

March 2007

Natural Environment Study

Bacterial Indicators Total Maximum Daily Load (TMDL) Coachella Valley Storm Water Channel Riverside County, California

The purpose of the Natural Environment Study (NES) is to provide biological studies and biologically related information necessary for the environmental review process regarding land use decisions. Full disclosure of environmental impacts of proposed projects is required to satisfy legal mandates of various California and federal statutes and regulations. The NES includes documentation of project area biological resources and an impact assessment of project alternatives on those resources.

PROJECT DESCRIPTION

The proposed project is an amendment to the Water Quality Control Plan for the Colorado River Basin Region (Basin Plan) that will establish the **Bacterial Indicators Total Maximum Daily Load (TMDL), Coachella Valley Storm Water Channel (CVSC), Riverside County, California**. A TMDL is the maximum amount of a pollutant that a water body can receive while still meeting water quality objectives (narrative or numerical) designed to protect beneficial uses [Clean Water Act Section 303(d); 40 Code of Federal Regulations (CFR) Sections 130.2(d), (i), 130.7].

E. coli, enterococci, and fecal coliform are specific indicator organisms that apply to bacteria conditions. Indicator bacteria do not cause illness directly, but high concentrations of these indicators that exceed WQOs indicate the high likelihood of infectious diseases. The United States Environmental Protection Agency (USEPA) recommends using either *E. coli* or enterococci water quality objectives (WQOs) for protection of bathers from gastrointestinal illness in fresh recreational waters such as CVSC, and only enterococci WQOs for marine (USEPA 2002).

Quantitative water quality objectives for these three bacteria indicator organisms were established by the Regional Board and incorporated into the Basin Plan to protect beneficial uses of waterways in the Region. Violation of these objectives indicates impairment of beneficial uses and degraded water quality conditions. The Basin Plan states that beneficial uses of the Coachella Valley Storm Water Channel^a include: freshwater replenishment (FRSH); water contact recreation (REC I)^b; water non-contact recreation (REC II)^b; warm freshwater habitat (WARM); wildlife habitat (WILD); and preservation of rare, threatened, or endangered species (RARE)^c (Basin Plan as amended to date).

^a Section of perennial flow from approximately the City of Indio to the Salton Sea

^b Unauthorized use

^c Rare, threatened, or endangered wildlife exists in or utilizes some of this waterway

The CVSC is located in Riverside County, California. The CVSC is unlined and extends about 17 miles from the City of Indio to the northern end of the Salton Sea. The CVSC is an engineered extension of the Whitewater River and serves as a depository and conveyance channel for irrigation return water, treated wastewater, storm water runoff, and urban runoff. The CVSC is maintained by the Coachella Valley Water District for flood protection in the Coachella Valley and serves as a master drain for the area from the City of Indio to the Salton Sea.

The Coachella Valley has been heavily agricultural since the early 1900s. Agricultural fields are irrigated by groundwater and Colorado River water from the All-American Canal. Agricultural return water dominates the channel's flow to the Salton Sea. However, the CVSC also receives discharges from four National Pollutant Discharge Elimination System (NPDES) permitted facilities: three municipal wastewater treatment plants and an aquaculture facility (Kent Seatech Corporation Fish Farm (KSCFF)). Average annual flows in the CVSC are decreasing due to changes in agriculture practices and suburban development.

The CVSC's main sources of pathogens (represented by *E. coli*) are avian (40%), human (25%), rodents plus other wild mammals (25%), and livestock (<3%). Human sources include sewage, wastewater effluent, and wastewater treatment plants. Agricultural, stormwater and urban runoff appears to play a significant role, but the actual contribution is not well understood and therefore requires more study.

The Basin Plan Amendment to incorporate the TMDL:

- Summarizes TMDL elements, including the Project Definition, Watershed Description, Data Analysis, Source Analysis, Critical Conditions and Seasonal Variations, Linkage Analysis, TMDL Calculation and Allocations, Public Participation, Implementation Plan, and Monitoring Plan.
- Establishes numeric targets that are consistent with Basin Plan water quality objectives, and applicable throughout the year and in the entire stretch of the Coachella Valley Storm Water Channel:

Indicator Parameter	30-Day Geometric Mean ^a	Or	Single Sample
<i>E. coli</i>	126 MPN ^b /100 ml		400 MPN/100 ml

- a. Based on a minimum of no less than 5 samples equally spaced over a 30-day period.
- b. Most probable number.

- Incorporates a TMDL Implementation Plan, as required by Section 13242 of the Porter-Cologne Water Quality Control Act, that includes designation of responsible parties and cooperating agencies/organizations, a description of required and recommended actions, time schedules, and Regional Board compliance monitoring.
- Describes TMDL enforcement.

- Describes the Regional Board TMDL review process.
- Includes Regional Nonpoint Source Control Plan elements.
- Updates and/or deletes dated information that is no longer accurate

The TMDL Implementation Plan occurs in two phases. Phase I implementation actions are described below.

Monitoring additional constituents in stormwater. Municipal Separate Storm Sewer System (MS4) permits^d for permittees who discharge to the impaired portion of the CVSC will be revised by the Regional Board to include monitoring and reporting for *E. coli*. Regional Board staff also will issue similar stormwater permits to other entities/municipalities discharging to the impaired portion of the CVSC (if any).

Implementation of water quality monitoring program. Responsible parties will conduct a two-year bacteria indicator water quality monitoring program to properly characterize bacterial contributions to CVSC from anthropogenic sources. The program must be conducted according to a Quality Assurance Project Plan (QAPP) approved by the Regional Board Executive Officer. Likely actions include collecting water samples in the Channel and tributary drains.

Revising the NPDES permit for the aquaculture facility. Currently, KSCFF, an aquaculture facility, has an NPDES permit to discharge to CVSC, but monitoring for bacteria is not required. The Regional Board will revise KSCFF's NPDES permit to include effluent *E. coli* limitations and monitoring.

Implementation of a pathogen reduction plan for tribal land. USEPA is to coordinate the development of a plan to ensure that waste discharges from tribal land (septic systems and otherwise) do not violate or contribute to a violation of the TMDL. USEPA is to coordinate the submittal of a technical report to the Regional Board that describes measures taken and/or proposed to reduce these sources. Likely actions include owner/operator education.

Implementing of Tracking Plan by Regional Board. Regional Board staff is to develop a plan to conduct TMDL surveillance and track TMDL activities. The plan is due 90 days after USEPA approves the TMDL, and will include the following objectives:

- Assess, track, and account for practices already in place;
- Measure milestone attainment;
- Determine compliance with NPDES permits, WLAs, and LAs; and
- Determine progress toward achieving WQSs.

^d MS4 Permittees who discharge to the impaired portion of the CVSC are Riverside County Flood Control and Water Conservation District (RCFCWCD), Coachella Valley Water District (CVWD), the City of Indio, and the City of Coachella.

Likely Phase II implementation actions (should they be necessary) are described below. A separate CEQA analysis will be done before Phase II is implemented. However, Phase II actions are described to give a better understanding of the scope of the project.

- **Implementation of Management Practices.** The Regional Board may require that responsible parties implement site-specific management practices to address anthropogenic wastewater discharges into the CVSC.
- **Revision of water quality objectives.** The Regional Board may revise water quality objectives for the CVSC. This involves completing a Use Attainability Analysis to develop a Site Specific Objective to address natural, uncontrollable background sources (e.g., wildlife) of pathogens. A Use Attainability Analysis is a structured scientific assessment that may require intensive field study, and likely would be contracted to a private consultant who would be the responsible party for the analysis. Regional Board staff would be the responsible party for development of the Site Specific Objective. Potential actions include collecting water samples and assessing habitat conditions in the CVSC and tributary drains.

Phase II will be implemented if water quality objectives are not achieved by the end of Phase I. Phase II actions will be based on assessment of Phase I data and progress. Potential Phase II actions include implementation of management practices, enforcement actions, and revision of water quality objectives. Phase II is to be completed within 5 years of the end of Phase I.

The TMDL's purpose is to achieve water quality objectives and protect beneficial uses by reducing the amount of bacteria in the CVSC. Current bacteria levels pose a public health threat. Compliance with the TMDL is expected to result in CVSC being unimpaired by pathogens and protective of beneficial uses.

STUDY METHODOLOGY

Literature Review Methods

Research was done on the wildlife, vegetation, and habitats in or near the CVSC. Literature sources included field guides, research papers, websites, government publications, and a query of the California Natural Diversity Database (California Department of Fish and Game 2006), among others. Information specifically cited within this report is recorded in the “References Cited” section. Background information not specifically cited within the text is recorded in the “References Relied Upon” section.

Special status species recorded as “accidental” in the literature are not included in this report, as project area habitat generally is not considered suitable for these species. Accidental visitors are likely off-course due to extreme inclement weather, and would not otherwise utilize project area habitat.

Special Status Definitions

The California Department of Fish and Game and U.S. Fish and Wildlife Service designate the status of a species. “Special” is defined here as plants, animals, or natural communities whose populations are of concern, including those that are endangered, threatened, special concern, and otherwise rare/sensitive. This is consistent with the California Natural Diversity Database, which tracks such animals (California Department of Fish and Game 2004b), plants (California Department of Fish and Game 2005), and natural communities (California Department of Fish and Game 2003). Special status species are categorized and defined as:

“Endangered” species are those that have such limited numbers that they are in imminent danger of extinction throughout all or a significant portion of their range.

“Threatened” species are those that are likely to become endangered in the foreseeable future.

“Special Concern” species are those that have declining population levels, limited ranges, and/or continuing threats that have made them vulnerable to extinction. (State-listed Special Concern Species that are “Fully Protected” are those that may not be taken or possessed without a state permit. Federally-listed Special Concern Species are no longer tracked by the U.S. Fish and Wildlife Service, and thus are not discussed in this report.)

“Rare/Sensitive” species are those that are biologically rare, very restricted in distribution, declining throughout their range, in danger of local extirpation, are closely associated with a rapidly declining habitat, or have a critical, vulnerable stage in their life cycle that warrants monitoring.

Endangered and threatened species have the highest level of protection, followed by special concern species, then rare/sensitive species. When a species is listed in more than one category in the California Natural Diversity Database (e.g., State Special Concern and Rare/Sensitive), this Natural Environment Study records only the category offering the highest level of protection.

ENVIRONMENTAL SETTING

Affected Environment

The area affected by the project includes: (a) the entire length of the CVSC (about 17 miles), from Washington Street in the City of Indio to the outlet at the Salton Sea, (b) drains (e.g., open, agricultural tile) tributary to the CVSC, and (c) surrounding land that allows surface water to flow into the CVSC and drains. This area is located in Coachella Valley in Riverside County, in southeastern California. Figure 1 shows a map of the CVSC in a regional context, and includes locations of U.S. Geological Survey (USGS) flow gages, NPDES permitted dischargers, tribal areas, and the northern end of the Salton Sea. Figure 2 shows a map of the CVSC and its flow sources (i.e., permitted dischargers and tributary drains). Figure 3 shows a picture of the CVSC at the Avenue 66 bridge.

Figure 1: Location of Coachella Valley Storm Water Channel, in Regional Context

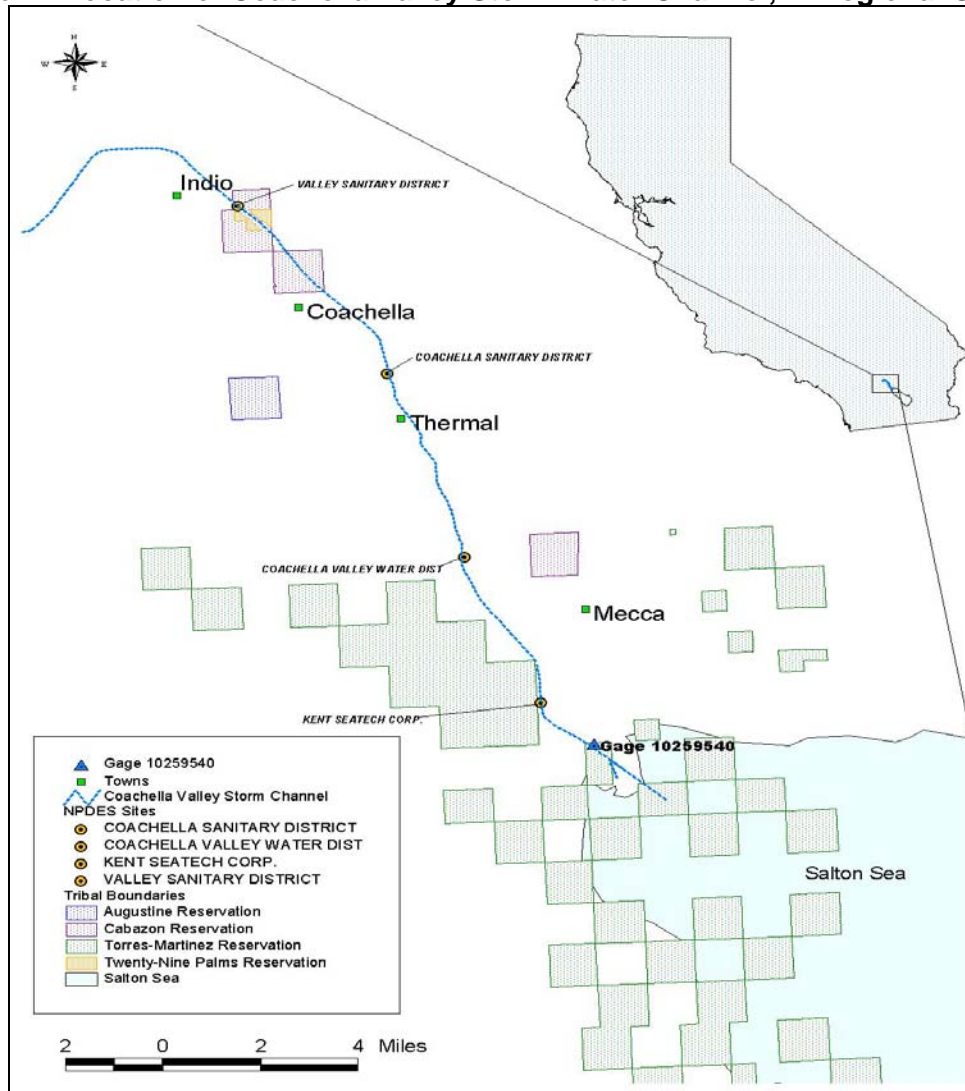
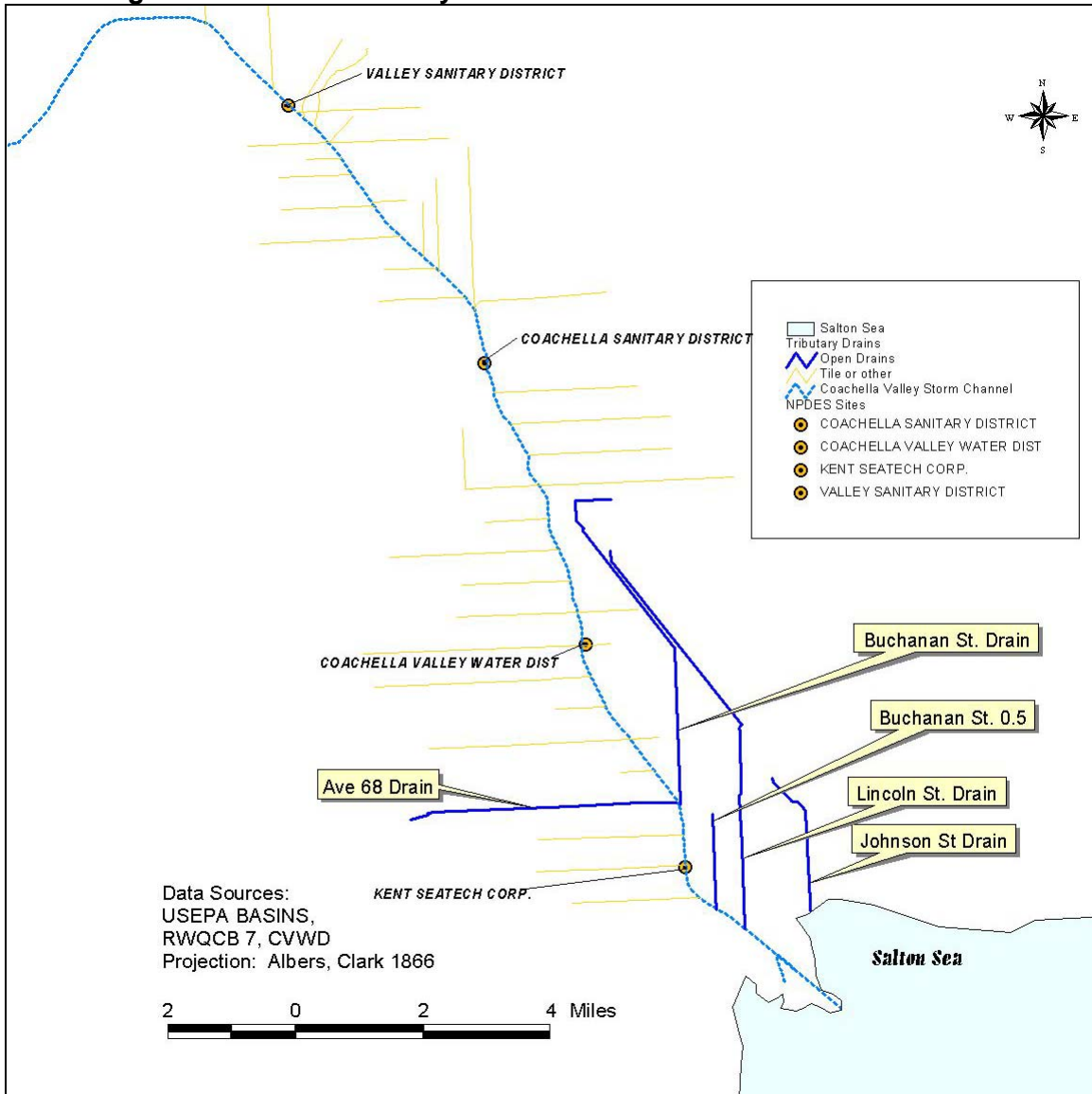


Figure 2: Coachella Valley Storm Water Channel and Flow Sources*



* Drain lengths are approximate. Open drains are considered perennially wet, having generally constant flow.

Figure 3: Coachella Valley Storm Water Channel at the Avenue 66 Bridge



Weather

The CVSC is located in one of the most arid desert regions in the United States. Average annual precipitation on the valley floor (elevation less than 2,000 feet) is less than 1 inch, and evapotranspiration could reach 50 inches annually if water were available (USDA Soil Conservation Service 1980). The climate is hot, with dry summers, occasional thunderstorms, and gusty high winds with sandstorms. Average temperature is 57°F (71°F high, 42°F low) in January, and 93°F (107°F high, 78°F low) in July (The Weather Channel 2006). The climate is relatively stable throughout the year without the wide swings in temperature and precipitation found in other parts of the country.

Soil

Soils in Coachella Valley are excessively drained to somewhat poorly drained, nearly level to moderately steep, on alluvial fans and valley fill and in lacustrine basins (Table 1).

Table 1: Soil Associations in Coachella Valley

Association Name	Slope	Drainage	Soil Description
Niland-Imperial-Carsitas	Nearly level to moderately sloping	Moderately well drained to excessively drained	Sands, gravelly sands, cobbly sands, fine sands, and silty clays in lacustrine basins
Carsitas-Myoma-Carrizo	Nearly level to moderately steep	Somewhat excessively drained or excessively drained	Sands, fine sands, gravelly sands, cobbly sands, stony sands on alluvial fans and valley fill
Myoma-Indio-Gilman	Nearly level to rolling	Somewhat excessively drained to moderately well drained	Fine sands, very fine sandy loams, fine sandy loams, silty loams on alluvial fans
Gilman-Coachella-Indio	Nearly level to rolling	Somewhat excessively drained to moderately well drained	Fine sands, fine sandy loams, silt loams, loamy fine sands, and very fine sandy loams on alluvial fans
Salton-Indio-Gilman	Nearly level	Somewhat poorly drained to well drained	Silty clay loams, very fine sandy loams, fine sandy loams, and silt loams in lacustrine basins

Source: USDA Soil Conservation Service 1980

Land Uses

Coachella Valley supports a variety of land uses (Table 2). The valley is dominated by deciduous shrubland (desert scrub), reflecting the desert region in which the valley is located. Major land uses near the CVSC include agricultural, urban, bare rock/sand/clay, and grassland/herbaceous. Evergreen forests are located along the southwestern edge of the Whitewater River drainage basin.

Table 2: Coachella Valley Existing Land Uses

Use	Total Area (acres)	Percent of Total Area (%)
Urban (mostly tourist and resort residential communities dominated by low and medium-density residential development, and supported by a full range of commercial services, light industrial, and hotel/resort development)	67,400	6.00
Rural, Rural Residential (includes development areas that are tightly clustered, but most are largely limited to low and very low-density residential development, highly dispersed homesteads and mobilehome and RV parks, some of which are supported by equally outlying convenient commercial uses)	12,500	1.00
Agriculture (focuses on cultivation of dates, grapes, citrus, and other fruit and vegetable crops)	84,900	7.50
Lake (includes Salton Sea)	43,500	4.00
Reservoir	800	0.00
Wind Energy Uses	4,400	0.50
Quarry	900	0.00
Landfill	400	0.00
Public and Private Non-Conservation Lands	320,600	28.00
Open Space-Public and Private Conservation Lands	601,000	53.00
TOTAL AREA COVERED BY PLAN	1,136,400	100.00
Indian Reservation Lands – Non Part of Plan	69,600	
TOTAL OF ALL ACRES IN PLAN AREA	1,206,00	

Source: Draft Final Coachella Valley Multi Species Habitat Conservation Plan, 2006

Figure 4 shows agricultural fields (in photo background) along the CVSC with a small drain pipe (in photo center) discharging into the channel near Avenue 50 and Avenue 52. Figure 5 shows a residential area (in photo background) near the channel between Avenue 50 and Avenue 52.

Figure 4: Agricultural Fields Along the Coachella Valley Storm Water Channel



Figure 5: Residential Area Along the Coachella Valley Storm Water Channel



Ecological Setting

The CVSC empties into the Salton Sea, which is one of the few remaining wetland environments along the Pacific Flyway. The CVSC supports a substantially different ecosystem than that of the Salton Sea, despite the Sea receiving agricultural discharges and other relatively freshwater flows from the CVSC, New River, Alamo River, and agricultural drains. This is due to physical and chemical differences, the most important being the Salton Sea's high salinity level. Accordingly, the freshwater CVSC and saline Salton Sea fulfill a critical role in the ecological importance of this desert region.

Turtles and birds are at the top of the local food web. These species feed on fish, aquatic vegetation, invertebrates (aquatic, sediment-dwelling, and terrestrial), amphibians, crayfish, clams, and reptiles. Food is found in the CVSC and its tributary drains as well as along Sea shorelines and agricultural fields.

Habitat in the CVSC is highly fragmented and disturbed along most of its length. The habitat is dominated by open desert scrub with tamarisk scrub occurring commonly. Tamarisk (also known as salt cedar) is an introduced species that has out-competed native vegetation for limited desert water. Small freshwater marsh areas occur uncommonly, and are utilized by threatened and endangered songbirds among others. Fish and wildlife use the CVSC as alternative habitat for foraging and shelter because about 97% of California wetlands have been converted to other uses or otherwise degraded (Bennett 1998). Small riparian corridors occur uncommonly, serving as potential wildlife movement corridors, and thus are important aspects of habitat, especially for songbirds. The endangered desert pupfish is present in multiple drains that empty directly into the Salton Sea, including drains near the CVSC, but has not been documented within the CVSC or its tributary drains. Areas adjacent (upland) to the CVSC mostly are agricultural, residential, empty lots, and desert scrub. Figure 6 shows a small freshwater marsh area along the Lincoln Street drain, a large open drain that is tributary to the CVSC.

Figure 6. Freshwater Marsh Habitat Along the Lincoln Street Drain



Habitat at the CVSC/Salton Sea interface is composed of shallow freshwater and saltwater marshes, extending about 100 yards upstream into the CVSC from the Salton Sea shore. This habitat accounts for less than 1% of the CVSC, and is one small part of the wetland habitat around the Salton Sea. The interface between the CVSC and the Salton Sea contains elements of both freshwater and saltwater ecosystems, and serves as a transition zone where fresh and salt water intermix to form brackish water. Species here are generally much more salt tolerant than species within the CVSC. This marsh habitat is critical for many species, especially birds that use this habitat for nesting, sheltering, and feeding. Birds are the most diverse wildlife group in the area, as indicated by their abundance and species richness. Many threatened and endangered waterfowl and shorebirds use the marsh area where the CVSC empties into the Salton Sea.

The Salton Sea is a critical stop for migrating birds on the ecologically important Pacific Flyway, a major migratory route connecting Canada and the U.S. to Mexico and Central America. Millions of birds, representing more than 350 species, winter at the Sea (U.S. Fish and Wildlife Service 1997a). Salton Sea bird communities represent a significant proportion of the breeding populations of many species (Tetra Tech Inc. 2000). Catastrophic die-offs of birds and fish since 1992 indicate that the Salton Sea is potentially impaired by a number of pollutants.

Habitats

Available habitat is intricately associated with wildlife diversity and abundance. Impacts to habitat have direct impacts on the wildlife dependent upon that particular habitat. Habitat disturbance due to agricultural and urban development has resulted in the limited distribution of native vegetation along the CVSC and throughout the Coachella Valley.

Natural habitats in or near the CVSC include desert scrub, open water, riparian, and wetland (freshwater and saltwater marsh). Non-natural habitats adjacent to the CVSC include agricultural land and urban land. Other habitats are in the region but relatively far from the CVSC, and include mudflat, palm oasis, fine sand, and cave/mine/cliff. These habitats are described below.

Desert scrub is dominant on the valley floor, and in the CVSC and its tributary drains, occurring where water does not flow perennially. This habitat is composed of large expanses of open sand/soil, with brushy scrub species interspersed throughout. Tamarisk scrub is common along the CVSC. Tamarisk (*Tamarisk* spp.) is an introduced, non-native shrub/tree that has replaced much of the native vegetation, reducing water available for native plants and wildlife.

Open water occurs in much of the CVSC and some tributary drains. This habitat is the portion that is always flooded, and may support submerged or emergent vegetation.

Riparian habitat occurs uncommonly along the CVSC and its tributary drains, occurring largely in association with available underground water sources. Tamarisk has supplanted much of the native riparian habitat in the CVSC and its tributary drains.

Wetland (freshwater marsh and saltwater marsh) habitat occurs at the CVSC's outlet at the Salton Sea, especially about 100 yards inland from the Sea shore. This habitat is characterized by emergent vegetation in standing water or saturated soil. Freshwater marsh is dominated by non-native species such as common reed (*Phragmites australis*) and cattail (*Typha* spp.), while

saltwater marsh is dominated by a thick cover of salt grass (*Distichlis spicata*) and species such as alkali bulrush (*Scirpus robustus*) (Tetra Tech Inc. 2000). Very small isolated freshwater marsh areas occur uncommonly in the CVSC and its tributary drains. Freshwater and saltwater marsh habitats are special status natural communities.

Agricultural land and urban land are commonly adjacent to the CVSC. These habitats are not considered natural, but are used by wildlife because buildings and planted vegetation provide food and cover.

Mudflat habitat is outside of the project area, located on the southern end of the Salton Sea. Mudflats are associated largely with delta areas, where the Alamo River and New River meet the Sea.

Palm oasis, fine sand, and cave/mine/cliff habitats are located outside of the project area. These habitats are relatively small in size and number, and tend to occur in isolated and/or protected areas.

List of Occurring Plants

Table 3 lists plant species that occur or potentially occur in the CVSC vicinity. This list is not complete, but rather, is representative of plants in the area.

Table 3. Representative List of Plants in the Project Vicinity

Common Name	Scientific Name	Special Status
Chaparral sand-verbena	<i>Abronia villosa</i> var. <i>aurita</i>	Yes
Chamise	<i>Adenostoma fasciculatum</i>	No
Western ragweed	<i>Ambrosia psilostachya</i>	No
Fiddleneck	<i>Amsinckia intermedia</i>	No
Deep Canyon snapdragon	<i>Antirrhinum cyathiferum</i>	Yes
Coachella Valley milk-vetch	<i>Astragalus lentiginosus</i> var. <i>coachellae</i>	Yes
Triple-ribbed milk-vetch	<i>Astragalus tricarinatus</i>	Yes
Quail bush	<i>Atriplex canescens</i>	No
Slender wild oat	<i>Avena barbata</i>	No
Black mustard	<i>Brassica nigra</i>	No
Brome	<i>Bromus rubens</i>	No
Sedge	<i>Carex barbarae</i>	No
Yellow-star thistle	<i>Centaurea solstitialis</i>	No
Bull thistle	<i>Cirsium vulgare</i>	No
Poison hemlock	<i>Conium maculatum</i>	No
Common horseweed	<i>Conyza canadensis</i>	No
Cardoon	<i>Cynara cardunculus</i>	No
Smoke tree	<i>Dalea spinosa</i>	No
Jimsonweed	<i>Datura wrightii</i>	No
Salt grass	<i>Distichlis spicata</i>	No
Glandular ditaxis	<i>Ditaxis claryana</i>	Yes
California ditaxis	<i>Ditaxis serrata</i> var. <i>californica</i>	Yes
Doveweed	<i>Eremocarpus setigerus</i>	No

Common Name	Scientific Name	Special Status
Long-beaked filaree	<i>Erodium botrys</i>	No
Little San Bernardino Mountains gilia	<i>Gilia maculata</i>	Yes
Western sunflower	<i>Helianthus annuus</i>	No
Cow parsnip	<i>Heracleum sphondylium</i>	No
Telegraph weed	<i>Heterotheca grandiflora</i>	No
Prickly lettuce	<i>Lactuca serriola</i>	No
Creosote bush	<i>Larrea tridentata</i>	No
Santa Rosa Mountains leptosiphon	<i>Leptosiphon floribundus</i> ssp. <i>Hallii</i>	Yes
Alfalfa	<i>Medicago sativa</i>	No
Creamy blazing star	<i>Mentzelia tridentata</i>	Yes
Slender woolly-heads	<i>Nemacaulis denudata</i> var. <i>gracilis</i>	Yes
Slender-stem bean	<i>Phaseolus filiformis</i>	Yes
Common reed	<i>Phragmites australis</i>	No
Bristly ox-tongue	<i>Picris echioides</i>	No
Arrowweed	<i>Pluchea sericea</i>	No
Rabbitfoot grass	<i>Polypogon monspeliensis</i>	No
Wild radish	<i>Raphanus sativus</i>	No
Castor bean	<i>Ricinus communis</i>	No
Golden dock	<i>Rumex maritimus</i>	No
Willow	<i>Salix hindiana</i>	No
Russian thistle	<i>Salsola tragus</i>	No
Orocopia sage	<i>Salvia greatae</i>	Yes
Alkali bulrush	<i>Scirpus robustus</i>	No
Desert spike-moss	<i>Selaginella eremophila</i>	Yes
Coves's cassia	<i>Senna covesii</i>	Yes
Purple stemodia	<i>Stemodia durantifolia</i>	Yes
Tamarisk	<i>Tamarix</i> spp.	No
Cattail	<i>Typha</i> spp.	No
Stinging nettle	<i>Urtica holosericea</i>	No
Mecca-aster	<i>Xylorhiza cognata</i>	Yes

IMPACT TO BIOLOGICAL RESOURCES

Impact Assessment Summary

The project area supports important biological resources, including special status wildlife, plants, and natural communities. Over 120 special status species and natural communities were identified in the literature review as occurring or potentially occurring in the project vicinity (Table 4). These included 22 threatened and/or endangered species. Many species are associated with the area where the CVSC empties into the Salton Sea (U.S. Fish and Wildlife Service 1997a).

Table 4 presents information regarding special status species and natural communities, including status, habitat (used for nesting, roosting, and/or foraging), local seasonal presence (regardless of abundance), and potential for being impacted by the project. The impact assessment is based on species' sensitivity to project impacts, species' natural history requirements, site proximity to known occurrences, species' range, seasonal abundance, consultation with local resource managers, and professional judgment. Some identified species may occur in the vicinity of, but not within, the project area due to a lack of suitable habitat (e.g., fine sand, palm oasis) on-site, and thus will not be impacted by the project. Other species have a low potential for occurring on-site, and thus a low potential for being impacted by the project.

Table 4. Impact Assessment for Special Status Species and Natural Communities

Common Name	Scientific Name	Status	Habitat	Local Seasonal Presence	Potential for Being Impacted
Wildlife = 104					
Cheeseweed owlfly	<i>Oliarces clara</i>	R/S	Riparian	Sp	None
Coachella giant sand treader cricket	<i>Macrobaenetes valgum</i>	R/S	Sand	Y	None
Coachella Valley Jerusalem cricket	<i>Stenopelmatus calhuilaensis</i>	R/S	Scrub, Sand	Y	None
Desert pupfish	<i>Cyprinodon macularius</i>	FE, SE	Open Water	Y	None
Desert slender salamander	<i>Batrachoseps major aridus</i>	FE, SE	Oasis	Y	None
Arroyo toad	<i>Bufo californicus</i>	FE	Riparian	Y	None
Desert tortoise	<i>Gopherus agassizi</i>	FT, ST	Scrub	Y	None
Flat-tailed horned lizard	<i>Phrynosoma mcalli</i>	SSC	Sand	Sp, S, F	None
Coachella Valley fringe-toed lizard	<i>Uma inornata</i>	FT, SE	Sand	Y	None
Northern red-diamond rattlesnake	<i>Crotalus ruber ruber</i>	SSC	Scrub	Y	None
Common loon	<i>Gavia immer</i>	SSC	Open Water	Sp, F	None
American white pelican	<i>Pelecanus erythrorhynchos</i>	SSC	Open Water, Mudflat	Y	None

Common Name	Scientific Name	Status	Habitat	Local Seasonal Presence	Potential for Being Impacted
California brown pelican	<i>Pelecanus occidentalis californicus</i>	FE, SE	Open Water, Mudflat	Y	None
Double-crested cormorant	<i>Phalacrocorax auritus</i>	SSC	Open Water	Y	None
American bittern	<i>Botaurus lentiginosus</i>	R/S	Wetland	Y	None
Least bittern	<i>Ixobrychus exilis</i>	SSC	Wetland	Y	None
Great blue heron	<i>Ardea herodias</i>	R/S	Mudflat, Wetland	Y	None
Great egret	<i>Ardea alba</i>	R/S	Mudflat, Wetland	Y	None
Snowy egret	<i>Egretta thula</i>	R/S	Mudflat, Wetland	Y	None
Black-crowned night heron	<i>Nycticorax nycticorax</i>	R/S	Wetland	Y	None
White-faced ibis	<i>Plegadis chihi</i>	SSC	Wetland, Ag	Y	None
Wood stork	<i>Mycteria americana</i>	SSC	Mudflat, Wetland	S, F	None
Fulvous whistling duck	<i>Dendrocygna bicolor</i>	SSC	Wetland	Sp, S, F	None
Aleutian Canada goose	<i>Branta canadensis leucopareia</i>	R/S	Ag, Wetland	F, W	None
Canvasback	<i>Aythya valisineria</i>	R/S	Open Water	Y	None
Osprey	<i>Pandion haliaetus</i>	SSC	Riparian, Open Water	Y	None
White-tailed kite	<i>Elanus leucurus</i>	R/S (FP)	Wetland, Ag	Y	None
Bald eagle	<i>Haliaeetus leucocephalus</i>	FT, SE	Mudflat, Open Water	W	None
Golden eagle	<i>Aquila chrysaetos</i>	R/S (FP)	Ag, Scrub	Y	None
Northern harrier	<i>Circus cyaneus</i>	SSC	Ag, Wetland	Y	None
Sharp-shinned hawk	<i>Accipiter striatus</i>	SSC	Riparian, Scrub	Sp, F, W	None
Cooper's hawk	<i>Accipiter cooperi</i>	SSC	Riparian, Scrub	Sp, F, W	None
Swainson's hawk	<i>Buteo swainsoni</i>	ST	Ag	S, W	None
Ferruginous hawk	<i>Buteo regalis</i>	SSC	Ag	F, W	None
Merlin	<i>Falco columbarius</i>	SSC	Ag	F, W	None

Common Name	Scientific Name	Status	Habitat	Local Seasonal Presence	Potential for Being Impacted
American peregrine falcon	<i>Falco peregrinus anatum</i>	SE (FP)	Wetland	Y	None
Prairie falcon	<i>Falco mexicanus</i>	SSC	Ag	Y	None
California black rail	<i>Laterallus jamaicensis coturniculus</i>	ST (FP)	Wetland	Y	None
Yuma clapper rail	<i>Rallus longirostris yumanesis</i>	FE, ST	Wetland	Y	None
Greater sandhill crane	<i>Grus canadensis tabida</i>	ST (FP)	Ag	F, W	None
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	FT	Mudflat	Y	None
Mountain plover	<i>Charadrius montanus</i>	SSC	Ag	Sp, F, W	None
Long-billed curlew	<i>Numenius americanus</i>	SSC	Wetland, Ag	Y	None
Laughing gull	<i>Larus atricilla</i>	SSC	Open Water, Mudflat	Y	None
California gull	<i>Larus californicus</i>	SSC	Open Water, Mudflat, Ag	Y	None
Gull-billed tern	<i>Sterna nilotica</i>	SSC	Mudflat, Ag	Sp, S, F	None
Caspian tern	<i>Sterna caspia</i>	R/S	Open Water, Mudflat	Y	None
Forster's tern	<i>Sterna forsteri</i>	R/S	Open Water, Mudflat	Y	None
Black tern	<i>Chlidonias niger</i>	SSC	Mudflat, Ag	Sp, S, F	None
Black skimmer	<i>Rynchops niger</i>	SSC	Mudflat	Sp, S, F	None
Burrowing owl	<i>Athene cunicularia</i>	SSC	Ag	Y	None
Long-eared owl	<i>Asio otus</i>	SSC	Riparian	W	None
Short-eared owl	<i>Asio flammeus</i>	SSC	Ag	F, W	None
Vaux's swift	<i>Chaetura vauxi</i>	SSC	Scrub, Open Water	Sp, F	None
Costa's hummingbird	<i>Calypte costae</i>	R/S	Urban, Scrub	Y	None
Rufous hummingbird	<i>Selasphorus rufus</i>	R/S	Urban, Scrub	Sp, S, F	None

Common Name	Scientific Name	Status	Habitat	Local Seasonal Presence	Potential for Being Impacted
Allen's hummingbird	<i>Selasphorus sasin</i>	R/S	Urban	F	None
Lewis' woodpecker	<i>Melanerpes lewis</i>	R/S	Urban	Sp, F, W	None
Gila woodpecker	<i>Melanerpes uropygialis</i>	SE	Urban, Scrub	Y	None
Red-breasted sapsucker	<i>Sphyrapicus rubber</i>	R/S	Urban	W	None
Olive-sided flycatcher	<i>Contopus cooperi</i>	R/S	Urban, Scrub	Sp, F	None
Willow flycatcher	<i>Empidonax traillii</i>	SE	Urban, Scrub	Sp, F	None
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE	Urban, Scrub	Sp, F	None
Vermilion flycatcher	<i>Pyrocephalus rubinus</i>	SSC	Urban, Riparian	Y	None
California horned lark	<i>Eremophila alpestris actia</i>	SSC	Ag	Y	None
Purple martin	<i>Progne subis</i>	SSC	Riparian	Sp, F	None
Bank swallow	<i>Riparia riparia</i>	ST	Ag	Sp, S, F	None
Black-tailed gnatcatcher	<i>Polioptila melanura</i>	R/S	Scrub	Y	None
Crissal thrasher	<i>Toxostoma crissale</i>	SSC	Scrub, Riparian	Y	None
Le Conte's thrasher	<i>Toxostoma lecontei</i>	SSC	Scrub	Y	None
Loggerhead shrike	<i>Lanius ludovicianus</i>	SSC	Scrub, Ag	Y	None
Least Bell's vireo	<i>Vireo bellii pusillus</i>	FE, SE	Riparian	Sp, S	None
Gray vireo	<i>Vireo vicinior</i>	SSC	Scrub	Sp, S, F	None
Virginia's warbler	<i>Vermivora virginiae</i>	SSC	Scrub	F	None
Yellow warbler	<i>Dendroica petechia brewsteri</i>	SSC	Riparian, Urban	Sp, F, W	None
Hermit warbler	<i>Dendroica occidentalis</i>	R/S	Scrub, Urban	Sp, F	None
Yellow-breasted chat	<i>Icteria virens</i>	SSC	Riparian	Sp, S, F	None
Summer tanager	<i>Piranga rubra</i>	SSC	Urban	F	None
Abert's towhee	<i>Pipilo aberti</i>	R/S	Scrub	Y	None
Chipping sparrow	<i>Spizella passerina</i>	R/S	Urban	Sp, F, W	None
Lark sparrow	<i>Chondestes grammacus</i>	R/S	Ag, Scrub	Sp, F, W	None
Bell's sage sparrow	<i>Amphispiza belli belli</i>	R/S	Ag, Scrub	F, W	None
Large-billed savannah sparrow	<i>Passerculus sandwichensis rostratus</i>	SSC	Ag, Mudflat, Wetland	Sp, S	None
Brewer's sparrow	<i>Spizella breweri</i>	R/S	Ag, Scrub	Sp, F, W	None

Common Name	Scientific Name	Status	Habitat	Local Seasonal Presence	Potential for Being Impacted
Gray-headed junco	<i>Junco hyemalis caniceps</i>	SSC	Scrub, Ag	Sp, F, W	None
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	R/S	Wetland, Ag	Y	None
Lawrence's goldfinch	<i>Carduelis lawrencei</i>	R/S	Scrub	Sp, F, W	None
California leaf-nosed bat	<i>Macrotus californicus</i>	SSC	Cave, Scrub, Ag	Sp, S, F	None
Mexican long-tongued bat	<i>Choeronycteris mexicana</i>	SSC	Cave, Scrub	Sp, S, F	None
Spotted bat	<i>Euderma maculatum</i>	SSC	Cave, Scrub, Ag	Sp, S, F	None
Pallid bat	<i>Antrozous pallidus</i>	SSC	Cave, Scrub, Ag	Sp, S, F	None
Pocketed free-tailed bat	<i>Nyctinomops femorasaccus</i>	SSC	Cave, Scrub, Riparian, Oasis	Sp, S, F	None
Big free-tailed bat	<i>Nyctinomops macrotis</i>	SSC	Cave, Scrub, Open Water	Sp, S, F	None
Western mastiff bat	<i>Eumops perotis californicus</i>	SSC	Cave, Scrub, Ag	Sp, S, F	None
Western yellow bat	<i>Lasiurus xanthinus</i>	R/S	Cave, Scrub	Sp, S, F	None
Palm Springs round-tailed ground squirrel	<i>Spermophilus tereticaudus chlorus</i>	SSC	Scrub	Y	None
Palm Springs pocket mouse	<i>Perognathus longimembris bangsi</i>	SSC	Scrub	Sp, S, F	None
Earthquake Merriam's kangaroo rat	<i>Dipodomys merriami collinsi</i>	R/S	Scrub	Y	None
San Bernardino Merriam's kangaroo rat	<i>Dipodomys merriami parvus</i>	FE	Scrub	Y	None
Yuma hispid cotton rat	<i>Sigmodon hispidus eremicus</i>	SSC	Ag, Riparian	Y	None
Colorado Valley woodrat	<i>Neotoma albigula venusta</i>	R/S	Scrub	Y	None
American badger	<i>Taxidea taxus</i>	SSC	Scrub	Y	None

Common Name	Scientific Name	Status	Habitat	Local Seasonal Presence	Potential for Being Impacted
Peninsular bighorn sheep	<i>Ovis canadensis nelsoni</i> DPS* (formerly <i>O. c. cremnobates</i>)	FE, ST (FP)	Scrub	Y	None
Nelson's (=Desert) bighorn sheep	<i>Ovis canadensis nelsoni</i>	R/S	Scrub	Y	None
Plants = 15					
Chaparral sand-verbena	<i>Abronia villosa</i> var. <i>aurita</i>	R/S	Scrub	Y	None
Deep Canyon snapdragon	<i>Antirrhinum cyathiferum</i>	R/S	Scrub	Y	None
Coachella Valley milk-vetch	<i>Astragalus lentiginosus</i> var. <i>coachellae</i>	FE	Scrub	Y	None
Triple-ribbed milk-vetch	<i>Astragalus tricarinatus</i>	FE	Scrub	Y	None
Glandular ditaxis	<i>Ditaxis claryana</i>	R/S	Scrub	Y	None
California ditaxis	<i>Ditaxis serrata</i> var. <i>californica</i>	R/S	Scrub	Y	None
Santa Rosa Mountains leptosiphon	<i>Leptosiphon floribundus</i> ssp. <i>Hallii</i>	R/S	Scrub	Y	None
Creamy blazing star	<i>Mentzelia tridentata</i>	R/S	Scrub	Y	None
Slender woolly-heads	<i>Nemacaulis denudata</i> var. <i>gracilis</i>	R/S	Scrub, Sand	Y	None
Slender-stem bean	<i>Phaseolus filiformis</i>	R/S	Scrub	Y	None
Orocopia sage	<i>Salvia greatae</i>	R/S	Scrub	Y	None
Desert spike-moss	<i>Selaginella eremophila</i>	R/S	Scrub	Y	None
Coves's cassia	<i>Senna covesii</i>	R/S	Scrub	Y	None
Purple stemodia	<i>Stemodia durantifolia</i>	R/S	Scrub	Y	None
Mecca-aster	<i>Xylorhiza cognata</i>	R/S	Scrub	Y	None
Natural Communities = 2					
Desert Fan Palm Oasis Woodland	not applicable	R/S	not applicable	not applicable	None
Wetlands (freshwater and saltwater marsh)	not applicable	R/S	not applicable	not applicable	None

* Distinct Population Segment

Legend:

Status: FE = Federal Endangered
FT = Federal Threatened
R/S = Rare or Sensitive
SE = State Endangered
ST = State Threatened
SSC = State Special Concern
FP = Fully Protected (an additional State designation)

Habitat: Ag = agricultural land
Cave = cave, mine, cliff
Mudflat = mudflat, beach
Oasis = palm oasis communities
Open Water = open water (e.g., Salton Sea, drain channels)
Riparian = shrubby vegetation (e.g., willow, tamarisk) along waterways
Sand = fine sand
Scrub = desert scrub
Urban = human residential and industrial areas
Wetland = emergent wetlands (e.g., freshwater marsh, saltwater marsh)

Local Seasonal Presence: Sp = Spring (about April through May)
S = Summer (about June through August)
F = Fall (about September through October)
W = Winter (about November through March)
Y = Year-round (resident, or visitors throughout the year)

Special Status Wildlife

One-hundred and four special status wildlife species, including twenty threatened and/or endangered species, were identified in the literature review as occurring or potentially occurring in the project vicinity (Table 4). The following bullet statements discuss project impacts on these species.

- Threatened and/or Endangered Species. The desert slender salamander, Coachella Valley fringe-toed lizard, and western snowy plover will not be impacted by the project because they use habitats (e.g., mudflat, fine sand, cave/mine/cliff, palm oasis) in the vicinity, but outside, of the project area. Other threatened and/or endangered species also will not be impacted by the project even though they use habitats (e.g., desert scrub, open water, riparian, wetland, urban land, agricultural land) in the project area, because the reduced pathogen levels or implementation measures will not adversely affect these habitats. These species include the arroyo toad, desert tortoise, desert pupfish, California brown pelican, bald eagle, Swainson's hawk, American peregrine falcon, California black rail, Yuma clapper rail, greater sandhill crane, gila woodpecker, willow flycatcher, southwestern willow flycatcher, bank swallow, least Bell's Vireo, San Bernardino Merriam's kangaroo rat, and peninsular bighorn sheep.
- State Special Concern and Rare/Sensitive Species. Eighty-four species that are not threatened and/or endangered (i.e., state special concern species, rare/sensitive) will

not be impacted by the project because: (a) they use habitats (e.g., mudflat, fine sand, cave/mine/cliff, palm oasis) that are in the vicinity, but outside, of the project area, or (b) they use habitats (e.g., desert scrub, open water, riparian, wetland, urban land, agricultural land) within the project area that will not be affected by reduced pathogen levels or implementation measures.

Special Status Plants

Fifteen special status plant species, including two threatened and/or endangered species, were identified in the literature review as occurring or potentially occurring in the project vicinity (Table 4). The following bullet statements discuss project impacts on these species.

- Threatened and/or Endangered Species. The Coachella Valley milk-vetch and triple-ribbed milk-vetch will not be impacted by the project because: (a) these species are unlikely to occur in the project area because potential habitat (i.e., desert scrub) on-site is highly disturbed, and these species are sensitive to disturbance, (b) these species are not recorded within the project area in the California Natural Diversity Database, and (c) these species will not be affected by reduced pathogen levels or implementation measures, even if they should occur on-site.
- State Special Concern and Rare/Sensitive Species. Thirteen species that are not threatened and/or endangered (i.e., state special concern species, rare/sensitive) will not be impacted by the project because they use habitat (i.e., desert scrub) within the project area that will not be affected by reduced pathogen levels or implementation measures.

Special Status Natural Communities

Two special status natural communities were identified in the literature review as occurring or potentially occurring in the project vicinity (Table 4). The following bullet statements discuss project impacts on these communities.

- The Desert Fan Palm Oasis Woodland community will not be impacted by the project because this community occurs in the vicinity, but outside, of the project area. This community is restricted to areas with high water tables, permanent streams, or large springs, and is dominated by *Washingtonia filifera* that grow to 75-100 feet tall. Two stands occur outside of the project area, at Bear Creek Palms (south of Coyote Creek headwaters, east of Deep Canyon) and on public land at Deep Canyon (east of, and parallel to, Highway 74, between Coyote Creek and Hidden Palms Canyon).
- Wetlands occur on-site, but will not be impacted by the project, because reduced pathogen levels or implementation measures will not adversely affect them. Wetlands, represented by freshwater and saltwater marsh communities, occur most notably at the CVSC's outlet to the Salton Sea, but also in small isolated areas along the channel and its tributary drains.

Impact Assessment of Project Alternatives

The Preferred Alternative has been the basis for all discussions in this Natural Environment Study. However, other alternatives exist, including a No Action Alternative, a Faster Compliance Timeline Alternative, and an Increased Regulatory Oversight Alternative. Each

alternative is described below, with an assessment of impacts on biological resources.

The Preferred Alternative is defined as the proposed Basin Plan amendment to incorporate the subject TMDL and corresponding Implementation Plan. This alternative implements measures that will bring the CVSC into compliance with existing Basin Plan water quality objectives. Phase I requires that responsible parties: (a) implement a two-year water quality monitoring program, and/or (b) monitor *E. coli* in NPDES facility effluent. Phase I is to be completed within 3 years of USEPA approval of the TMDL. Phase II will be implemented if water quality objectives are not met at the end of Phase I. Phase II actions will be based on assessment of Phase I data and progress. Potential Phase II actions include aggressive enforcement actions and revision of water quality objectives. Phase II is to be completed within 5 years of the end of Phase I. The time schedule is moderately aggressive yet reasonable, allowing sufficient time for responsible parties to comply with Implementation Plan provisions. This alternative will decrease existing pathogen levels, reduce the human health threat, and protect beneficial uses. This alternative will result in no impact upon biological resources because current pathogen levels do not appear to put wildlife population health at risk. This conclusion is based on: (a) wildlife being a major source of pathogens, and (b) a lack of wildlife disease outbreaks.

The No Action Alternative is defined as no Regional Board adoption of a Basin Plan Amendment to incorporate the subject TMDL and corresponding Implementation Plan. This means that pathogen levels in the CVSC will continue to: (a) violate Basin Plan water quality objectives, (b) impair beneficial uses, and (c) place the health of human communities at unacceptable risk. This alternative does not comply with the Clean Water Act or meet the purpose of the Preferred Alternative, which is to eliminate ongoing water quality violations. It is precisely because of these violations that law dictates a regulatory action. This alternative would result in no impact upon biological resources (as in the Preferred Alternative). However, this alternative is not acceptable because it would allow current pathogen levels to continue to put human health at risk, and would not protect beneficial uses.

The Faster Compliance Timeline Alternative is defined as the Preferred Alternative with Phase I compliance to be achieved within one year (instead of three years) of USEPA approval of the TMDL. This alternative is not feasible or reasonable, considering the amount of data collection required to assess conditions/sources and the amount of time needed by responsible parties to develop/implement plans to reduce pathogen levels. This alternative would decrease existing pathogen levels, reduce the human health threat, protect beneficial uses, and result in no impact upon biological resources (as in the Preferred Alternative). However, this alternative could lead to insufficient data to effectively plan for Phase II and could lead to greater economic impacts to responsible parties who may require additional personnel to implement required measures so quickly.

The Increased Regulatory Oversight Alternative is defined as the Preferred Alternative with greater regulatory oversight, including more frequent submission of reports by responsible parties to the Regional Board and more intense monitoring (e.g., more stations). This alternative would decrease existing pathogen levels, reduce the human health threat, protect beneficial uses, and result in no impact upon biological resources (as in the Preferred Alternative). However, this alternative could be unnecessarily burdensome on the regulated community, and exhaustive of limited Regional Board staff resources.

SPECIAL LAWS

The Federal Endangered Species Act of 1973 (16 U.S.C. Section 1531 et. seq.) provides for the conservation of endangered and threatened species listed pursuant to Section 4 of the Act [16 U.S.C. Section 1533] and the ecosystems upon which they depend. Section 7 of the Act [16 U.S.C. Section 1536] requires Federal agencies to ensure that actions they authorize, fund or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. The U.S. Fish and Wildlife Service administers this federal program.

The California Endangered Species Act (Fish & Game Code Section 2050 et seq.) requires the California Department of Fish and Game to establish a list of endangered and threatened species (Section 2070) and to prohibit the incidental taking of any such listed species except as allowed by the Act (Sections 2080-2089). The Act also requires the Department to comply with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) when evaluating incidental take permit applications (Fish & Game Code Section 2081(b) and California Code of Regulations, Title 14, Section 783.0 et seq.), and the potential impacts the project or activity for which the application was submitted may have on the environment. The Department's CEQA obligations include consultation with other public agencies which have jurisdiction over the project or activity (California Code of Regulations, Title 14, Section 783.5(d)(3)). But in no event may the Department issue an incidental take permit if issuance would jeopardize the continued existence of the species (Fish & Game Code Section 2081(c); California Code of Regulations, Title 14, Section 783.4(b)). The Department of Fish and Game administers the state program.

The California Environmental Quality Act (CEQA) requires identification of potentially significant adverse environmental effects of proposed projects. Significant effects are to be mitigated by avoidance, minimization, rectification, or compensation whenever possible. Where a proposed project could result in the taking of a species listed under the California Endangered Species Act, an analysis of the impacts of the proposed taking must be conducted in addition to the environmental analysis of the project itself (Fish & Game Code Section 2081; California Code of Regulations, Title 14, Sections 783.2-783.5). Effects to all state and federally listed species are considered significant under CEQA.

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. Sections 703-712) is a federal law that implements international treaties and conventions held to protect migratory birds. The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10. This includes feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR Part 21). The MBTA requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (1 February to 31 August, annually) to avoid nest abandonment and/or loss of eggs or young. The loss of habitat upon which the birds depend could constitute a violation of the MBTA.

MITIGATION MEASURES

The Implementation Plan occurs in two phases, with Phase II occurring only if Phase I does not achieve water quality objectives. Phase I requires responsible parties to monitor and report on *E. coli*. Phase II potentially involves: (a) implementation of site-specific management practices, and (b) revision of water quality objectives. A separate CEQA analysis will be done before Phase II is implemented. A responsible party must comply with CEQA requirements, however, before it is allowed to implement any project proposed to achieve TMDL compliance. Consequently, pursuant to CEQA, the responsible party becomes a Lead Agency with respect to this compliance project. In this capacity, the responsible party shall, to the greatest extent feasible, use this environmental analysis, which describes the reasonably foreseeable methods by which compliance with the Bacterial Indicators TMDL will be achieved. (Public Resources Code Sections 21159, 21159.2, 21159.4; CEQA Guidelines Sections 15187 & 15189.) The responsible party, as lead agency, remains responsible, however, for its own CEQA analysis and identifying any necessary mitigation measures for reducing potentially significant environmental impacts should its proposed compliance project fall outside the scope of this CEQA analysis. (Public Resources Code Section 21159.2; State CEQA Guidelines Section 15189.)

At the time of this analysis, it was uncertain what measures the responsible parties may implement. California law prohibits the Regional Board from specifying the design, location, type of construction, or particular manner in which compliance may be achieved (Water Code Section 13360). Hence, responsible parties may use any effective implementation action to achieve compliance with the Bacterial Indicators TMDL so long as the law does not prohibit the proposed action.

Likely Phase I implementation actions and potential mitigation measures are described below.

- **Monitoring additional constituents in stormwater.** Municipal Separate Storm Sewer (MS4) permits for permittees discharging into the impaired portion of the CVSC will be revised by the Regional Board to include monitoring and reporting of *E. coli*. Regional Board staff also will issue similar stormwater permits to other entities/municipalities discharging to the CVSC (if any). Likely actions include adding these constituents to existing monitoring programs without the need to significantly change current procedures (e.g., stations, frequency, length of time). Mitigation measures likely are not necessary, given that this action will not significantly change the procedure (e.g., stations, frequency, length of time) currently used in stormwater monitoring.
- **Implementation of water quality monitoring program.** Responsible parties will conduct a two-year bacteria indicator water quality monitoring program to properly characterize bacterial contributions to CVSC from anthropogenic or municipal sources. The program must be conducted according to a QAPP approved by the Regional Board Executive Officer. Likely actions include collecting water samples in the CVSC and tributary drains. Potential mitigation measures include placing sample stations (in the channel and drains) away from nesting/roosting habitat of sensitive species.

- **Implementation of a pathogen reduction plan for tribal land.** USEPA is to coordinate development of a plan to ensure that waste discharges from tribal land (septic systems and otherwise) do not violate or contribute to a violation of the TMDL. USEPA is to coordinate the submittal of a technical report to the Regional Board that describes measures taken and/or proposed to reduce these sources. Likely actions include owner/operator education. Mitigation measures likely are not necessary, given that this action is administrative.

Phase II will be implemented if Phase I is unsuccessful in meeting TMDL water quality objectives. Phase II actions will be based on assessment of Phase I data and progress. A separate CEQA analysis with mitigation measures will be done before Phase II is implemented. However, Phase II actions are described to give a better understanding of the scope of the project. Likely Phase II implementation actions (should they be necessary) are described below.

- **Implementation of Management Practices.** The Regional Board may require that responsible parties implement site-specific management practices to address anthropogenic wastewater discharges into the CVSC.
- **Revision of water quality objectives.** The Regional Board may revise water quality objectives for the CVSC. This involves completing a Use Attainability Analysis and developing a Site Specific Objective to address natural, uncontrollable background sources (e.g., wildlife) of pathogens. A Use Attainability Analysis is a structured scientific assessment that may require intensive field study, and likely would be contracted to a private consultant who would be responsible for developing mitigation measures should the study methods have a significant impact on biological resources. Regional Board staff would be the responsible party for development of the Site Specific Objective, which likely would not require mitigation measures due to the administrative nature of the task.

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