standard (NAAQS), increases the frequency or severity of existing violations of any NAAQS, or, delays the timely attainment of any NAAQS or any required interim emission reductions or milestones.

1.7.3 Water Quality

The CWA establishes federal limits, through the National Pollutant Discharge Elimination System (NPDES), on the amounts of specific pollutants that are discharged to surface waters in order to restore and maintain the chemical, physical, and biological integrity of the water as established by ambient water quality standards. A NPDES permit, or modification to an existing permit, would be required for any change from the present parameters in the quality or quantity of wastewater discharge and/or stormwater runoff. The NDEP establishes water quality standards in accordance with the CWA, and has authority over the NPDES program in Nevada. A general description of the NPDES process is presented in Appendix M. The current wastewater discharge permit for the three wastewater treatment agencies in southern Nevada is also presented in Appendix M.

The *Safe Drinking Water Act* of 1974 sets primary standards for the quality of public drinking water supplies and establishes a program to prevent contamination of underground drinking water sources (42 USC 300f et seq.; PL 93-523). The *National Primary Drinking Water Regulations* define the maximum allowable concentrations of specified contaminants in public water systems (42 USC 300g; 40 CFR 143).

The *Floodplain Management* EO 11988 (1977) requires federal agencies to evaluate the potential effects of actions on floodplains and to consider alternatives to avoid adverse effects and incompatible development wherever possible.

1.7.4 Biological Resources

The *Endangered Species Act* (ESA) of 1973 requires federal agencies that authorize, fund, or carry out actions to avoid jeopardizing the continued existence of endangered or threatened species, and to avoid destroying or adversely modifying their critical habitat (16 USC 1531 et seq; PL 93-205). Federal agencies must evaluate the effects of their actions on endangered or threatened species of fish, wildlife, and plants, and their critical habitats, and take steps to conserve and protect these species. All potentially adverse impacts to endangered and threatened species must be avoided or mitigated.

Special status plant species are those that are federally listed threatened or endangered, proposed for listing, or candidates for listing under the ESA. Federal land management agencies are mandated to protect and manage threatened, endangered, candidate, proposed, and sensitive plant species and their habitat. The federal agencies are also required to protect and manage sensitive species jointly identified with the appropriate state agency. A *Scientific Collection Permit* issued by the Nevada Department of Wildlife would be required prior to handling of any state sensitive species (Nevada Revised Statutes [NRS] 503.597 and 503.650).

The *Migratory Bird Treaty Act* of 1918, as amended [16 USC 703 et. seq.], provides for the protection of migratory birds and prohibits their unlawful take or possession. In addition, EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, was signed by President Clinton in 2001. This EO directs federal agencies to include impacts to migratory birds in their NEPA analyses.

The *Protection of Wetlands* EO 11990 requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands (1977). It is the commitment of the USACE to:

- Achieve the goal of no net loss of our nation’s wetlands, and
- Improve guidance to ensure effective, scientifically based restoration of wetlands impacted by development activities.

1.7.5 Cultural Resources

The *National Historic Preservation Act* (NHPA) of 1966, as amended, requires federal agencies to take into account the effects of their undertakings on historic properties, and to afford the Advisory Council on Historic Preservation an opportunity to comment with regard to such undertaking (16 USC 470a et seq. 80 Stat. 915; PL 89-665). Implementing regulations for Section 106 of the NHPA are found at 36 CFR 800 and outline the process agencies are to follow when evaluating the effects of their undertakings on historic properties and when resolving effects to such properties. Historic properties are defined in the *Protection of Historic Properties Act of 1986* (36 CFR 800.16[1][1]) as “... any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places....”

The *Archaeological Resources Protection Act* (ARPA) of 1979, as amended, and its implementing regulations establish a procedure for permitting the recovery of information from archaeological sites, and authorize and establish civil and criminal penalties for intentionally or inadvertently damaging an archaeological site without a permit (16 USC 470aa-470mm. 93 Stat. 721; 43 CFR 7; PL 96-65).

The *Native American Graves Protection and Repatriation Act* (NAGPRA) of 1990 and its implementing regulations address the rights of lineal descendants and members of Native American tribes to certain Native American human remains and cultural items with which they are affiliated (25 USC 3001-30013. 104 Stat. 3042; 43 CFR 10; PL 101-601). The NAGPRA’s implementing regulations at 43 CFR 10.3 and 10.4 address federal agencies’ responsibilities when such items may be discovered during intentional permitted excavations, or the unintentional discovery of such items during the course of construction work, and those exposed as a result of erosion. When working on state, county, or private lands, both state and federal agencies are required to comply with NRS 383.150 through 383.190, *Historic Preservation and Archaeology: Protection of Indian Burial Sites* NRS 383.150-383.190 which address the inadvertent discovery of human remains on such lands.

The *American Indian Religious Freedom Act* (AIRFA) of 1978 established the policy of the United States “...to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise [their] traditional religions...including but not limited to access to sites...and the freedom to worship through ceremonials and traditional rites” (42 USC 1996 et seq. PL 95-341) Section 1(a) of the *Protection and Accommodation of Access to “Indian Sacred Sites”* (EO 13007 1996) further directs federal agencies “...to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions to, (1) accommodate access to

and ceremonial use of Native American sacred sites by Native American practitioners, and (2) avoid adversely affecting the physical integrity of such sacred sites.” Compliance with AIRFA is thus achieved through consulting with tribal governments and tribal traditional religious practitioners.

1.7.6 Noise

The *Noise Control Act of 1972* establishes a policy to promote an environment free from noise that is harmful to the health or welfare of people (42 USC 4901; PL 92-574). Federal agencies comply with state and local requirements for the control and abatement of environmental noise, where applicable.

1.8 Related Documents

The following documents address ongoing actions, issues, or baseline data in the project area and are used as background information or incorporated by reference into this EIS as appropriate.

Area Wide Reuse Study (COH et al. 2000). The *Area Wide Reuse Study* examines potential reclaimed water demands and associated agencies’ improvement plans through the year 2020.

Las Vegas Wash Stabilization Project Environmental Assessment (NPS 2001b). The runoff in the Las Vegas Wash has caused the channel to cut deeper into the landscape and grow wider, threatening the stability of the Northshore Road Bridge. The *Las Vegas Wash Stabilization Project Environmental Assessment* analyzes the potential impacts of placing three ECSs within the Las Vegas Wash at intervals downstream of the Northshore Road Bridge (within the LMNRA) to protect it from erosion.

Las Vegas Wash Comprehensive Adaptive Management Plan (LVWCC 2000). The *Las Vegas Wash Comprehensive Adaptive Management Plan* encompasses the 12-mile (19 km) long Las Vegas Wash from its headwaters northwest of the Las Vegas metropolitan area to its mouth at Las Vegas Bay, an arm of the western portion of Lake Mead. This document serves as the basis from which to implement actions recommended by LVWCC study teams and provides a roadmap for the long-term stabilization, enhancement, and management of the Las Vegas Wash.

Programmatic Biological Assessment for Clark County Wetlands Park Master Plan Las Vegas, Nevada (SWCA 2000a). This Biological Assessment specifies the development planned within the Wetlands Park and its potential effects to federally listed species. The species considered include the southwestern willow flycatcher (*Empidonax traillii extimus*), Yuma clapper rail (*Rallus longirostris yumanensis*), desert tortoise (*Gopherus agassizii*), and razorback sucker (*Xyrauchen texanus*).

Clark County Wetlands Park Trail Corridors and Guidelines Plan (Clark County Parks and Community Services 2002). Development of a trail system within the Wetlands Park is a component identified in the *Clark County Wetlands Park Master Plan* (Clark County 1995). The *Wetlands Park Trail Corridors and Guidelines Plan* is based upon public participation and considers recreational needs by multiple user groups, the maintenance and biological monitoring

needs of the Las Vegas Wash stabilization and restoration projects, accessibility, safety, and overall maintenance and enforcement of the trail system. The *Wetlands Park Trail Corridors and Guidelines Plan* serves as a guide for the design, permitting, and development of the Wetlands Park trail corridors.

The Sunrise Management Area Interim Management Plan and Environmental Assessment (BLM 2000). The *Sunrise Management Area Interim Management Plan and Environmental Assessment* covers 21,578 acres (8,732 hectares) within the Sunrise Mountain Special Recreation Management Area. The purpose of this plan is to provide management guidance for the Sunrise Management Area (SMA) that is consistent with the BLM RMP. The goal of this plan is to provide recreation opportunities and to protect biological, geological, hydrological, and cultural resources within the SMA.

Final Program Environmental Impact Statement of the Clark County Wetlands Park (Reclamation and Clark County Department of Parks and Recreation 1998). In 1991, a \$13.3 million bond was approved for the construction and operation of a wildlife and wetlands park to control erosion in the Las Vegas Wash. The *Final Program Environmental Impact Statement of the Clark County Wetlands Park* evaluates potential impacts from the construction and operation of the 8-square mile (21 square km) Wetlands Park located along 7 miles (11 km) of the Las Vegas Wash.

Las Vegas Wash Off-channel Wetlands Draft Report (Reclamation 2002). Since 1970, more than 1,800 acres (725 hectares) of wetlands along the Las Vegas Wash have been lost due to erosion caused by increased flows of highly treated effluent and urban runoff. The *Las Vegas Wash Off-channel Wetlands Draft Report* summarizes Reclamation's preliminary investigation of constructing off-channel wetlands around the Las Vegas Wash. This report identifies wetland designs and the potential effects of wetland development in the Las Vegas Wash as it relates to water supply, costs, and environmental, cultural, geological, and hydrological resources.

US 93 Hoover Dam Bypass Project Final Environmental Impact Statement and Section 4(f) Evaluation and Record of Decision (U.S. Federal Highway Administration 2001). The increasing congestion caused by the switchbacks leading to Hoover Dam and the restrictions at the dam crossing have led to the development of the Hoover Dam Bypass Project. The Hoover Dam Bypass Project is a 3.5-mile (6-km) corridor consisting of a bridge and highway access across the Colorado River in the vicinity of Hoover Dam. The ROD identified the Sugarloaf Mountain Alignment as the selected alternative.

Lake Mead National Recreation Area General Management Plan 1986 and 2002 Lake Management Plan and Final Environmental Impact Statement (NPS 1986, 2002). The 1986 *General Management Plan* and 2002 *Lake Management Plan and Final Environmental Impact Statement* (NPS 1986, 2002) are specific to the LMNRA, which includes two reservoirs (Lakes Mead and Mohave) along 140 miles (225 km) of the Colorado River from the southern tip of Nevada to the northwest corner of Arizona. The 1986 *General Management Plan* is the management document for Lakes Mead and Mohave. The 2002 *Lake Management Plan* tiers from the 1986 *Final Environmental Impact Statement / General Management Plan* and proposes additional management of recreational use for the waters of LMNRA. The objectives of executing the Management Plans are to improve the management of Lake Mead and

Lake Mohave and provide for the long-term protection of LMNRA resources, while allowing a range of recreational opportunities to support visitor needs.

Las Vegas Resource Management Plan and Final Environmental Impact Statement (BLM 1998). This RMP provides management guidance for approximately 3.3 million acres (1.3 million hectares) of public land administered by the BLM. The RMP was prepared in compliance with the *Federal Land Policy and Management Act of 1976*. The RMP identifies and analyzes alternatives for long-term management of public lands and resources administered by BLM in the planning area, which is defined as the Las Vegas District excluding Red Rock Canyon National Conservation Area, and the Nellis Range.

Lower Colorado River Multi-species Conservation Program Final Environmental Impact Statement/Environmental Impact Report (Reclamation et al. 2004). The Lower Colorado River Multi-Species Conservation Program (LCR MSCP) was developed to protect the lower Colorado River environment as well as the interests of water users and hydropower demands, protect threatened and endangered species, and prevent the listing of additional species in the lower Colorado River. The MSCP comprehensive, long-term, multi-agency effort is to work towards the recovery of several endangered species.

1.9 Organization of the Environmental Impact Statement

This EIS is organized into 12 Chapters and 15 Appendices. Chapter 1 describes the purpose and need for the proposed project and provides project history and background information. Chapter 2 provides a description of the five alternatives analyzed in depth, and the alternatives eliminated from further considerations. Chapter 2 also provides a comparative summary of the impacts of the alternatives to the local communities and the natural environment. Chapter 3 contains a description of the affected environment and provides a baseline for analyzing the impacts of the alternatives. The results of the environmental impact analysis are presented in Chapter 4. Chapter 5 presents the cumulative impacts that may result from the alternatives. Chapter 6 discusses the irreversible and irretrievable commitments of resources that may result from the action. The list of individuals and organizations consulted during the preparation of this EIS is provided in Chapter 7. Chapter 8 contains the list of SCOP EIS preparers and contributors. The references that are cited through-out the document are presented in Chapter 9. Chapter 10 contains the list of repositories and libraries that received a copy of this EIS and the public distribution list. A Glossary and an Index are presented in Chapters 11 and 12, respectively.

In addition to the body of this EIS, the following appendices are included:

- Appendix A - Notice of Intent
- Appendix B - Scoping Comments
- Appendix C - Native American Scoping Comments
- Appendix D - Water Resources
- Appendix E - Biological Resources
- Appendix F - Noise Assessment
- Appendix G - Air Quality

Appendix H - Visual Resources

Appendix I - Socioeconomics

Appendix J - BLM Standard Stipulations for Rights-of-way

Appendix K – Endocrine Disrupting Chemicals and Pharmaceuticals and Personal Care Products

Appendix L - Comments and Responses

Appendix M - National Pollutant Discharge Elimination System Permit Process

Appendix N - No Conflict-of-interest Disclosure Statement

Appendix O - Acronyms and Abbreviations.

The List of Acronyms, Appendix O, is printed on the right side of 11x17 paper. This allows the reader to unfold the List of Acronym pages and have the list visible while reading the EIS. The glossary in Chapter 11 provides definitions of words and terminology that the reader may need.