PROPERTY
OPERATIONS AND MAINTENANCE PLAN
(O&M PLAN)

SWEETWATER AUTHORITY

INITIAL DRAFT

August 2019

Prepared by:

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ACRONYMS AND ABBREVIATIONS

AF	Acre-foot
Authority	Sweetwater Authority
BMP	Best Management Practice
BVR	Bonita Valley Reservoir
CAL FIRE	California Department of Forestry and Fire
CDFW	California Department of Fish and Wildlife
CEA	Conservation Easement Area
CEQA	California Environmental Quality Act
COSD	County of San Diego
CRHT	California Riding and Hiking Trail
DDW	California Department of Drinking Water
DPR	California Department of Pesticide Regulations
DSOD	Division of Safety of Dams
ESA	Environmentally Sensitive Area
FAHJ	Fire Authority Having Jurisdiction
GAC	Granular Activated Carbon
HMA	Habitat Mitigation Area
HMP	Habitat Management Program
JWA	Joint Water Agencies
LOD	Limits of Disturbance
MOU	Memorandum of Understanding
MSL	Mean Sea Level
NPDES	National Pollutant Discharge Elimination System
NWR	San Diego National Wildlife Refuge
O&M	Operations and Maintenance
O&M Plan	Operations and Maintenance Plan
PVC	Polyvinyl Chloride
QSD/QSP	Qualified SWPPP Developer/Practitioner
ROW	Public Right-of-Way
RWQCB	San Diego Regional Water Quality Control Board
SBID	South Bay Irrigation District
SDCWA	San Diego County Water Authority
SDF	San Diego Formation
SOP	Standard Operating Procedure
SWRCB	State Water Resources Control Board
SWPPP	Storm Water Pollution Prevention Plan
U.C.	University of California
URDS	Sweetwater Reservoir Urban Runoff Diversion System
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service

USFWS	U.S. Fish and Wildlife Service
UTV	Utility Vehicle
WPCP	Water Pollution Control Plan
WTP	Water Treatment Plant
VDL	Vista Del Lago

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1.0 INTRODUCTION

Sweetwater Authority (Authority) has prepared the Property Operations and Maintenance Plan (O&M Plan) in an effort to formalize the operations and maintenance activities that occur, or are proposed to occur (hereinafter referred to as "O&M"), within the Authority's lands, including Authority-owned properties and easements. The O&M Plan covers activities related to maintenance, repairs, and minor improvements of facilities, such as structural damage repairs to outdoor facilities, grounds maintenance and landscaping, brush management, and reservoir and recreational programs maintenance. The O&M Plan also describes and covers certain critical operational activities, such as water transfers from one reservoir to another. Other water purveyor activities, such as the replacement of distribution system facilities or processes related to water treatment, are not covered by this O&M Plan, but are briefly discussed in the O&M Plan for reference purposes. A main goal of the O&M Plan is to eventually facilitate and streamline internal and external approvals for O&M. In the case of externally regulated O&M, programmatic permitting and agreements with the resource and regulatory agencies will be pursued. The O&M Plan will be subject to the proper environmental and public review. The O&M Plan includes the following main sections:

Section 1. Introduction – Provides a general introduction of the O&M Plan.

Section 2. Background – Provides a brief background of the Authority, its facilities and lands, and also identifies which activities are not covered by the O&M Plan.

Section 3. Goals and Objectives – Describes the goals and objectives of the O&M Plan, including obtaining programmatic permitting from regulatory agencies and procedures for amending the O&M Plan.

Section 4. Scope and Implementation - Describes the O&M activities covered under the O&M Plan, which are organized in four broad categories:

(1) Property Management
(2) Drainage Systems and Soil Stabilization
(3) Reservoir Facilities Management
(4) Public Recreation

Section 5. Environmental Measures – This section describes the environmental measures that Authority staff is to follow while conducting O&M activities in undeveloped lands, environmentally sensitive areas (ESAs), and other areas of concern.

The O&M Plan is being developed in concert with other documents with the main goal of ensuring full regulatory compliance and minimizing environmental impacts to the greatest extent possible. The main appendices to the O&M Plan include:

Appendix A. O&M Mapbook and Vegetation Management Schematics – A series of maps ("Mapbook") with references to existing land covers is currently being developed for the O&M Plan. The Mapbook will help Authority staff identify the appropriate environmental measures applicable at each unique location while conducting the O&M activities described in the O&M Plan. Vegetation Management Schematics for are also included in Appendix A. The schematics are aimed to capture and communicate how brush management is to be conducted in Authority managed lands.

Appendix B. Generic Water Pollution Control Plan – The Water Pollution Control Plan (WPCP) was developed to inform workers of industry standard Best Management Practices (BMPs) used to protect water quality from stormwater and non-stormwater pollution.

2.0 BACKGROUND

Formed in 1977, the Authority is a public water agency providing water service to southwestern areas of San Diego County, specifically National City, western and central Chula Vista, and the unincorporated community of Bonita (**Figure 1**). The Authority was formed by a Joint Powers Agreement between South Bay Irrigation District (SBID) and the City of National City, and is governed by a seven-member Board of Directors, with five Directors elected from divisions in the SBID and two Directors appointed by the Mayor of National City. The Authority provides water service to approximately 190,000 customers within its 36-square-mile service area.

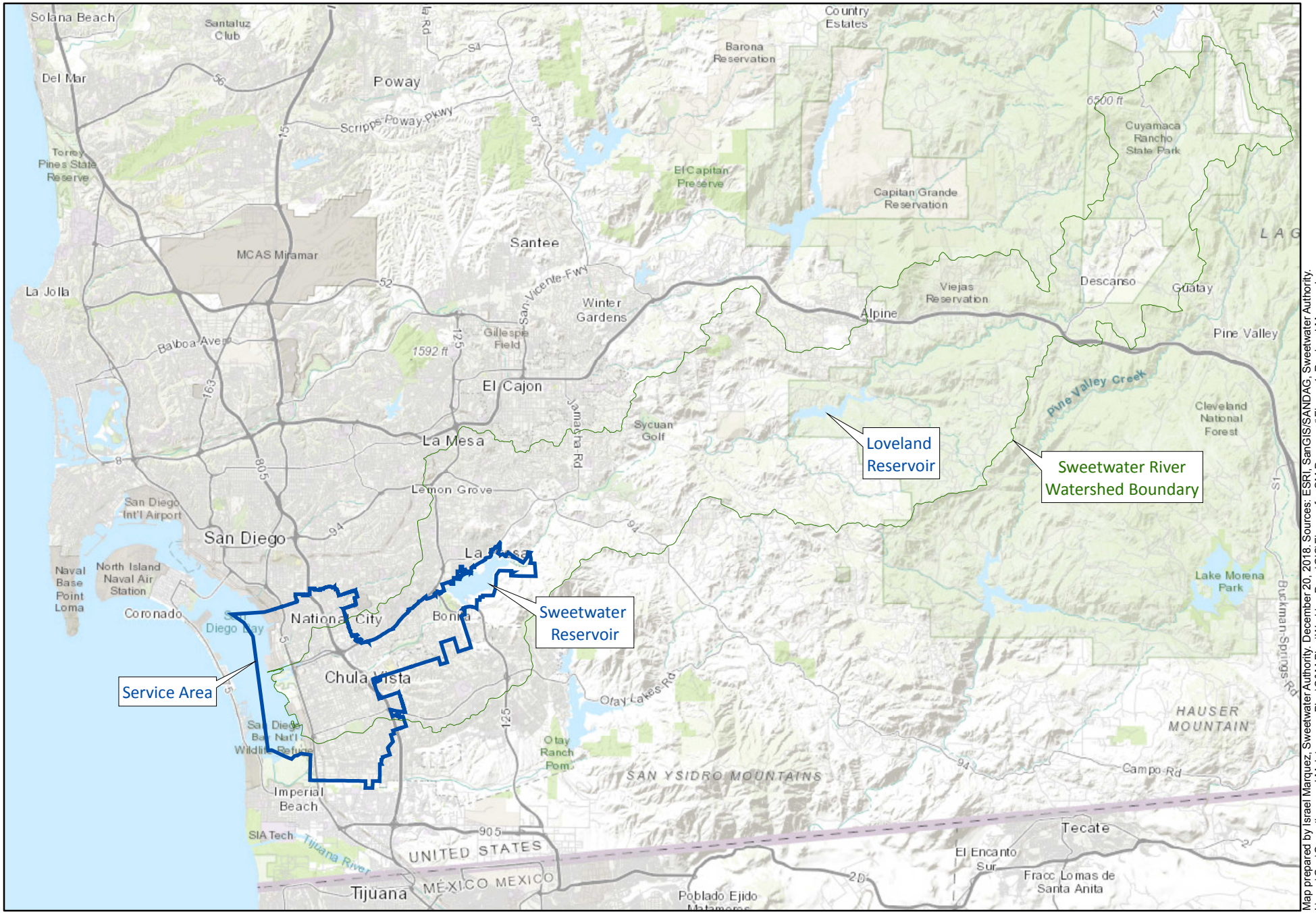
2.1 Properties Description

The Authority owns and manages approximately 5,200 acres of property in the middle and upper portions of the Sweetwater River watershed (watershed), which includes the Sweetwater Reservoir property and the Loveland Reservoir property. The Authority also maintains facilities within the middle and upper watersheds that are located in Authority easements, including the Sloane Canyon slide gate at Willow Lake and a diversion system that protects Sweetwater Reservoir from polluted runoff, known as the Sweetwater Reservoir Urban Runoff Diversion System (URDS).

In addition to facilities and properties in the upper and middle watershed, the Authority owns and manages many facilities located within its service area, including two water treatment plants, multiple well sites, and a distribution system that includes various tank sites, pump stations, and approximately 390 miles of transmission and distribution mains. While most of the tanks, pump stations, and wells are located in urban and suburban areas and in property owned in-fee by the Authority, most of the transmission mains are located within the public right-of-way (ROW) or easements.

2.1.1 Loveland Reservoir

Loveland Reservoir is located within approximately 3,300 acres of land owned in-fee by the Authority, approximately 17 miles upstream of Sweetwater Reservoir, and within the boundaries of the Cleveland National Forest (**Figure 2**). When filled to capacity at an elevation of 1,355 feet above mean sea level (MSL), the 25,387 acre-foot (AF) reservoir has a surface area of approximately 455 acres. Runoff is captured from the 102-square mile upper Sweetwater River watershed, primarily during spring and winter months, and transferred to Sweetwater Reservoir via the Sweetwater River channel. Facilities at or adjacent to Loveland Reservoir include Sweetwater Falls Dam ("Loveland Dam"), the Loveland Reservoir Saddle Dam (dike), the Caretaker's residence and office, a road network, a small boat dock, small storage buildings, and a public shoreline fishing area, dock, and supporting parking lot. The California Riding and Hiking Trail (CRHT) traverses portions of the Loveland Reservoir property.



Map prepared by Israel Marquez, Sweetwater Authority, December 20, 2018. Sources: ESRI, SanGIS/SANDAG, Sweetwater Authority.
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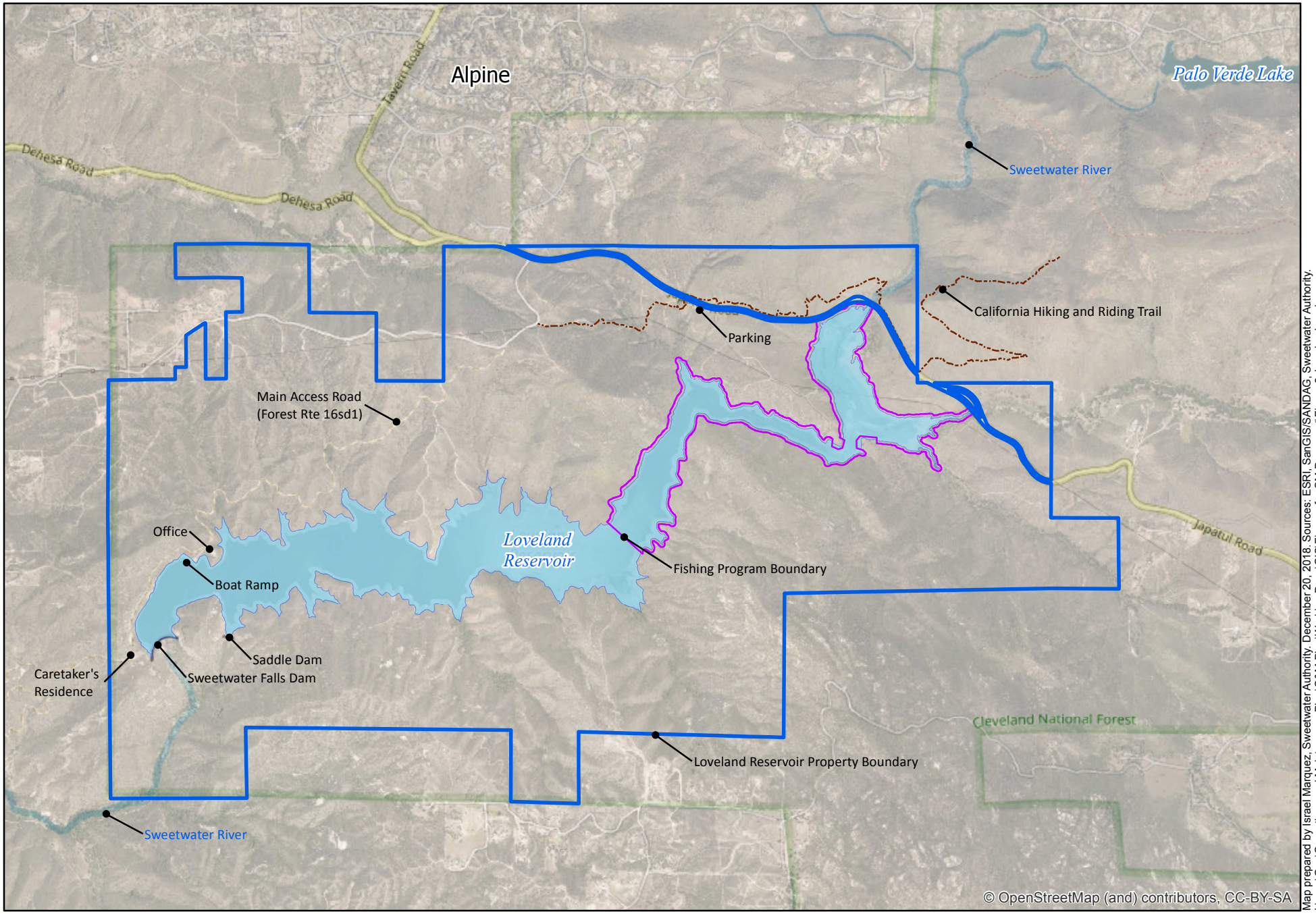
Figure 1. Regional Map

Property Operations and Maintenance Plan



Map prepared by Israel Marquez, Sweetwater Authority, December 20, 2018. Sources: ESRI, SanGIS/SANDAG, Sweetwater Authority.
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Figure 2. Loveland Reservoir

Property Operations and Maintenance Plan

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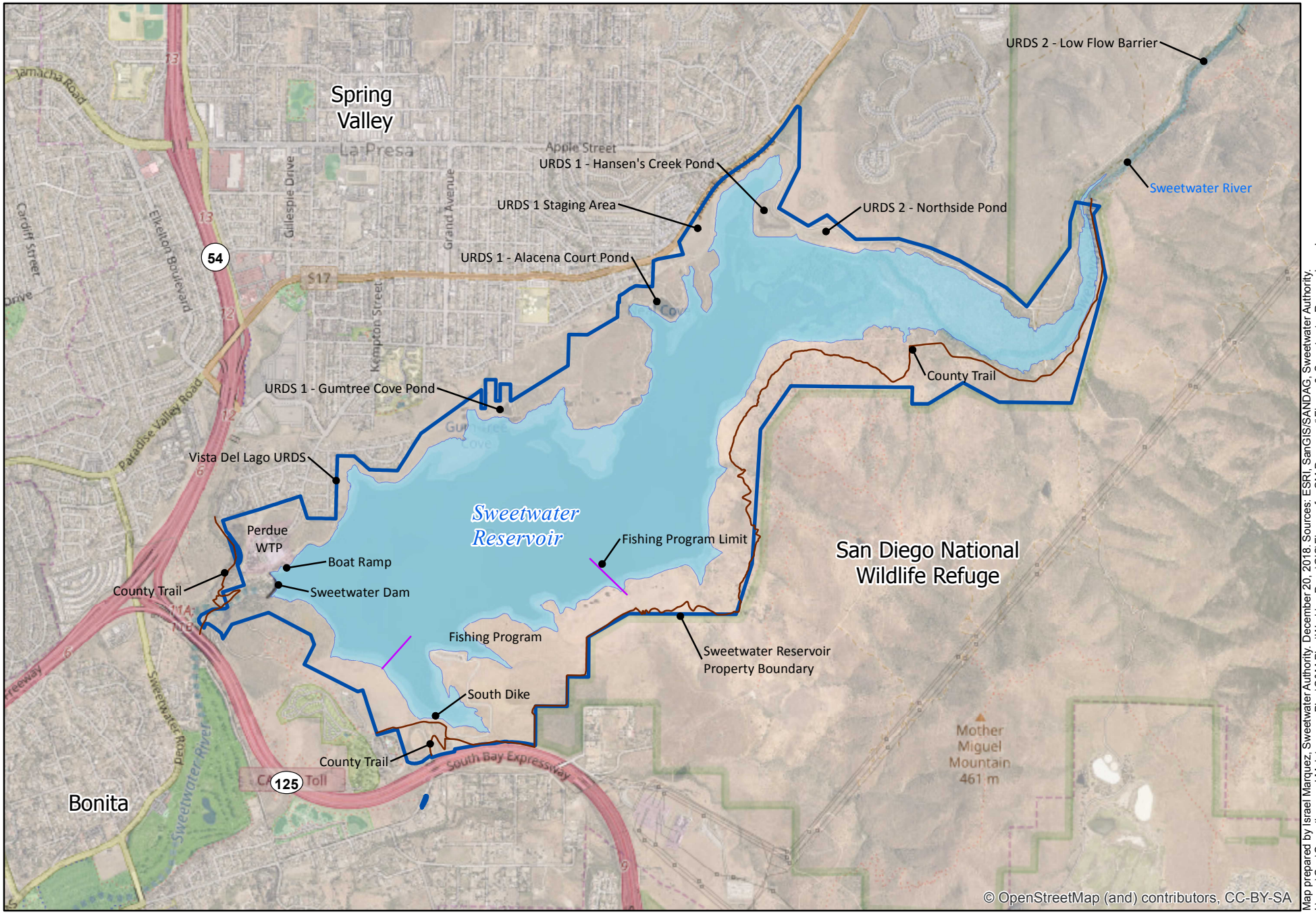
2.1.2 Sweetwater Reservoir

Sweetwater Reservoir is located within approximately 1,793 acres of land owned by the Authority, approximately 17 miles downstream of Loveland Reservoir, and adjacent to the San Diego National Wildlife Refuge, or NWR (**Figure 3**). The 28,079 AF reservoir has a surface area of approximately 978 acres when filled to capacity at an elevation of 239 feet MSL. It can be drawn down to a minimum pool elevation of 196.6 feet MSL with a surface area of approximately 270 acres and a volume of 3,350 AF. Major facilities located at or adjacent to Sweetwater Reservoir include the Robert A. Perdue Water Treatment Plant, Sweetwater Dam, the intake tower, the South Dike, a 42-inch water main, the URDS, a road network, the shoreline fishing facilities, and recreational trails. Other major facilities include two aqueducts owned and operated by the San Diego County Water Authority (SDCWA). In addition to water storage and treatment facilities, the Authority currently maintains habitat preserves on the Sweetwater Reservoir property as mitigation for various projects; these include the Sweetwater Reservoir Habitat Management Program (HMP), Skelton Habitat Mitigation Area (HMA), and the Sweetwater Reservoir Shoreline Fishing Program Conservation Easement Area (CEA).

2.1.3 Other Facilities in the Middle and Upper Watershed

Sweetwater Reservoir Urban Runoff Diversion System - The URDS is comprised of a system of drainage and diversion facilities designed to protect Sweetwater Reservoir from potential negative water quality impacts resulting from urbanization and agriculture upstream of Sweetwater Reservoir (Authority, 2014). The URDS allows for runoff capture, pollutant removal within constructed wetlands via sedimentation and phytoremediation, and runoff diversion from the Sweetwater Reservoir. Typical runoff diversions include the winter "first flush" storm event and dry season low flows. The URDS is also capable of capturing and diverting away from the reservoir any "emergency runoff" (i.e., runoff contaminated by hazardous spills upstream of the reservoir). The URDS was constructed in three phases: Vista del Lago (late 1970s), Phase I (1991), and Phase II (1998). While most of the URDS is located within the Sweetwater Reservoir property, portions of the URDS were built on easements within the NWR and ROW currently managed by the State of California. The entire URDS is located within the middle watershed.

Fishing Programs and Recreational Trails - Each of the two surface water reservoirs owned by the Authority provide opportunities for limited recreation, consisting of shoreline fishing and recreational trail use. Non-contact fishing opportunities exist at both reservoirs in designated areas. At Sweetwater Reservoir fishing is allowed in a 2.5-mile stretch of the southwest shoreline. At Loveland Reservoir fishing is allowed along a 5-mile stretch of the eastern shoreline. Regional recreational trails also exist at both reservoirs, including the Sweetwater Reservoir Riding and Hiking Trail at Sweetwater Reservoir and the CRHT at Loveland Reservoir; these regional trails are not managed by the Authority, but their maintenance is coordinated with the Authority. In addition to the regional recreational trails, the fishing programs have small trail networks that are open to the public when the fishing programs are open.



Map prepared by Israel Marquez, Sweetwater Authority, December 20, 2018. Sources: ESRI, SanGIS/SANDAG, Sweetwater Authority.
I:\engr\Gen\Operations and Maintenance Plan\O&M Plan\Working Docs\GIS\Figures for OM Document\Figure 3. Sweetwater Reservoir.mxd

Figure 3. Sweetwater Reservoir

Property Operations and Maintenance Plan

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Sloane Canyon Slide Gate - The Sloane Canyon Slide Gate is located downstream of Loveland Reservoir within an Authority easement in property managed by the Sycuan Band of the Kumeyaay Nation (Sycuan Tribe). The Sloane Canyon Slide Gate easement area includes access area and the streambed stabilizer at the downstream end of Willow Lake in the former Sloane Canyon Sand Mine. The slide gate acts a stabilizer and was constructed downstream of Willow Lake in order to control severe erosions during storm events, as ordered by an emergency Watercourse Permit issued by the County of San Diego (COSD) to Calmat Company/Fenton Materials in August 1988.

2.1.4 Service Area Facilities

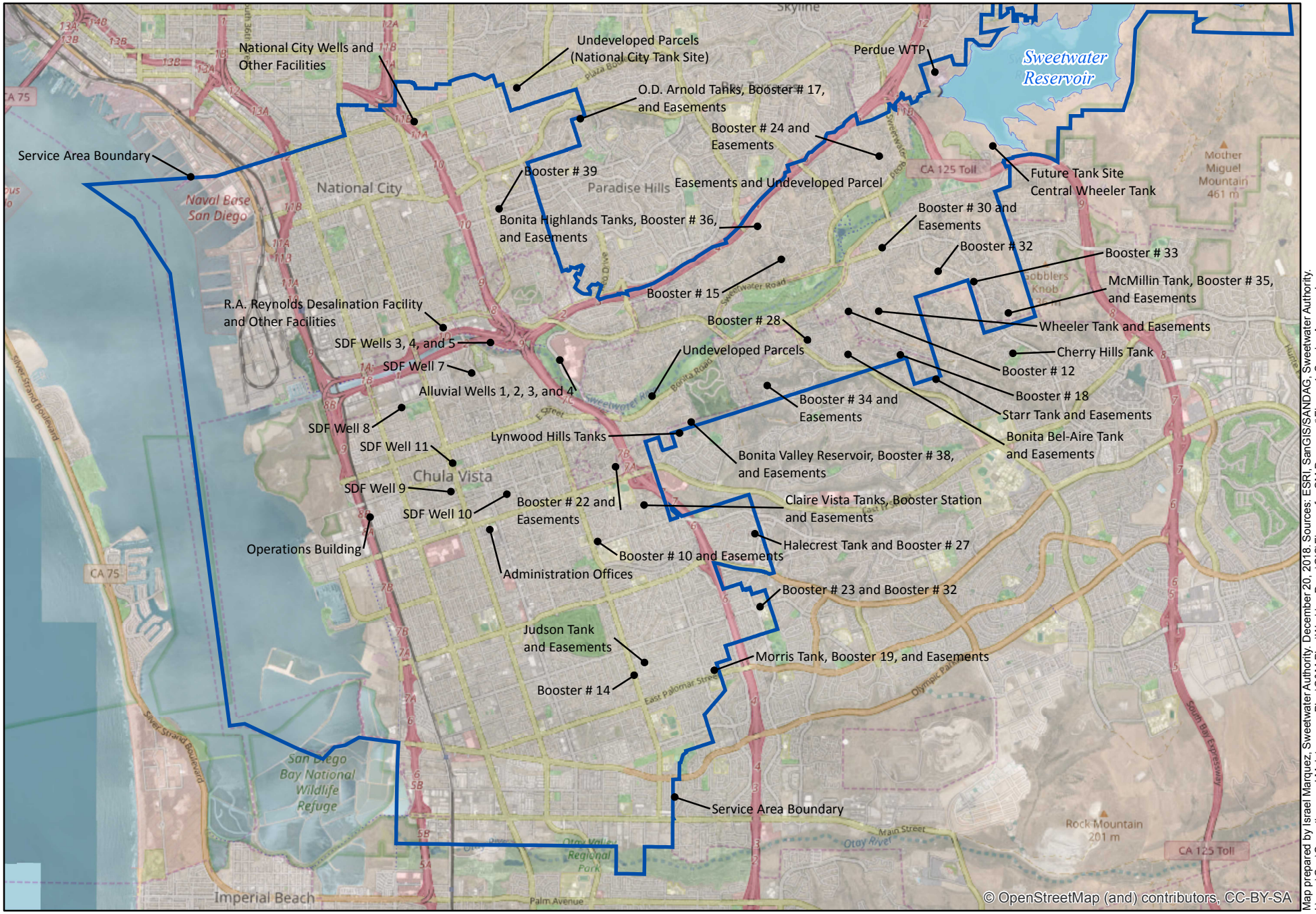
The Authority's service area includes National City, the western and central portions of Chula Vista, and the unincorporated community of Bonita (Figure 4). The service area includes the water treatment and distribution system facilities.

Robert A. Perdue Water Treatment Plant - The Perdue Water Treatment Plant (WTP) is located on the north side of Sweetwater Reservoir and, while geographically located in the middle watershed, the Perdue WTP is considered part of the Authority's service area due to its function. The Perdue WTP treats raw water to produce up to 30 million gallons per day (MGD) of potable water. Raw or untreated water is pumped from the reservoir or obtained from the SDCWA aqueduct; water is then treated to remove color, turbidity, taste, odor, and bacteriological contamination through coagulation, flocculation, dissolved air flotation, sedimentation, filtration, and disinfection; and the potable water is then conveyed into the distribution system.

Richard A. Reynolds Groundwater Desalination Facility - The Richard A. Reynolds Groundwater Desalination Facility (Desalination Facility) is in the City of Chula Vista on the northern banks of the Sweetwater River and immediately adjacent to National City. The Desalination Facility uses reverse-osmosis treatment (R/O) to remove dissolved salts, microscopic particles, and other contaminants which could be found in the brackish groundwater. The Desalination Facility began operating in 1999 drawing brackish groundwater from six wells. Construction for a phase two expansion of the Desalination Facility included installation of three additional reverse osmosis trains, a new iron and manganese treatment system, drilling of five new brackish groundwater wells, installation of 23,000 feet of pipe, and additional system upgrades. The Desalination Facility now has a full production potential of 10 MGD of drinking water and provides Authority customers with about one-third of their annual water supply. The Desalination Facility's sustainable design also includes 2,950 ground-mounted solar photovoltaic panels as an alternative energy source.

Bonita Valley Reservoir – The Bonita Valley Reservoir (BVR) is a reinforced concrete underground reservoir located in Bonita, south of the Sweetwater River. BVR can store up to 18 million gallons (MG) of potable water (RECON, 1982).

Service Area Parcels and Easements - Treated water is distributed to customers via approximately 390 miles of pipeline (ranging from 2- to 48-inch diameter), 23 pump stations (with a total capacity of 36,000 gallons per minute) and 25 storage tanks (with a total storage capacity of 42.8 MG). While tanks and pump stations are located on small parcels of land owned by the Authority or on easements granted to the Authority, transmission and distribution mains are located mostly on easements or the public ROW.



Map prepared by Israel Marquez, Sweetwater Authority, December 20, 2018. Sources: ESRI, SanGIS/SANDAG, Sweetwater Authority.
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Figure 4. Service Area

Property Operations and Maintenance Plan

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The Authority owns multiple parcels scattered throughout the service area. These parcels, mostly associated with treatment and distribution facilities, include many sites that support small reservoirs, tanks, wells, and pump stations. In addition, a small number of parcels owned by the Authority are currently undeveloped, such as the proposed National City Tank parcel. The Authority also holds multiple easements with distribution and treatment facilities throughout the service area. Easements in the service area are generally located in private property or property owned by other public agencies.

2.2 Activities Not Covered by the O&M Plan

There are multiple operational and maintenance activities that the Authority conducts on a regular basis that are not part of this O&M Plan because they are out of the scope of this O&M Plan or because they are conducted under specific existing permit conditions. As a general rule, operations and maintenance of water treatment facilities, habitat preserves, reservoir operations, or distribution system operations, should not be considered covered by this O&M Plan, unless specifically discussed in Section 4 of this document. Amendments to this O&M Plan would be addressed as outlined in Section 3.3 *Plan Amendments*.

Open Water Management - The following activities are examples of open water management activities not covered by the O&M Plan:

- Operation of the reservoirs from minimum pool to the high water mark associated with storage of natural runoff and imported water. This activity is currently regulated by the State Water Resources Control Board (SWRCB) and the Division of Safety of Dams (DSOD).

- Surface waters chemical applications. Sweetwater Reservoir is occasionally treated with chemicals to improve water quality and meet drinking water regulations. For example, to eliminate taste and odor associated with eutrophication and subsequent algae blooms associated with excess nutrients, the reservoir is treated with copper sulfate, along with citric acid as chelating agent. Copper sulfate applications to Sweetwater Reservoir to control algae are covered under the Aquatic Pesticide Statewide NPDES Permit (SWRCB, 2016). Chemicals used for water treatment at the Perdue WTP are all National Sanitation Foundation approved and their usage is covered/regulated under the Authority's State Board-DDW Water Supply Permit.

- Sediment extraction for reservoir capacity management purposes. Minor dredge and fill activities in the reservoirs is proposed and may be required if related to O&M activities outlined in Section 4, but not for reservoir capacity management or for marketing of dredged materials.

- Water quality sampling and water quality-related investigative studies, including the use of divers and boats.

- Water extraction for fire emergencies and training exercises, including helicopter or fixed wing aircraft water extraction.

- Water pumping for water treatment.

- Maintenance associated with quagga mussels. Currently, maintenance and inspection activities associated with quagga mussels are covered under the Authority's Quagga Mussel Monitoring and Control Plan, which was developed in accordance with California Department of Fish & Wildlife (CDFW) regulatory requirements (Hatcher, 2009).

Water Treatment, Water Distribution, and Associated Programs – Most of the water treatment and distribution facilities have their own O&M procedures and manuals and their own programs and regulatory permits. For example, there is a Standard Operating Procedure (SOP) for O&M of valves in the distribution system or an NPDES permit for discharges associated with drinking water facilities. Facilities in the service area with their own O&M, SOPs, programs, or permit conditions are not covered by this O&M Plan. Replacement or installation of distribution tanks, pump stations, transmission and distribution water mains, laterals, hydrants, valves, meters, and other distribution system appurtenance are not covered by this O&M Plan.

Monitoring or Maintenance of Private Wells – While the Authority may monitor certain private wells within the watershed or service area, the Authority has no responsibility regarding maintenance of private wells.

Habitat Management – The Authority has several mitigation requirements in place to protect and manage sensitive species and habitat within specific areas of the Authority properties, including the Sweetwater Reservoir HMP, Sweetwater Reservoir Shoreline Fishing Program CEA, Skelton HMA and the URDS II Biological Monitoring Program. Habitat and species management activities are conducted by the Authority and include maintenance and enhancement of existing habitat, control of invasive species, and revegetation of native species. Habitat and species management activities are not considered part of the O&M Plan as they occur as result of existing permit requirements.

Mosquito Control – COSD Vector Control Program staff inspects Sweetwater Reservoir property for nuisance and disease carrying mosquitos in the vicinity of inhabited dwellings. Physical control is conducted as necessary by Authority staff, cleaning and removing debris from the URDS channels and other water collection points. Biological control is performed as necessary by COSD staff, and includes adding mosquito fish to the URDS ponds and water collection points where the water stagnates and mosquito breeding can occur (COSD, 2019).

Emergency Actions – Emergency actions or procedures are not part of the O&M Plan.

3.0 GOALS AND OBJECTIVES

The Authority's mission is to provide current and future customers with a safe, reliable water supply through the use of the best available technology, sound management practices, public participation and a balanced approach to human and environmental needs. This O&M Plan is consistent with the Authority's mission. In an effort to maximize the use of its assets, the Authority has adopted, through its strategic planning process, the goal of achieving "*uninterrupted, long-term water supply through investment, maintenance and innovation.*" More specifically, the Authority has the goal of "*maintaining its facilities and infrastructure to optimize its useful life and performance*." The O&M Plan also meets that specific purpose for the properties that are covered by the strategic plan (Authority, 2017). Furthermore, the O&M Plan has the following specific objectives:

- Objective 1. Identify and describe O&M activities within the scope of the O&M Plan - Identify O&M activities that occur, or are proposed to occur, on Authority properties. This Plan focuses on maintenance, repairs, and minor improvements of facilities.

- Objective 2. Streamline O&M activities using programmatic approvals - The Authority will request programmatic permits or agreements with the applicable resource agencies to streamline the external approval of O&M activities.

- Objective 3. Describe the management practices conducted to avoid or minimize environmental impacts - The Plan describes management practices developed to avoid or minimize environmental damage that are required to be performed by Authority staff or its contractors.

- Objective 4. Plan Amendments - The Plan will be amended, as necessary, to improve property management practices and O&M activities.

3.1 Streamlining of Programmatic Approvals

Water supply and reliability are the main concerns of the Authority. In order to ensure that water delivered to its customers meets and exceeds all standards, the Authority understands that a well-maintained system is necessary. The Authority conducts all of its functions, including O&M, in compliance with regulatory requirements and is consistent with numerous federal and state regulations including, but not limited to, the federal and state Safe Drinking Water acts, federal Clean Water Act, Migratory Bird Treaty Act, National Historic Preservation Act, federal and state Endangered Species acts, Homeland Security Act, California Fish and Game Code, and California Water Code. The Authority complies with local fire ordinances, which regulate activities such as vegetation clearing and brushing to reduce fire hazards and maintain emergency access. In addition, the Authority coordinates with other local agencies on a regular basis to be consistent with local ordinances, such as vector control conducted by the COSD.

In order to streamline future permitting processes, the Authority intends to pursue programmatic permitting for the applicable O&M that are regulated by the resource and regulatory agencies. Permit streamlining for multiple O&M activities conducted on Authority properties would reduce time required for agency coordination and review, increasing overall efficiency. Programmatic permitting will also allow for comprehensive planning, including conservation and mitigation planning, that contributes to the recovery and protection of sensitive resources. Potential permitting mechanisms are Habitat

Conservation Plans administered by the U.S. Fish and Wildlife Service (USFWS), Natural Community Conservation Plans administered by CDFW, Regional General Permits administered by the U.S. Army Corps of Engineers (USACE) and certified by the California Regional Water Quality Control Board, San Diego Region (RWQCB), and programmatic Lake and Streambed Alteration Agreements administered by CDFW.

3.2 Management Practices

The purpose of the management practices, which include the Environmental Measures, Appendix A, and Appendix B, is to prescribe measures that would be implemented on a case-by-case basis to avoid or minimize potential environmental impacts.

Environmental Measures – The Environmental Measures (Section 5 of O&M Plan) includes applicable environmental measures aiming to avoid or minimize potential environmental impacts. These environmental measures developed for the O&M Plan will accomplish the following objectives:

1. Inform Authority staff and authorized representatives of the adopted measures used to avoid or minimize environmental impacts and to ensure consistency with permit conditions, as applicable.

2. Serve as mitigation measures for areas of concern.

Appendix A. O&M Mapbook and Vegetation Management Schematics – Concurrent with the preparation of the O&M Plan, an annotated Mapbook is being created to identify facilities within each managed property and the land covers surrounding such facilities. The Vegetation Management Schematics, also included in Appendix A, are aimed to communicate to Authority staff, in general terms, the desired measurements and practices for vegetation control and removal. Appendix A is for reference purposes and may be updated as needed.

Appendix B. Generic Water Pollution Control Plan – The purpose of the WPCP is to ensure that O&M activities conducted by Authority staff or its authorized representatives do not result in pollution of waters or waterways regulated by RWQCB. While the WPCP complements the environmental measures, its main goal is ensuring that all O&M activities are conducted with applicable stormwater BMPs.

3.2.1 Staff Training, Coordination, and Record Keeping

Staff Training – Authority staff that work in or adjacent to regulated resources shall attend an employee-training program which shall be reviewed annually, and updated as necessary. The training program will include an overview of sensitive biological, cultural, and water resources on Authority-owned properties and easements; summary and application of the relevant environmental regulations; discussion of standard and relevant BMPs; and procedures to address and resolve potential issues or other conflicts that are not specifically addressed in the O&M Plan. A similar educational program shall be held for all contractors participating in O&M. Appropriate educational materials summarizing the program shall be made available to contractors prior to the initiation of applicable O&M on Authority managed lands.

Compliance Monitoring – The Authority will be responsible for compliance monitoring, as needed, to ensure that O&M activities are being carried out in accordance with the O&M Plan, its appendices, and applicable permit conditions. Implementation of the O&M Plan is not only intended to facilitate internal communications between Authority staff in different departments, but also a cooperative and interactive partnership with the regulatory agencies. Therefore, these agencies shall be provided reasonable site access upon request to observe implementation of O&M activities. Any identified compliance deficiencies shall be discussed between the Authority and the regulatory agencies to determine remedial measures. Similarly, the Authority would provide reports to the regulatory agencies that summarize the O&M that were conducted. The reports shall also quantify and describe impacts to regulated resources and how the permit conditions are being met.

3.3 Plan Amendments Process

It is anticipated that modifications to the O&M Plan will occur due to changes in state and federal regulations, "lessons learned," regulatory agency guidance, Authority's Policies and Procedures, newly identified activities not currently covered under the O&M Plan, or currently unforeseen scenarios. The Authority plans to review this O&M Plan every five years or as necessary, with the ultimate goal of ensuring system reliability by conducting O&M as efficiently as possible. Any identified amendment to the O&M Plan is expected to follow the process outlined below:

1. Identify purpose and need of proposed amendment(s).

2. Identify the nature of proposed amendment(s).
    a. Action-amendment would be the modification, inclusion, or removal of an O&M action.
    b. Site-amendment would be the removal from, or inclusion of a site to the O&M Plan.

3. Identify if any regulatory/environmental review is triggered by the proposed amendment(s), and comply with regulatory/environmental review as required.

4. Adopt or reject proposed amendment(s).

Plan amendments can also occur to clarify language of the O&M Plan and may have little to no significance in the outcomes of the O&M activities described herein.

3.4 Current Plan Amendments

Plan amendments will be summarized in this section. As of today, no amendments have occurred to the O&M Plan.

4.0 SCOPE AND IMPLEMENTATION

O&M activities are necessary for the Authority to maintain its facilities in proper working condition and meet industry standards. O&M activities include maintenance activities that are routinely implemented by the Authority at Sweetwater Reservoir, Loveland Reservoir, and other Authority properties and easements. Examples of maintenance activities include dirt road maintenance, debris removal from drainage facilities, and general grounds maintenance activities in the vicinity of built properties. Other activities, such as road realignments, are less frequent but still part of the scope of the O&M Plan. While some of these activities are location specific, the majority of these O&M activities occur throughout the Authority properties.

4.1 Property Management

The Authority owns and manages approximately 5,200 acres of land in the middle and upper portions of the Sweetwater River watershed. Within these properties, the Authority maintains roads, drainage conveyance systems, recreational facilities, and many other facilities. The Authority also maintains facilities within the middle and upper portions of the watershed and within the Authority's service area that are located in Authority easements. Many water treatment and distribution facilities exist in parcels of land with brush management needs or may be located on the top of hills with steep slopes subject to erosion. Distribution sites, in general, require landscaping and grounds maintenance on a regular basis. Pipeline corridors, which are within the public ROW or on Authority easements, require brush management or encroachment removal as needed.

4.1.1 Defensible Space

Fire management activities on Authority managed property include preemptive actions intended to reduce the threat of wildfire, actions necessary to control an active wildfire, and any post-wildfire actions necessary to restore the affected area immediately following a burn.

Preemptive Actions – Creation and maintenance of defensible space (i.e., fuel management zones and fuel breaks) is conducted in coordination with the local Fire Authority Having Jurisdiction (FAHJ), and pursuant to the applicable fire codes and any agreements between the FAHJ and the wildlife agencies and other regulatory agencies (COSD, 2017). The general practice on Authority properties includes creating fuel management zones by clearing and thinning vegetation up to 100 feet (horizontal distance) from qualifying structures and up to 15 feet from each side of selected roads, unless a modified fuel management zone is determined to be acceptable by the FAHJ. These fuel management zones are created to aid fire fighters in the event of a fire, and to provide a barrier or gap in vegetation that is utilized to slow or stop the progress of a wildfire (Authority, 2001).

Fuel breaks are created and maintained by mowing, removal, or replacement of combustible vegetation types including weeds, dead or dying trees or foliage. The majority of the fuel breaks located in Authority property have been mowed for logistic and efficiency purposes. In some situations, selective vegetation reduction is performed adjacent to Authority structures. For example, at the Sweetwater Reservoir property, approximately 2 miles of 50-foot-wide fuel breaks are maintained near the housing developments located along the northern perimeter of the reservoir land. These fuel breaks are maintained each year by cutting, trimming, and removing vegetation using a tractor and brush cutter. During the growing season, maintenance activities occur as needed. At Loveland Reservoir property, there is a 2.5-mile fuel break along Forest Route 16Sd1 (10-feet clearance on each side of the road) and two defensible space areas around the Caretaker's residence and Loveland Reservoir Field Office. The local or state FAHJ may eventually require more fuel breaks or vegetation treatments in the lake properties since both lake properties are currently mapped as hvery high fire hazard severity zones (CAL FIRE, 2007). Authority properties in the urban areas, such as tank sites and pump stations, are also maintained following the applicable fire code guidelines.

Certain Authority buildings, such as the Caretaker's Residence at Loveland Reservoir, require the maintenance of defensible space, per applicable fire codes.

Post-Wildfire Actions – Post-wildfire actions are conducted to stabilize soils, protect drainages, and minimize the potential for flooding. These post-wildfire actions may include removal of debris, removal or rehabilitation burnt structures or facilities, minor regrading and/or soil compaction, installation of erosion prevention and sediment control measures, and revegetation either by planting or hydroseeding.

4.1.2 Fencing, Gates, and Signage

The Authority maintains a perimeter around Sweetwater Reservoir and Loveland Reservoir and is delineated with fencing and/or regularly spaced property marker signs. Additionally, the Authority also fences many of its other properties and easements, largely for security reasons. The Authority regularly patrols its properties and assets, including reservoir lands and major facilities, to enforce trespassing restrictions and to provide immediate repairs and replacements.

Fencing – The Authority selects fencing that best accomplishes access control and prevents trespassing. For instance, chain link fencing is used along the areas of the reservoir perimeters that are located adjacent to the roadway or are otherwise highly trafficked by trespassers. Fencing at off-site properties and easements generally consists of chain link fencing topped with barbed wire, which is compatible with the developed urban environment. Chain link fence installation requires post-hole digging and concrete footings for each post. Posts are spaced at approximately 10 feet apart and installed at a depth of

approximately 24 inches. Fencing may also be placed parallel to trails, near recreational areas, or at the boundaries of ESAs. Fences within the reservoir properties tipically consist of three- or five-strand barbed or barbedless wire to maintain wildlife movement across the property boundary. Barbed and barbless wire fencing are generally supported by metal T-posts pounded directly into the ground and spaced at approximately 10 feet apart. A 5-foot vegetation clearance on each side of a fence may be maintained; and up to 10 foot vegetation clearance may be maintained in areas where utility vehicles (UTVs) are needed for patrolling the property line. Further, staff removes unnecessary existing fencing from interior portions of the reservoir lands, as appropriate.

Gates and Signs – There is currently a variety of chain link fenced gates and swing arm gates providing access to Authority property and roads. These gates are kept locked to restrict access to reservoirs and other facilities. Maintenance, repair, relocation, and/or replacement of gates are conducted on an as-needed basis with in-kind materials, and following industry-standards. Gates may have a 5 feet vegetation clearance and are maintained clear of obstructions. Signs are posted and maintained throughout Authority properties for the purposes of providing access control, regulatory information, hazard notification, and public education. Authority staff inspect signs at least once annually and repair or replace damaged or missing signs as needed. Replacement of signs may occur with in-kind materials, including wooden or metal posts. Vegetation clearance of up to 3 feet from posts is allowed. Selected branches outside the vegetation clearance buffer may be removed if branches are considered a visual obstacle.

Signs are installed and maintained throughout the Authority's properties and easements.

4.1.3 Pest Control and Nuisance Wildlife Management

Control of pest and nuisance wildlife is necessary to protect facilities, including but not limited to building foundations, concrete and dirt channels, berms, and roads. For rats, mice, and some bird species, population control is necessary to avoid health related issues (e.g. water quality impairment from droppings in treatment). Management of pests and other nuisance species includes rodenticide application and fumigation performed by qualified applicators, and ground squirrel control using CDFW-approved depredation traps and methods.

Grouting of Burrows - When burrows created by ground squirrels or other small mammals are identified in the vicinity of existing facilities, burrows are typically filled with a grout mix consisting of sand and water. Depending on the damage, a cement based-mix may also be used to seal the grouts and discourage future burrow activity in the same area. In addition to a grouting pump and a hose, hand tools or heavy equipment may be necessary to complete the repairs. Specific burrow conditions, time of year,

and/or ground squirrel densities are considered in prescribing the preferred treatment method. Grouting of burrows is coordinated with staff Biologist to avoid any impacts to wildlife.

Bird Repellents and Nest Removal - Metal bird repellent spikes and auditory deterrence devices (e.g. ultrasonic sound waves that are silent to humans) are used to keep birds/bird droppings from certain facilities and walkways. Consistent with the provisions of the Migratory Bird Treaty Act and in coordination with the applicable wildlife agencies and Authority biologist, active bird nests may be removed for certain bird species to avoid impacts to drinking water quality.

Invasive beetles - Invasive woodboring beetles, such as the Goldspotted Oak Borer, Polyphagous Shot Hole Borer, and Kuroshio Shot Hole Borer, bore holes in and spread diseases among many trees species in Southern California. While boring beetles are not currently known on Authority properties, species populations are growing within the region, including the Sweetwater River watershed. Consequently, O&M activities at Authority properties may include wood boring beetle control methods. Management options for controlling these beetles are primarily limited to cutting, chipping, and/or burning infested branches or limbs.

4.1.4 Operational Trails

There are multiple operational trails throughout Authority properties that were created with the purpose of accessing facilities and monitoring stations. Some examples are the trails to access the URDS facilities and boreholes at Sweetwater Reservoir, or a UTV trail created adjacent to the Spring Canyon subdivision to access a fuel management zone. The typical width of these operational trails does not exceed 6 feet. Some operational trails, however, are up to 10-foot wide to provide access to UTVs. New operational trails may be installed where deemed necessary to provide access to facilities or monitoring stations.

4.1.5 Road Network Management

The Authority maintains roads predominately comprised of native soils, road base, or gravel. Road networks function as access roads to facilities and for patrolling. Road networks are used regularly by Authority staff, but also serve as access routes to other agencies (e.g. San Diego Gas and Electric, Otay Water District) or to access neighboring private properties. The Authority's roadway network requires routine maintenance to ensure continued access across the reservoir properties. Unpaved roads are subject to erosion, pooling of water during the wet season, and general wear and tear from repeated use. As discussed below, road vegetation maintenance, grading, placement of materials and road relocations occur to improve the overall roadway networks.

Roadside Vegetation Maintenance – Areas adjacent to roads are maintained and controlled so that vegetation growing on or adjacent to the roads does not encroach. Trimming and mowing of vegetation adjacent to the road is necessary to maintain access. Roads currently vary in width, but a road right of way (ROW) of 20 feet is being proposed as part of this O&M Plan, except where other standards require roads to be wider or narrower (e.g. roads with fuel breaks). Within this ROW, vegetation can be trimmed and/or removed and surfaces maintained as needed. Vegetation trimming is performed by hand using non-powered and powered trimmers, cutters, and saws, and/or with tractor mounted mowers. In some limited circumstances (e.g. persistent or invasive species), vegetation may also be treated with herbicides. Turnouts may be installed adjacent to the proposed ROW to improve road safety and access.

Roadside vegetation may be conducted using mechanical equipment.

Road Surface Maintenance – Surface maintenance of unimproved Authority roads is typically performed with a tractor mounted blade or Gannon box. Grading cuts into the road surface to smooth "washboard" ridges, high spots, and depressions that have resulted from on-going vehicle traffic. Roads are also surface dragged by towing large rubber tires or a metal scraper implement behind a pick-up truck. Road shoulders are scraped/maintained to their disturbed width. Reshaping existing roads or adding drainage improvements may be necessary to achieve proper drainage and to address lowering of the road surface and creation of cut banks along the road edge.

Placement of Road Base Materials and Paving – Placement of road base materials is sometimes necessary to fill depressions, bring road levels up to natural grade, and generally improve surface road conditions. Materials may include ¾-inch drain rock, decomposed granite, or Class II road base. Materials placement can be localized for a single area or spread over several hundred feet to improve an entire road segment. Materials are graded smooth and compacted with the weight of the tractor and/or trucks. There are certain paved roads within properties owned or managed by the Authority. These roads are built for accessing facilities or patrolling, and their construction and maintenance is done by qualified contractors, following existing industry standards for the construction of paved roads.

Road Additions and Abandonment – The Authority's roadway networks at Sweetwater Reservoir and Loveland Reservoir have been developed over time as necessary to facilitate access. As the Authority's property holdings have grown, the roadway network has expanded with the interior dirt roads experiencing reduced levels of use. The Authority's existing perimeter roads are incomplete and require small additions to facilitate continuous perimeter access; additionally, some roads may need to be widened and turnout areas added. These additions would be constructed similar in appearance to the existing perimeter road segments and consistent with the proposed 20-foot road width standard. As the Authority's roadway network is expanded, the interior roads that experience little to no use can be abandoned, particularly in areas where these roads may fragment sensitive habitat. During abandonment, the road would be de-compacted and the area would be restored in order to stabilize existing soils.

Patrol and maintenance roads may be abandoned, realigned, or expanded, depending on changing purpose and needs.

4.1.6 Brush Management

Brush management activities on Authority properties are necessary to maintain existing facilities. In addition to creating fuel breaks and maintaining roadside buffers, brush management is also necessary to control invasive vegetation and to prevent the establishment of trees as well as large shrubs and other large woody species that may cause damage to Authority facilities or infrastructure. Vegetation overhanging road paths, channels, or ditches, or growing into Authority property fencing is trimmed or pruned as necessary. Brush management activities usually require a variety of equipment including mowers, masticators, string-trimmers, and hand shears. Brush removal on easements occurs as needed (e.g. preventive maintenance, addressing water leaks or encroachments, etc.) and may be performed by Authority staff or the property owners. Vegetation removal outside of Authority property occurs only with approval of the adjacent land owner(s) and when absolutely necessary. The Vegetation Management Schematics are provided in Appendix A.

Invasive Plant Removal – Many invasive plant species require continuous, active management to control their populations to avoid or minimize harm to water resources, facilities, and natural habitats. Control techniques include both mechanical and chemical control. Mechanical control involves girdling, cutting at base, root excavation by hand or small tools (powered and conventional), or by heavy machinery (tractors and mowing equipment). Chemical control uses a variety of approved herbicides that employ of variety of techniques (foliar, cut-stump, basal bark, and injection).

4.1.7 Landscaping and Grounds Maintenance

Landscaping and grounds maintenance activities occur mostly on developed sites. Landscaping activities include planting, seeding, and the installation of horticultural gardens and irrigation systems. These types of planting activities generally consist of planting trees and drought tolerant vegetation for property beautification, but may also include installation of vegetated swales within developed sites. Other landscaping activities include mowing, trimming, waste management, and erosion control. Grounds maintenance include building and grounds maintenance, parking areas and paved road maintenance (e.g. sweeping), surface cleaning, graffiti removal, repairs to concrete work, litter control, pressure washing of buildings, rooftop repairs, remodeling, minor construction, sweeping of developed sites, etc.

4.1.8 Enforcement Actions

Enforcement actions at Authority properties vary, from patrolling properties, to addressing trespassing, illegal dumping issues, removing encroachments, and coordinating with local law enforcement agencies. Patrols of the reservoir properties and easements are conducted on a regular basis to control trespassing, inspect for potential water quality degradation and property damage, and to identify/address other issues that arise. Patrols also include regular inspections of the reservoir shoreline via maintenance boats. Where natural habitats occur, patrol vehicles are confined to the road limits and designated vehicle turnouts.

Enforcement actions include the removal of unauthorized encampments within Authority property.

Authority staff regularly controls trash and other debris from Authority managed facilities and properties. Trash is typically picked up by hand and placed in trash bags or receptacles. Illegal dumping of some waste materials are treated as hazardous waste and its disposal is coordinated with the appropriate authorities. Some other non-hazardous illegal dumpings, such as furniture, are removed using a tractor or similar heavy equipment. All construction- and maintenance-related materials and/or demolition debris are removed from Authority lands and disposed of or recycled, as appropriate.

The Authority installs cameras and uses temporary and permanent lighting for a variety of activities. Surveillance cameras may be installed as needed for monitoring purposes or security reasons. While temporary lighting is generally installed for maintenance- or construction-related activities during the evening hours, particularly during the winter season when the sun sets earlier, permanent lighting is intended to light Authority facilities and infrastructure, as necessary, to deter trespassers and to light Authority sidewalks,

pathways, and work areas. Temporary lighting can sometimes be provided by a lighting tower that is powered by a diesel generator(s), while permanent lighting is tied to a continual source.

4.1.9 Site Specific O&M

There are various operational sites that because of the types of activities conducted on these sites they are included in this O&M Plan. O&M activities in these sites are conducted as described in Sections 4.1.1 to 4.1.8, and Section 4.2, as applicable.

Storage and Staging Areas - During construction or major maintenance activities at Sweetwater Reservoir, Loveland Reservoir, and other Authority properties and easements, the Authority uses construction storage and staging areas to store construction materials and stage heavy equipment, as necessary. At the Sweetwater Reservoir property, permanent staging areas include Gate 100, the Perdue WTP Boneyard, the former Thompson House site, the URDS Staging Area, the South Dike Borrow Site (Borrow Site), and other similar disturbed, developed areas. At the Loveland Reservoir property, the Fishing Program Parking Lot, the Caretaker's Residence, and the Field Office areas have been used historically for staging materials.

South Dike Borrow Site - The Borrow Site is a large earthen mound that has been previously used to dispose of excavated soils from pipeline replacement and similar projects. As utilities trenching and other similar activities generate additional soils, fill may continue to be stored in this location. Activities at the Borrow Site would include the use of dump trucks and other heavy equipment such as excavators and dozers, necessary to periodically deposit or remove the soils. Grading activities for placing soil would typically involve depositing soil in 12- to 24-inch lifts and compacting each lift with a dozer or other grading equipment. Located south of Sweetwater Reservoir and within the reservoir's property, the Borrow Site will occasionally be used as a staging area and for other purposes. Soils from the Borrow Site are planned to eventually be used to raise the height of the existing South Dike at Sweetwater Reservoir (Amec-Foster-Wheeler, 2018).

URDS Staging Area - The URDS Staging Area is a 4-acre site upstream of the URDS I facilities and it is one of the main staging areas for field workers in the Sweetwater Reservoir property. The URDS Staging Area includes an area dedicated for staging materials and covered with approximately 6 inches of road base, and a second area where vegetation is staged and wood-chipped. The URDS Staging Area is mostly used by Authority staff conducting land maintenance tasks on a routine basis, but can also be used by Authority contractors (Authority, 2018).

Vegetation Woodchip Site - The Authority maintains vegetation woodchip sites to stage and/or compost cut plant material from on-going maintenance activities. Woodchip sites are located at the Perdue WTP Boneyard and the URDS Staging Area. Collected plant material is staged at these sites and eventually transferred to 40-yard greens bins for off-site disposal at the local landfill. If desired, vegetation can be mulched and disposed at the URDS Staging Area at the area known as the "buffer area" per the URDS environmental documentation (Authority, 2018). The Perdue WTP Boneyard is used for staging and transfer only, where this material is eventually moved to the URDS Staging Area or as greens waste to a local approved landfill. Maintenance of the vegetation woodchip sites include the use of trucks, tractors, or other heavy equipment (e.g. chipper), necessary to periodically deposit, process and/or remove the collected vegetation woodchips, as required for future Authority projects and landscaping. Collected vegetation material is stockpiled and managed consistent with industry standard BMPs.

Service Area Facilities - While this Plan is not being prepared for the general operations associated with the service area facilities (e.g. treatment and distribution of water), the Authority may conduct some O&M, as described in Sections 4.1.1 to 4.1.8, within its service area facilities. These O&M activities include cleaning ditches, repairing slopes, installing/repairing drain pipes, minor grading within disturbed or operational areas, etc. The table below has a list of facilities which are generally located within or adjacent to existing development, and require periodic grounds maintenance and repairs to keep this infrastructure operable and current with industry standards (see also **Figure 4**). Maintenance activities and operations such as those described in Sections 4.1.1 to 4.1.8 and Section 4.2 may be needed in some of these sites and will be addressed as described herein.

O&M SITES WITHIN THE SERVICE AREA

Sites subject to O&M, Service Area
Treatment and Groundwater Facilities Perdue WTP, Desalination Facility, National City wells site, San Diego Formation and alluvial wells sites, raw water and brine discharge pipe corridors, and associated easements.
Bonita Valley Reservoir Reservoir footprint and surrounding easements.
Tank sites Bonita Bel-Aire Tank property and easements; Bonita Highlands Tanks property and surrounding easements; Cherry Hills Tank property; Claire Vista Tanks property and adjacent easements; Halecrest Tank property; Judson Tank property; Lynwood Hills Tank property; McMillin Tank property and surrounding easements; Morris Tank property; O.D. Arnold Tank property and surrounding easements; Starr Tank property and surrounding easements; Wheeler Tank property, and proposed Central Wheeler Tank.
Hydro-Tank Facilities Robinhood Hydro #34; Sea View Hydro #23; Halecrest Hydro #27; Horseridge #32; O.D. Arnold Hydro #17; Steeplechase Hydro #35A; and Steeplechase Hydro #35B.
Booster Stations Facilities Rice Canyon # 22; Claire Vista # 10; Oxford Street #14; Vista Del Lago #37; Bel Aire #28; Starr #18; Bonita Highlands #15; Wheeler #12; Bonita Golf #24; Central Avenue #30; and O.D. Arnold #39.
Selected Easements Rice Canyon to Claire Vista Tank; Lomacitas Lane and vicinity; Bonita Golf Course; SR-125 and S.D. County Park Vicinity; San Diego County Club Golf Course; Chula Vista Golf Course; La Vista Cemetery; National City Golf Course ("Las Palmas"); intersection of Sweetwater Rd. and Plaza Bonita Rd.; North of Bonita Rd. and west of Willow Street.
Undeveloped Properties National City Tank Site, APNs 585-100-24, 590-051-25, 570-170-44, 570-180-04, 570-180-55.

Sloane Canyon Slide Gate and Easement - Operation and maintenance of the Sloane Canyon Slide Gate includes removing the buildup of debris upstream of the gates, taking depth readings, and vegetation management on the access road sides and around the structure. The Authority regularly conducts depth

readings, but notifies Sycuan Tribe to request debris removal. Future activities at the Sloane Canyon Slide Gate may include the installation of gauges for local and/or remote monitoring.

4.2 Drainage Systems and Soil Stabilization

This section describes maintenance and repairs of drainage facilities, and management practices related to erosion prevention, sediment controls and slope stabilization. Drainage facilities include stormwater conveyance and flood control facilities and exist throughout the Authority's properties and easements. Drainage facilities must be maintained or installed to reduce the potential or extent of flooding and to reduce the likeliness of stormwater pollution and structural or property damage.

4.2.1 Drainage Facilities

Maintenance, Repairs and Replacements - Replacement, repair, and removal of sediment or debris from drainage facilities are routine activities conducted by the Authority. Vegetation and annual weed growth that overhangs concrete brow ditches, concrete channels, manholes, or other storm drain-type facilities, are trimmed or pruned back up to 3 feet from the edge of structure as long as vegetation trimming does not result in erosion. Native plant vegetation is cut no more than 4 inches to the ground so the root system remains intact. In certain circumstances, herbicide is used directly on any plant species that may cause structural damage to the drainage facility or result in a trip hazard. All vegetation and debris growing in concrete channels, concrete ditches, and concrete swales is removed. Occasionally, man-made unlined channels or ditches need to be dredged or re-contoured to improve their functionality, and while these ditches may be vegetated or bare ground, inlets and other structures are maintained clear of vegetation or debris to prevent structural damage and reduce likeliness of flooding. Excess sediment and debris accumulated in and around culverts and other drainage pipes and facilities is removed using the appropriate tools. Sediment removal from facilities is conducted to maintain the original volumetric capacity of drainage facilities, and heavy equipment is used if there are excessive amounts of debris accumulated.

Stormwater facilities are maintained and repaired as needed. New facilities are installed as necessary to improve drainage and reduce impacts to water quality and hydrology.

Drainage system repairs involve repairs to or replacement of any drainage facility that is damaged or degraded. Work on drainage systems could include, but not be limited to, reclamation of eroded slopes and waterways, and repairs or installation of drainage facilities, such as downdrain flumes, culverts, headwalls, or energy dissipaters (e.g. gabions or rip-rap). French drains could also be used to correct unpaved road drainage areas. Maintenance and repairs of drainages and streambeds may include reshaping of streambeds, revegetation, debris removal, relocation of in-stream structural facilities, installation of retaining walls, etc. Indirect repairs to a streambed may include improvements to, or relocation of, roads and other facilities.

New Drainage Facilities - Ephemeral drainages and streams exist in Authority properties; some of them have been modified by existing roads and associated drainage facilities. Whenever a drainage facility needs to be installed or upgraded within a waterway, the Authority conducts the appropriate hydraulic analysis to ensure that potential hydrological impacts areas are avoided or minimized. If a streambed or stream crossing located within Authority property shows signs of failure due to upstream development or other reasons, the Authority may conduct repairs based on the results of the investigation.

4.2.2 Erosion Prevention and Sediment Controls

Activities involving ground disturbance are accompanied by erosion prevention, sediment control, and slope stabilization measures, as appropriate. Prior to initiation of any project activity where the ground is disturbed, site conditions and proposed activities are evaluated and the proper stormwater BMPs are selected for installation. The Authority's BMP efforts generally focus on minimizing or avoiding disturbance to natural land covers and preventing materials from escaping the sites being maintained. Following the completion of maintenance activities, disturbed soils are typically revegetated or stabilized with other non-vegetative materials. Revegetation, typically involving native or drought tolerant non-invasive plants, involves hydroseed application, planting of container plants, or both. Depending on the goal of the project, soils may also be protected in place with mulch or rip-rap or using other measures. The WPCP prepared for the O&M Plan (Appendix B) includes more detail about each of the erosion prevention and sediment control measures used by the Authority.

Erosion repairs may include a combination of short-term (e.g. re-grading) and long-term (e.g. installation of drainage facilities, paving, etc.) solutions.

Erosion repairs consist of stabilizing or restoring the existing terrain or man-made features, such as retaining walls and dirt roads, to prevent structural damage and further erosion. The Authority implements different measures on an as needed basis to address long-term erosion issues associated with cut/fill slopes or upstream hydromodifications. In the event that severe or otherwise problematic erosion issues develop, Authority staff installs temporary measures while identifying a long-term solution.

In certain circumstances long-term solutions to erosion issues and slope repairs can include regrading, installation of diversion ditches at the top of cut slopes, installation of downdrain flumes with energy dissipaters on the side of roads, or other stabilization techniques as approved by a Professional Civil Engineer. Erosion repairs could occur in any facility or land managed by the Authority.

4.3 Reservoir Facilities Management

Reservoir maintenance, including maintenance of dams, is one of the most important O&M activities that occurs in Authority lands that allows the Authority to provide safe and reliable water while having safe structures. Reservoir maintenance includes, but is not limited to, maintenance and minor repairs to dams, dikes, discharge pipelines, and intake and outlet structures and facilities; maintenance, repairs and replacement of log booms, buoy and gauges; access, maintenance, repair, or replacement of facilities within the reservoirs; water transfers; and vehicle or equipment access points, boating ramps, and temporary roads within the reservoir footprint.

4.3.1 Dams and Dikes Maintenance

The dams and dikes at Sweetwater Reservoir and Loveland Reservoir are subject to monthly inspections and surveys immediately following any potentially destabilizing events (e.g. earthquakes), as required by DSOD. Maintenance of these facilities include the installation of equipment to monitor horizontal and vertical displacement of the structure and the prolongation of cracks, in kind concrete repair, graffiti removal, the removal of all vegetation from the main dams and the secondary dikes at each reservoir, and regular maintenance of Authority facilities at the reservoirs. Vegetation control is accomplished through the use of hand tools and/or herbicide application. Vegetation control is required to preclude roots from damaging the integrity of these impoundment structures and to maintain surface concrete visibility, including weep holes. Typical vegetation clearances at the dams and dikes include tree and shrub removal, 10-foot clearance from the dike or dams' crotch, and 15-foot clearance from any associated dam/dike structure where the structure is adjacent to pervious soils. Rodent burrows are addressed by following procedures outlined in Section 4.1.3.

Dams and dikes are inspected, maintained, and repaired in close coordination with the California Division of Safety of Dams (DSOD).

4.3.2 Log Booms Maintenance and Repairs

The log booms at Sweetwater Reservoir and Loveland Reservoir are floating debris barriers that protect the intake tower and the spillways at the dams from floating debris. The log booms require periodic adjustment depending on the water level within the reservoirs, repairs and replacements of segments, and removal of accumulated vegetation or debris. These maintenance activities are generally conducted by Authority staff using a maintenance boat. Log booms are adjusted by winches located above the reservoir high water limits, which are also subject to periodic maintenance. Maintenance in the upland areas include up to 3 feet of vegetation removal on each side of the log boom and 5 feet from the anchoring area. Debris may be removed anytime during the year; however, woody debris collected during the flood season is typically cleared after high water events. Winches and sections of log boom that are in upland areas also require maintenance, including vegetation removal.

4.3.3 Reservoir Floor Maintenance

Reservoir floor maintenance involves management of reservoir floor vegetation at Sweetwater Reservoir – from the high water mark of 239 feet above MSL to the edge of the reservoir water – to maintain an operating pool, preclude permanent establishment of invasive plant species or other vegetation, and deter trespassing and unauthorized activities. Maintenance activities generally include mowing, using a tractor or skid steer mounted rotatory blade or flail. Persistent or invasive plant species, such as giant reed (*Arundo donax*) and salt cedar (*Tamarix* sp.), can also be treated with herbicide, as necessary. Prior to mowing the reservoir floor, the surface may need to be prepared by removing rocks – from 6- to 24-inch in size – that could damage the mowing equipment and/or present fire hazards from blade initiated sparks. In some cases, rocks are partially buried by silt or reservoir bottom material and encapsulated by vegetation, which is also removed during site preparation. Once the rocks are removed, the resulting ground depression is filled in with similar lake bottom soils. All of the rocks that are collected during surface preparation are stockpiled above the reservoir's high water mark at designated areas. Additionally, eroded areas or deep ravines that would have the potential to create a hazard during maintenance activities are also filled during site preparation. The eroded areas are graded to a "natural" contour, gathering and tapering soil material from the immediately adjacent reservoir bottom areas. Soil material is compacted in place and allowed to revegetate naturally, but would also be subject to annual mowing as with the remaining reservoir area.

The Sweetwater Reservoir is mowed to maintain an operating pool, preclude establishment of vegetation, and deter trespassing and unauthorized activities.

Currently, reservoir floor maintenance is authorized within a designated area of the Sweetwater Reservoir under the HMP (RECON, 1994). Consequently, protected habitat areas within this spillway

elevation, such as willow forested habitat within the Upper Sweetwater Reservoir HMP Preserve, are avoided during reservoir floor maintenance activities. However, the Authority is currently proposing additional maintenance activities, including mowing at Sweetwater Reservoir outside of the HMP mowing limits, installation of temporary road crossings, removal or repairs of abandoned road crossings, rock removal, removal of abandoned pipe, and filling ravines or eroded areas for hazard removal (ESA, 2014).

4.3.4 Water Transfers

Runoff captured at Loveland Reservoir is transferred to Sweetwater Reservoir via the Sweetwater River channel to augment water production for the Authority's service area. The amount of water that is transferred depends on both forecasted and actual rainfall and runoff, the estimated raw water available for treatment at Sweetwater Reservoir, and the anticipated consumer water demand. When transferring water, water levels at Loveland Reservoir may be drawn down to minimum pool elevation of 1,297 feet MSL, leaving 7,525 AF and a surface area of approximately 203 acres. Controlled releases have been occurring since the late 1940s and are the only current mechanism for transferring water from Loveland Reservoir to Sweetwater Reservoir. Controlled releases of water are planned to coincide with natural streamflow regimes, generally from December through April. The Authority has developed the "Loveland to Sweetwater Reservoir Water Transfer Standard Operating Procedure" to implement the water transfer when necessary (Authority, 2006).

4.3.5 Sweetwater Reservoir Urban Runoff Diversion System (URDS)

The main goal of the URDS is to protect Sweetwater Reservoir from spills, low or poor quality dry weather urban flows, and "first flush" stormwater runoff (Luke-Dudek, 1982). While the entire URDS system can be operated by Authority staff or remotely at the Perdue WTP, ongoing field maintenance and repairs are required at all URDS facilities. Maintenance and repairs are provided by Authority staff and plant maintenance staff trained in electromechanical and instrumentation. Due to the presence of endangered species and other sensitive resources in the vicinity of the URDS facilities, operations and maintenance activities require close coordination with qualified environmental staff to ensure biological resource impacts or impacts to other sensitive resources are precluded. O&M activities necessary to effectively operate the system are described below, and more detail information can be found in the URDS-specific O&M manuals (Boyle Engineering, 1991; ActivManuals & Enartec, 2012; and Authority, 2018).

Retention Ponds – The retention ponds and associated facilities are periodically inspected, especially after a major "first flush" condition in which a large amount of poor quality runoff has been diverted into to the pond and/or flood stage conditions. Any clean-up and/or drainage should be maintained and/or repaired to prevent further damage to the facilities. If there are sediment deposits resting against the outlet slide gate, it may need to be removed before the gate may be opened; especially if it has been closed for a long period of time. Sediment and vegetation accumulated in the pond concrete swale and blocking the channel inlet is removed. Weeds, trash, and other objects that lodge on the trach rack are removed. Floating debris and other waste materials are removed from the shoreline and banks of the pond. At least once a year the 6-inch reservoir bypass gate valve is closed and then opened for check of operation. Trees and bushy growth that has high penetrating root power should not be permitted to remain on the pond slopes and bottom in order to prevent damage to the PVC containment liner.

Occasionally on some bank areas the ground cover may require replanting with the same seed mixture used in the original planting; plant species selected must be tolerant of periods of inundation. The facing rock on the slopes (reservoir side) of the pond is flexible and may be displaced due to excessive wave action from the reservoir. During reservoir high water levels in which the water level reaches the facing rock, continuing surveillance is made to detect conditions that may cause scouring and washout. Rodents and rodent burrows that may cause damage to facilities are managed as discussed in Section 4.1.4. Facing rock should be added to areas where the blanket of facing rock is less than 12 inches thick and/or a depressed erosion hole. Harvesting of wetland vegetation may occur as needed to maximize pollutant removal. Periodic removal of sediment and marsh vegetation may also occur to maintain water storage capacity of the pond (approximately estimated to be required at 10- to 20-year intervals), and periodic sediment removal (dredging) is followed by wetland restoration.

Accumulated debris and sediment are removed from a concrete swale at Hansen's Pond, an URDS facility.

Diversion Structures – The diversion structures, including forebays, roads, dikes, and their associated facilities, are periodically inspected, especially after severe storm events and/or flood stage conditions. Slide gates and frames are checked for operation and damage, and any structural weakness is repaired to prevent further damage and so the gates with their motorized actuators will continue to be effective. Sediment deposited against the gates is removed before gates are opened. The revegetated slopes of the diversion structure are watered, as needed, to achieve a healthy vegetative cover that helps preventing erosion of dikes. Trees and bushy growth that has high penetrating root power is not permitted to remain on the dike and other areas covered with the PVC containment liner. Rodents and rodent burrows that may cause damage to dikes are managed as discussed in Section 4.1.4. The rock of the dike's slopes is flexible and may be displaced; rock is added to areas where the blanket of facing rock is less than 12 inches thick. Maintenance of the diversion structures includes removal of any vegetation that could impede flows as intended. Periodic removal of sediment and marsh vegetation is necessary to maintain pond capacity (similar to retention ponds and followed by wetland restoration.) Diversion and Bypass gates repairs are also necessary to ensure proper operation of the URDS. Removal of sediment buildup and debris to provide necessary drainage and gradients, and harvesting of wetland vegetation to maximize pollutant removal, may also occur when appropriate. Appurtenances located on the diversion structures, or channels and culverts connecting with diversion structures or retention ponds, may also need to be repaired or fully replaced to ensure the continual functionality of the URDS.

Low Flow Interceptor Barrier and Flume– The low flow interceptor barrier and flume are regularly inspected, especially after severe storm events and/or flood stage conditions. Any signs of vandalism are addressed and graffiti is removed or painted out, as necessary. Current maintenance practices include vegetation removal on both sides of the low flow barrier. In accordance with URDS II project permits, a 0.02 acre footprint is authorized for maintenance clearing, although maintenance dredging of a 0.13 acre

area is currently being proposed to recover original grade. A ramp or similar facility may need to be built between the existing facilities road and the low flow barrier in order to get the necessary heavy equipment to the proposed work area. To maintain flow capacity in the flume, Authority staff removes litter, debris, vegetation, sediment, and rock on a regular basis. Repairs to the flume occur as needed.

Gravity Pipeline and Manholes – To maintain flow capacity and gradients within the gravity pipeline, Authority staff provides routine inspection of the pipeline and manholes to identify any problems or damage and make any necessary repairs. Access is provided via the manholes along the gravity line for removal of unacceptable levels of sediment. Vegetation near pipelines is managed to prevent root intrusion, direct impacts to the above-ground pipe, and associated damage repairs.

Many URDS facilities are maintained throughout the Sweetwater Reservoir property and the adjacent San Diego National Wildlife Refuge, including runoff diversion structures, supporting access roads, and drainage facilities.

Conveyance Channels – Conveyance channels are patrolled periodically and immediately after a heavy rain and/or flood stage. Concrete linings and buried culverts are inspected, and any damage is repaired and/or reconstructed to prevent further destruction of the lining and erosion of the channel subsurface. Litter, debris, vegetation, sediment, and rocks are removed from channels and culverts as needed. Channels are inspected prior to a rainy season and cleaned as necessary. When it is observed that large amounts of dirt or debris are entering the channels, due to erosion of cut slopes, measures are taken to stabilize the cut slopes and/or intercept the dirt or debris at the surface before it reaches the conveyance channels. The channel's outlet end (including energy dissipaters) of each channel is kept clean to permit free flow from the channel outlet. The 4-inch flap valves in channel CH-7 are checked annually, during a low flow condition, to ensure that the flap swings freely and seats properly.

Pump Station, Force Main and GAC Facility – The pump station building and equipment is maintained in a clean serviceable condition, and necessary repairs are performed to maintain the system's operating capabilities. Maintenance of the force main (i.e., 8-inch recirculation line for URDS II) and GAC facility includes regular inspections and flushing of air, vacuum, and blow-off valves. GAC media is replaced as needed to maintain effectiveness.

Miscellaneous Facilities – Visual inspections of URDS miscellaneous facilities, such as electrical access boxes, manholes and air valves are conducted. Any electrical repairs or upgrades are conducted as described in the URDS O&M manuals.

Vegetation Clearances – Vegetation that overhangs, or has the potential to impact, any URDS structure, including concrete brow ditches, concrete channels, diversion structures, pond outlets, or other storm drain-type facility are trimmed or pruned back up to 3 feet from the edge of structure, as long as vegetation removal does not result in any type of erosion issues. The URDS have a 6-foot vegetation clearance. Section 4.2, *Drainage Systems and Soil Stabilization*, explains in more detail the types of activities associated with the maintenance of channels and other stormwater-type appurtenances, including catch basins ("interceptor cups"), drain pipes, and unlined ditches. VDL facilities and appurtenances are maintained in a similar manner. See also Vegetation Management Schematics (Appendix A). Trees and shrubs that have the potential to impact the URDS mains, including the gravity main, the force main, or the VDL interceptor main, are removed.

4.3.6 Boating and Boat Launch Ramps

Public boating is not permitted at either Sweetwater Reservoir or Loveland Reservoir. However, medium-sized power boats owned and operated by the Authority ("maintenance boats) are used at both reservoirs for patrol, water quality monitoring, and maintenance activities. Small boats and canoes used for lake monitoring and biological resource monitoring are occasionally launched from a variety of roadside areas around the reservoirs where these boats can be launched or carried from a vehicle to the shoreline. All launching sites are within the reservoir high water mark, and they fluctuate in length depending on level of the reservoir. The primary launch site at Sweetwater Reservoir is located south of the Perdue WTP facilities. During periods of low water, alternative launching sites are used, including the area near the SDCWA aqueduct discharge point. The primary launch site at Loveland Reservoir is currently an earthen ramp located along the southwesterly shoreline of the reservoir, although the Authority is considering launch ramp surface improvements (e.g. articulating concrete block, plastic textile energy dissipaters, etc.) that would minimize erosion and improve stability and reliability of this facility.

Periodic grading or in-kind resurfacing of the boat launch ramps may be performed to maintain access. At Loveland Reservoir, grading of both the boat ramp and access road is generally performed using a tractor mounted blade, Gannon box, and other commercial grading equipment, as needed. The activity can occur throughout the year with the need and frequency generated by the extent of erosion and wear that occurs. Boat ramp and road maintenance could include placement of decomposed granite or Class II base material. Boat dock anchor points are slugs of concrete (approximately 2.5 feet in diameter and a volume of 0.5 cubic yard) with an exposed rebar loop to attach cables to the floating boat dock. There are 26 existing anchor points in total, spaced approximately 20 feet apart. At least two anchor points are used at any single time to secure the floating boat dock. The anchors being used will vary with the changes in lake level. Maintenance and repair of these anchors can include excavation and resetting if needed due to shoreline erosion, and/or reinforcement to prevent future exposure. Reinforcement involves installation of metal T-posts, chain-link fabric, and backfilling with rock, gravel, or additional concrete. Up to four additional anchor points are proposed to be installed to accommodate the dock for an extreme low lake level condition. As an O&M activity, the Authority may improve the existing boat launch ramp at Loveland Reservoir to include erosion control features or a permanent water diversion structure, such as a concrete browditch. Vegetation can be removed to up to 10-foot clearance from any boating ramp structure or appurtenance, with the appropriate erosion prevention and sediment control BMP measures.

4.4 Public Recreation

Loveland Reservoir and Sweetwater Reservoir have limited opportunities for public recreation, consisting of shoreline fishing programs and riding and hiking trails.

4.4.1 Fishing Programs

Shoreline fishing occurs in designated areas of the two reservoirs managed by the Authority. At Sweetwater Reservoir, fishing occurs along a 2.5-mile stretch of the southwest shoreline. Support facilities are located at San Miguel Point which can be accessed via San Miguel Road on the south side of Sweetwater Reservoir. The Fishing Program at Sweetwater Reservoir is open during daylight hours on Saturdays, Sundays, and Mondays. The support facilities consist of a parking area with a pay station, fishing program trails, landscape and rest areas, and portable restrooms and trash cans. A vernal pool complex and other sensitive biological resource areas are located near the fishing program area and public access to these ESAs is prohibited at all times. Fishing is also allowed along a 5-mile stretch of the eastern shoreline of Loveland Reservoir. The Fishing Program at Loveland Reservoir is open daily, with seasonal time adjustments and holiday closures. Support facilities at Loveland Reservoir include a 50-space parking lot, fishing program trails, rest areas, portable toilets and trash cans, and access bridges and a fishing float.

Facilities at both fishing programs are maintained for public use on an as-needed basis. The fishing program trails are patrolled, monitored, and maintained to prevent erosion, ensure user safety, and prevent the spread or establishment of invasive species. Pruning during trail maintenance is managed to limit brush and fire danger and expedite decomposition. An information kiosk at the parking/staging area describes public access restrictions, safety precautions, and sensitive biological resources in the area. Fences and signs have been installed to discourage trespassing into ESAs and other undeveloped lands in the vicinity. Portable toilets and trash receptacles are provided and serviced regularly by Authority staff to control waste, and trash is removed when encountered during patrols. Parking areas and other staging and seating areas are maintained to prevent water degradation, garbage buildup, or vehicular fluid deposits. Stormwater BMPs are maintained and monitored at the landscape of the Sweetwater Reservoir fishing program in compliance with County regulations.

Shoreline fishing is allowed in designated areas at Sweetwater Reservoir and Loveland Reservoir. Access trails and other supporting facilities are maintained within the shoreline fishing programs.

Fisheries management at the reservoirs are generally limited to the placement of fish habitat structures to provide refuge for younger fish and bait fish, as well as attract larger gamefish. Artificial fish habitat is generally constructed of various materials including metal T-posts and interwoven fence materials; various diameter and segment lengths of concrete or PVC pipe; wood pallets; tree logs or limbs; piles of rock or other suitable materials that provide complex habitat but would not impact the water quality in the reservoirs. These structures may be placed individually or combined for added habitat diversity. Depending on type of fish habitat structure, these are placed when reservoir conditions are low. Structures that can float are wired to T-posts or anchored with weights. No fish stocking operations occur at Sweetwater Reservoir or Loveland Reservoir.

4.4.2 Regional Trails

In addition to the trails associated with the fishing programs (discussed above in Section 4.4.1), there are two riding and hiking trails on Authority property that are not managed by the Authority: The Sweetwater Reservoir Riding and Hiking Trail, and the California Riding and Hiking Trail (CRHT). The Sweetwater Reservoir Riding and Hiking Trail is located on the south side of Sweetwater Reservoir and its maintenance is coordinated between the County of San Diego and the Authority, and primarily conducted by volunteers. The CRHT is located on the north side of the Loveland Reservoir property and its maintenance is conducted by the State of California, consistent with the terms of multiple CRHT easements and a Revocable License Agreement. While neither of these Riding and Hiking Trails is maintained by the Authority, fencing posted with signs is provided along these trails to prevent trespassing in the reservoirs. Protection of Authority lands and natural resources is accomplished through patrolling, seasonal restrictions, fencing, restricting pets, and public education. Signs are posted along trails prohibiting trespassing into Authority lands and the collection of wildlife or plants. The Authority reservoir lands are managed for the primary purpose of protecting water quality in the reservoirs. Recreational trails are subordinate to ensuring the safety and reliability of the public water supply. The Authority may close, at any time and indefinitely, any trail within its property if trail use results, or has the potential to result, in an impact to water quality or becomes a safety concern.

5.0 ENVIRONMENTAL MEASURES

O&M activities often include ground disturbance, vegetation clearing, working near ESAs or in the vicinity of storm drains, etc. Implementation of O&M activities may have an impact on sensitive resources or receptors. Impacts may be direct or indirect, temporary or permanent. Depending on the O&M activity being performed, Authority field staff, in coordination with environmental staff, selects environmental measures to be implemented in the field that ensure avoidance or minimization of environmental impacts, and compliance with design features or approved measures associated with each individual O&M action.

1. Training. Provide training specific to the O&M task being conducted to all workers.

2. Limits of Disturbance (LOD). Limit any O&M activity to operational areas and field maintenance areas. Install temporary LOD flagging or fencing, as appropriate, and ensure all workers understand work limits. Vehicles are to remain within approved roads and previously disturbed areas; avoid driving, parking, or staging on undeveloped lands or ESAs.

3. Water Pollution Control Plan (WPCP). Refer to WPCP for selection and installation of appropriate stormwater BMPs. Direct any questions to staff QSD/QSP.

4. Housekeeping BMPs. The following housekeeping BMPs are to be followed at all times:

    - Ensure compliance with the 15 miles per hour (mph) speed limit when driving on unpaved roads

    - During clearing, grading, excavation, or hauling of excavated materials, water trucks or trailers shall be used as necessary to reduce airborne dust

    - Do not store or stage hazardous materials (paint, concrete, oil, gas, etc.) near reservoirs, streams, wetlands, natural drainages or storm drains. Report all spills within the same day to the Water Quality Department and environmental staff. Fueling of equipment or staging of equipment to occur within designated areas, at least 100-foot away (horizontal distance) from any identified waterway

    - Littering is strictly prohibited. All O&M generated waste shall be removed from work sites and properly disposed

    - All construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers. Construction noise reduction methods, such as shutting off idling equipment and the use of electric air compressors and similar power tools rather than diesel equipment, shall be used where feasible. Stationary construction equipment shall be placed such that emitted noise is directed away from, or shielded from, residential properties. Where applicable, ensure compliance with noise requirements near sensitive habitat/species

    - Minimize the use of herbicides in the watershed, wetlands and/or waters. Only use approved herbicides. Vegetation outside the approved limits will not be cut or sprayed with herbicide. Only aquatic or wetland approved herbicides are used in or near active waterways, including

rivers, streams, ponds, and reservoirs. Follow federal, state, and local regulations regarding herbicide use. Read and follow product labels

5. Environmental Monitoring. If impacts to, or work within, undeveloped lands or ESAs cannot be avoided, coordinate with environmental staff as soon as possible. Give reasonable advance notification to environmental staff since activities within ESAs or undeveloped lands may require a pre-activity biological survey and delineation of LODs, and/or biological monitoring. For grubbing, excavation or grading in undeveloped lands or ESAs, coordinate a month in advance with environmental staff as these activities may require archaeological monitoring.

6. Habitat Preserves. Coordinate any O&M activity within a habitat preserve with staff biologist.

7. Brush Management. Routine brush management in previously disturbed and approved areas is allowed after supervisor's approval. Brush management to be conducted as follows:

   - Request environmental clearance if brush management is to be conducted during the nesting season. Nesting windows are as follow:

     Trees/Woodland: January 15 – July 15
     Uplands: February 15 - August 31
     Riparian/Marsh: March 1 – September 15

   - Vegetation removal methods include cutting, trimming using hand or mechanical tools, and mowing

   - Vegetation removal should leave the roots of plants intact and 3-to-6 inches of plant trunk or stalk, where possible. If plants are invasive, a trip hazard, or roots can damage a facility, full mechanical removal or herbicide treatment is recommended

   - Add temporary and permanent stormwater BMPs as needed. Add a layer of mulch or other stormwater BMP on pronounced, unvegetated slopes to prevent erosion

   - Remove all dead vegetation and dispose at approved vegetation disposal sites

   - If brush management is conducted for defensible space or fuel break compliance, ensure consistency with the applicable Fire Authority Having Jurisdiction (FAHJ) requirements

   - Refer to Vegetation Management Schematics

8. Drainage Facilities. Maintenance and repairs of existing drainage facilities to be reported to environmental staff as noted below. Replacements and installation of drainage facilities to be coordinated with environmental staff and approved by staff engineer (hydraulic analysis for installation of new facilities or replacements may be required):

   - Maintenance and repairs: one month in advance notification

   - Replacements and installations: two months in advance notification

9. Roads and Trails. Maintenance and repairs of unpaved roads and trails are conducted using appropriate stormwater and dust control BMPs. Modifications to an unpaved road or trail shall occur within the appropriate corridor and with the appropriate drainage improvements. Installation or realignments of unpaved roads or operational trails are approved by the Director of Engineering or the Director of Water Quality, and shall occur with the following environmental issues in mind:

    - Soils, topography, and the potential for soil erosion issues
    - Avoidance/minimization of impacts to Authority facilities and other utilities
    - Avoidance/minimization of impacts to cultural resources, aquatic resources, ESAs, and sensitive species

    Coordinate with environmental staff in advance when requesting realignments or installation of a new dirt road or trail. For temporary trail closures, a notice shall be posted a week in advance.

10. Notification. Appropriate notification shall be given in advance to impacted customers or neighbors if activity may require water shutdown or temporary impact to other public service. Notify and coordinate with affected landowners and neighbors, if needed, to consider any special features that may be needed.

6.0 REFERENCES

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APPENDIX A

O&M Mapbook and Vegetation Management Schematics

(In development)

APPENDIX B

Generic Water Pollution Prevention Plan

(In development)