I. Introduction

The Proposal for the Greater Los Angeles Region (Region) would substantially contribute to the objectives and planning targets in the adopted IRWM Plan. The Projects included in this proposal are consistent with all the Plan objectives and would contribute to the planning targets for water supply, expanded use of recycled water, and reduction and treatment of stormwater. To assess how the Projects would contribute to Plan objectives and planning targets, performance measures have been identified for each project, and are presented in this attachment. Specific performance and monitoring measures include: how the performance measures apply to the identified Project benefits, which methods and locations will be used to collect and analyze the data, and how the monitoring data will be used to measure progress in meeting the objectives of the IRWM Plan.

Each Project benefits the Region in a different but complementary way. Projects were selected to assure that output indicators effectively track Plan objectives and evaluate change resulting from the project. Implementing these Projects as one integrated Proposal will enhance water supply reliability, improve water quality, increase water conservation, and expand groundwater restoration efforts in a measurable way within the Region and decrease demand for water imported into the Region. Although not specifically measurable, some of the projects result in flood benefits by reducing volume of storm waters, capturing and recharging runoff, and improving flood water quality.

II. Consistency with Basin Plan

The Los Angeles Regional Board's Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, the Basin Plan (i) designates beneficial uses for surface and ground waters, (ii) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's antidegradation policy, and (iii) describes implementation programs to protect all waters in the Region. In addition, the Basin Plan incorporates (by reference) all applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations.

The adopted IRWM Plan includes one objective related to surface water quality:

- Comply with water quality standards (including TMDLs) by improving the quality of urban runoff, stormwater, and wastewater.

The Plan (on page 3-4) acknowledges the importance of this objective, which is consistent with the Basin Plan:

> "Improving the quality of urban and stormwater runoff will reduce or eliminate impairment of the designated beneficial uses of rivers, creeks, beaches, and other bodies of water in the Region. Continued compliance with National Pollutant Discharge Elimination System (NDPES) permit requirements and the implementation of additional programs and projects will be required to reduce contaminant levels to the limits established by current, pending, and future TMDLs. Improving the quality of urban and stormwater runoff could also make these local supplies available for direct reuse or groundwater recharge in some locations depending on land use."

To support the identified water quality objective, the Plan also includes the following numeric planning targets related to urban and stormwater runoff:

- Reduce and reuse of 150,000 AFY of dry weather urban runoff and capture and treat an additional 170,000 AFY; and
- Reduce and reuse 220,000 AFY of stormwater runoff from developed areas and capture and treatment of an additional 270,000 AFY.

The Proposal includes six projects that would increase the capture of urban and/or stormwater runoff and three projects that would reduce the volume of urban and stormwater runoff. Thus, the Proposal is consistent with Plan objectives and planning targets, and consistent with the Basin Plan adopted by the Los Angeles Regional Board.

III. Hahamongna Basin Multi-Use Project

The Hahamongna Basin Multi-Use Project (Project) will serve a variety of needs in the vicinity of Pasadena, Altadena, and La Cañada Flintridge. The Hahamongna Basin (Basin), previously called the Devil's Gate Basin, is a debris basin on the Arroyo Seco Stream, which collects runoff behind Devil's Gate Dam (Dam). The Arroyo Seco Stream is a tributary to the Los Angeles River.

This multi-benefit Project will restore the natural processes within this significant regional open space which has undergone degradation and neglect for many years, as discussed in the *Hahamongna Watershed Park Master Plan*, which is a part of the *Arroyo Seco Master Plan.*

The Project is a cooperative effort between the Los Angeles County Flood Control District (LACFCD), the City of Pasadena, and the Arroyo Seco Foundation. This Project will increase water supply, improve water quality, and improve ecosystem health through enhancements to both the Basin and the adjacent Arroyo Seco Canyon. This multi-benefit Project incorporates features such as restoration of riparian habitat, installation of a public restroom, relocation of facilities to expand stormwater retention, enhancement of water quality, and expansion of open space and recreational opportunities. Project implementation will be divided into two components: the Hahamongna Basin (Basin component) and the Arroyo Seco Canyon (Canyon component).

Several performance measures will be used to quantify and verify the Project performance. These include:

- **Water Supply (Canyon)–**Diverted Intake Water: New Intake Structure in Canyon - The increase in diversion will continue to be metered at intake structure. Meter readings will assist with determining the anticipated increase of approximately 875 acre feet per year of diverted intake water. This will be compared to past records to measure performance standards.

- **Water Supply (Basin)–**Estimate Groundwater Recharge: Measure water surface inflow and outflow to estimate groundwater recharge from the inflow to the basin and outflow from Devil's Gate Dam.

- **Water Quality (Canyon)–**Reduce Bacteria in Water Flow: Take bacteriological samples monthly during periods of high use. First sample to be taken prior to construction of restroom to establish the baseline and monthly thereafter during periods of high use.

- **Water Quality (Basin)–**Reduce Amount of Trash and Debris in Basin: Collect and weigh the pounds of trash and debris collected at storm drains as needed.

- **Ecosystem Restoration (Canyon)–**Eliminate Presence of Invasive Non-Native Plants: Annual visual inspection and documentation of required actions to continue suppression of invasive non-native plants.

- **Ecosystem Restoration (Canyon)–**Maintain Optimum Conditions of Fish Movement and Stream Connectivity: Seasonal visual inspection and documentation of optimal water flow through the fish ladders.

These performance measures apply to the benefits identified in the following ways:

- **Water Supply (Canyon)–**Amount of water diverted.

- **Water Supply (Basin)–**Amount of water recharged into groundwater system.

- **Water Quality (Canyon)–**Reduction of bacteria in water system.

- **Water Quality (Basin)–**Reduction of trash and debris in Basin.

- **Ecosystem Restoration (Canyon)–**Eliminate presence of invasive non-native plants.

- **Ecosystem Restoration (Canyon)–**Maintain optimum conditions of fish movement and stream connectivity.

The data will be collected and analyzed as presented below.

- **Water Supply (Canyon)–**Meter data will be used to measure the amount of water diverted.

- **Water Supply (Basin)–**The amount of groundwater will be estimated and tracked.

- **Water Quality (Canyon)–**Bacteria samples will be taken monthly during periods of high use to compare conditions pre and post construction of restroom facilities.

- **Water Quality (Basin)–**The weight and frequency of trash and debris collected will be tracked.

- **Ecosystem Restoration (Canyon)–**Annual visual inspection and documentation of required action to continue mitigation of invasive non-native plants.

- **Ecosystem Restoration (Canyon)–**Seasonal visual inspection and documentation of optimal water flow through the fish ladders.

The monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan in the following ways:

- **Water Supply (Canyon)–**Meter diverted intake water.
- **Water Supply (Basin)–**Estimate groundwater recharge.
- **Water Quality (Canyon)–**Reduce Bacteria in Water Flow: Take bacterialogical samples monthly during periods of high use. First sample to be taken prior to construction of restroom to establish the baseline and monthly thereafter during periods of high use.
- **Water Quality (Basin)–**Reduce Amount of Trash and Debris in Basin: Collect and weigh the pounds of trash and debris collected at storm drains as needed.
- **Ecosystem Restoration (Canyon)–**Eliminate Presence of Invasive Non-Native Plants: Annual visual inspection and documentation of required action to continue mitigation of invasive non-native plants.
- **Ecosystem Restoration (Canyon)–**Maintain Optimum Conditions of Fish Movement and Stream Connectivity: Seasonal visual inspection and documentation of optimal water flow through the fish ladders.

The Project's performance measures, including the goals, desired outcomes, output and outcome indicators, targets, and measurement tools and methods, are presented in Table 6.1.

Table 6.1: Hahamonga Basin Multi-Use Project Performance Measures

Item	Description
Project Goals	1. Optimize use of local water resources to reduce the Region's reliance on imported water. 2. Comply with water quality regulations (including TMDLs) by improving the quality of urban runoff, stormwater, and wastewater. 3. Protect and improve groundwater and drinking water quality. 4. Protect, restore, and enhance natural processes and habitats. 5. Increase watershed friendly recreational space for all communities. 6. Maintain and enhance public infrastructure related to flood protection, water resources and water quality.
Desired Outcomes	1. Replace the diversion dam in the Arroyo Seco canyon with an inflatable dam to restore stream hydrology and increase water diversion for groundwater percolation. 2. Restore Arroyo Seco canyon habitat adjacent to the dam area and nearby trails to foster a healthy riparian environment that promotes water conservation.

Table 6.1: Hahamonga Basin Multi-Use Project Performance Measures

Item	Description
	3. Install fish ladder adjacent to the intake area in the Arroyo Seco canyon to restore stream aquatic connectivity during the full range of seasonal stream flows. 4. Construct a much needed public restroom upstream in the Arroyo Seco canyon with a contained septic system for improved water quality (estimated average use is 150 people /day on weekdays and 1000/weekend). 5. Excavate the collected sediment from behind Devil's Gate Dam to create a designated holding pool for increased infiltration into the Raymond Basin Aquifer. 6. Increase the capacity of the flood control basin so that more storm water can be held behind Devil's Gate Dam for increased ground water recharge/improved water conservation, thereby eliminating the loss of water to the ocean. 7. Raise the base elevation of 11 of SCE's transmission poles (which provide an arm of the region's power grid via the western edge of the Devil's Gate basin to the JPL substation) so that water can be held behind the dam. 8. Restore Berkshire Creek on the westside of the basin; reduce trash/TMDL's entering the basin and the Arroyo Seco stream, utilizing sustainable techniques. 9. Create large open areas above the flood inundation zone for restored Riparian, Sycamore Woodland and Sage Scrub habitats for increased bio-diversity and an enhanced wildlife corridor. 10. Raise portions of regional trail system to be above the frequent flood inundation zone to provide year round recreational trail opportunities. 11. Create 23 acres of open space/parkland by utilizing the sediment removed from behind the dam and placing it above & outside the flood zone.
Output Indicators	1. Water Supply (Canyon) – Amount of water diverted. 2. Water Supply (Basin) – Amount of water recharged into groundwater system. 3. Water Quality (Canyon) – Reduction of bacteria in water system. 4. Water Quality (Basin) – Reduction of trash and debris in Basin. 5. Ecosystem Restoration (Canyon) – Eliminate presence of invasive non-native plants. 6. Ecosystem Restoration (Canyon) – Maintain optimum conditions of fish movement and stream connectivity.
Outcome Indicators	1. Water Supply (Canyon) – Meter data will be used to measure the amount of water diverted. 2. Water Supply (Basin) – The amount of groundwater will be estimated

Table 6.1: Hahamonga Basin Multi-Use Project Performance Measures

Item	Description
	and tracked. 3. Water Quality (Canyon) – Bacteria samples will be taken monthly during periods of high use to compare conditions pre and post construction of restroom facilities. 4. Water Quality (Basin) – The weight and frequency of trash and debris collected at storm drains will be tracked. 5. Ecosystem Restoration (Canyon) – Annual visual inspection and documentation of required action to continue mitigation of invasive non-native plants. 6. Ecosystem Restoration (Canyon) – Seasonal visual inspection and documentation of optimal water flow through the fish ladders.
Measurement Tools and Methods	1. Water Supply (Canyon) – Meter diverted intake water. 2. Water Supply (Basin) – Estimate groundwater recharge. 3. Water Quality (Canyon) – Reduce Bacteria in Water Flow: Take bacterialogical samples monthly during periods of high use. First sample to be taken prior to construction of restroom to establish the baseline and monthly thereafter during periods of high use. 4. Water Quality (Basin) – Reduce Amount of Trash and Debris in Basin: Collect and weigh the pounds of trash and debris collected at storm drains as needed. 5. Ecosystem Restoration (Canyon) – Eliminate Presence of Invasive Non-Native Plants: Annual visual inspection and documentation of required action to continue mitigation of invasive non-native plants. 6. Ecosystem Restoration (Canyon) – Maintain Optimum Conditions of Fish Movement and Stream Connectivity: Seasonal visual inspection and documentation of optimal water flow through the fish ladders.
Targets	1. Improved water supply reliability. 2. Reduction in trash and sediment. 3. Reduction in water quality degradation (due to new restrooms).

IV. Citywide Smart Irrigation Control System and Recycled Water Improvements

The City of Calabasas (City) Citywide Smart Irrigation Control System and Recycled Water Improvements Project (Project) is needed to reduce overwatering of landscaped areas at City facilities, including parks and medians and reduce the use of imported water.

This Project will reduce runoff and its associated contaminants to the local creeks that feed into the Bay. The Santa Monica Bay is a 303(d) listed water body for DDT, debris, PCBs and sediment toxicity, designations caused by nonpoint and point sources. In addition to these contaminants, the Bay has a number of pollutants of concern, including heavy metals, pathogens, and nutrients/sediments. Urban runoff is also a major source of pollutants, such as trash, that enter the Bay. The Dry Canyon and McCoy Creeks, tributaries to the Los Angeles River that discharges to the Los Angeles Harbor), and the Las Virgenes Creek, tributary to the Malibu Creek are a few of the water bodies transporting urban runoff from the City of Calabasas into the Santa Monica Bay.

The Project will upgrade the citywide irrigation system to reduce runoff and total water usage through the design and installation of a smart irrigation control system that provides real-time information on irrigation water demand for each of the many sub-areas delineated throughout the City. Implementation of this Project will reduce dry-weather runoff, which carries pollution to sensitive ecosystems and water bodies.

Several performance measures will be used to quantify and verify the Project performance. These include:

- The first-quarter report will be produced using the first 3 months of data after project is implemented. Data will be sourced from irrigation meter readings, main computer information and number of sites and controller/sprinklers installed.
- The final report will be produced using the first 12 months of data after project is implemented. Data will be sourced from irrigation meter readings, main computer information and number of sites and controller/sprinklers installed.
- The monitoring plan will give numbers associated with water usage. City staff will collect water usage data from smart control computer and LVMWD meter readings.

These performance measures apply to the benefits identified in the following ways:

- The major function of this project is to reduce water consumption at various at City parks, medians and parkways. The monitoring plan and quarterly/final reports will quantify water savings once smart irrigation control system is put into place.

The data will be collected and analyzed as presented below.

- The data will be collected from main smart controller and water usage data obtained from water meters.
- Comparison of baseline data (current water usage as specific meters) compared to meter data after project is put into place.

The monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan in the following ways:

- One of the major goals outlined in the IRWM plan is conservation of water resources. This project would enhance water conservation category and improve water quality by reduction of urban runoff discharge into storm drains and eventually the Malibu Creek and Los Angeles River Watersheds.
- One of the major goals outlined in the IRWM plan is reduction of dry- and wet-weather runoff. Implementation of this Project will reduce dry-weather runoff, which carries pollution to sensitive ecosystems and water bodies.

The Project's performance measures, including the goals, desired outcomes, output and outcome indicators, targets, and measurement tools and methods, are presented in Table 6.2:

Table 6.2: City-wide Smart Irrigation Control
Park Water Replacement Performance Measures

Item	Description
Project Goals	The smart irrigation controller system proposed is designed to provide real-time information on irrigation water demand for each of the many sub-areas delineated throughout the City's system. These areas include city parks, sidewalks and street medians.
Desired Outcomes	Decreased water usage at specific sites throughout city, which is estimated at a 25% reduction at applicable sites or 110 AF/Y
Output Indicators	Data collected from main computer and water usage gathered from Las Virgenes Municipal Water District.
Outcome Indicators	Water usage data once system is on-line will be compared to baseline data. This will give irrigation reduction numbers.
Measurement Tools	Measurements will be calculated in Acre Feet. This data will come

Table 6.2: City-wide Smart Irrigation Control
Park Water Replacement Performance Measures

Item	Description
and Methods	from meter readings as well at information from main smart control computer system.
Targets	Targeting an approximate reduction in water usage of 25% at specific installation sites, which translate into 110 AF/Y.

V. Storm Drain Improvements and Installation of Infiltration Chambers on Hawthorne Blvd

The Storm Drain Improvements and Installation of Infiltration Chambers Project (Project) serves an area of approximately 300 acres, 1,150 residents, and the route along which 50,000 vehicles travel on a daily basis. During periods of intense rainfall, local residents and businesses experience flooded streets, sidewalks and driveways that create major traffic congestion, delays to local and regional bus service, and negative economic impacts to businesses in the affected areas.

This Project will install drainage improvements in the City of Hawthorne along a one-mile stretch of Hawthorne Boulevard between El Segundo Boulevard and Rosecrans Avenue to improve flood management and install filtering devices to enhance the quality of storm drain runoff. Permanent Best Management Practices (BMPs), including hydrodynamic separators, trash screens and infiltration chambers will be installed, bringing this area into compliance with State and Federal stormwater quality requirements and reducing local area flooding. These BMPs will treat total suspended solids (TSS), soluble metals, oil, grease, trash, and suspended solids.

Several performance measures will be used to quantify and verify the Project performance. These include:

- Groundwater surcharge from infiltration chamber: Around 30,000 CF chamber will surcharge the groundwater thru permeable layer.
- Initial polluted water filtration: First ¾" polluted storm water will be filtered and discharged to underground.
- Minimize local flooding and traffic accidents: Peak runoff will be reduced during light rainfall such as Q2 years or Q5 years.

These performance measures apply to the benefits identified in the following ways:

- The chamber system has an integrated monitoring system. The performance of chamber will be verified and checked by the storm water level.

The data will be collected and analyzed as presented below.

- For groundwater surcharge, an inspector will be able to check Stormwater level after rainfall event.

- An inspector will take filter media samples such as gravel or sand in time period and measure containments with lab test. Also replacement of filter media based on manufacturer's recommendation.

The monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan in the following ways:

- If the lab test results show different level of contaminations the system performs properly.

The Project's performance measures, including the goals, desired outcomes, output and outcome indicators, targets, and measurement tools and methods, are presented in Table 6.3.

Table 6.3: Storm Drain Improvements & Infiltration Chambers on Hawthorne Blvd Performance Measures

Item	Description
Project Goals	Minimize peak runoff and improve groundwater quality
Desired Outcomes	1. Decreased runoff 2. Increased groundwater supply 3. Improved groundwater quality
Output Indicators	1. Measurement of water levels within chambers. 2. Collection and analyses of filter media samples.
Outcome Indicators	1. Groundwater recharge calculations will provide increased water supply quantities. 2. Filter media data will be used to estimate improvement in water quality.
Measurement Tools and Methods	Physical water level check and lab testing
Targets	1. Reduced groundwater pollution. 2. Reduced pollutant discharge to ocean.

VI. Penmar Water Quality and Runoff Reuse Improvement Project

The Penmar Water Quality Improvement and Runoff Reuse Project (Project) will reduce the amount of dry and wet weather runoff discharged into the Santa Monica Bay (Bay) by capturing and treating dry and wet weather for irrigation at the Penmar Golf Course, Penmar Park and Recreation Center (and the City of Santa Monica's Marine Park as a separate project). By using local, treated dry and wet weather for irrigation, dependence on imported water will be reduced through the implementation of this Project.

Several performance measures will be used to quantify and verify the Project performance. These include:

- Water quality improvements will be measured by the volume of dry and wet weather runoff captured and treated. Benefits will also be measured by the number of bacterial exceedences at the beach at the storm drain outlet.
- Water supply benefits will be measured by the volume of stormwater used for irrigation at Penmar Golf Course and Pennmar Park and Recreation Center and the reduction in use of potable water for irrigation.

The data will be collected and analyzed as presented below.

- The pump station SCADA system will record the volume of runoff captured as a function of the pumping rate and duration. The information can be verified using the level reading in the underground tank.
- The bacterial exceedences at the beach will be compared against the probability of an exceedence in the TMDL Model.
- Water reuse will be monitoring through the treatment system SCADA system measuring flow rates.
- Potable water use reduction will be measured using the water bills from the Penmar Golf Course and Penmar Park and Recreation Center to show reduction in potable water use for irrigation over current usage.

The monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan in the following ways:

- The flow rates and capture volumes determined from the pump station SCADA system and the comparison of actual bacterial exceedences at the beach will be compared

against the TMDL model for exceedences that represents the watershed without the project.

- Water meter readings will be used to calculate the reduced water volume demand due to the use of treated storm water for irrigation. This volume will help reach the goal of reducing the use of imported water supply.

The Project's performance measures, including the goals, desired outcomes, output and outcome indicators, targets, and measurement tools and methods, are presented in Table 6.6.

Table 6.6: Penmar Water Quality Improvement and Runoff Reuse Project Performance Measures

Item	Description
Project Goals	1. Optimize use of local water resources to reduce the Region's reliance on imported and local (groundwater) potable water. 2. Comply with water quality regulations (including TMDLs) by improving the quality of urban runoff and stormwater.
Desired Outcomes	Reduced potable water demand for irrigation and reduced runoff discharged into Santa Monica Bay.
Output Indicators	Water meter readings, Pump Station Flow Data, Bacteria Exceedences at Beach.
Outcome Indicators	Water meter readings, Pump Station Flow Data, Bacteria Exceedences at Beach.
Measurement Tools and Methods	Water meter readings, Pump Station Flow Data, Bacteria Exceedences at Beach.
Targets	Reduce potable water demand and increase potable water supply by a minimum of 100 acre-feet through the use of treated storm water and reduce urban runoff discharged into Santa Monica Bay by the 200 acre-feet.

VII. Model Equestrian Center Project

An estimated 1,000 horses are kept on residential properties within equestrian overlay zones and in equestrian centers on the Palos Verdes Peninsula. Runoff from these properties discharges via open channels and storm drains either to Machado Lake in the Dominguez Watershed or to the southern portion of Santa Monica Bay. Though the scale of the impact of equestrian activities on the surrounding watersheds is not known at this time, monitoring plans that will be put into place will estimate the nutrient loading equestrian activities contribute to downstream water bodies.

The Model Equestrian Center project (Project) will modify the existing municipal Peter Weber Equestrian Center, a 7.5 acre facility that houses 116 horses, to create a public demonstration site for environmentally sustainable horse-keeping practices that improve the quality of storm water and other runoff. A portion of the Peter Weber Equestrian Center is located on the decommissioned Palos Verdes Landfill; therefore, special measures will be required to control runoff from the site.

Several performance measures will be used to quantify and verify the Project performance. These include:

- Beneficial use of rainfall and reuse of potable water supply measured through the volume of rainfall retained onsite in cisterns and rainfall events that produce no runoff from new facility area.
- Improve water quality and comply with TMDLs will be measured through a reduction in monthly and annual potable water supply used at the facility.
- Enhance native habitat and connectivity is achieved through native plantings pre- and post-project.
- Enhance open space and recreation opportunities through three measures: pony camp participation, board facility usage, and use of the facility by horse trainers for instruction.

These performance measures apply to the benefits identified in the following ways:

- Rainfall that is captured in cisterns reduces wet weather runoff from the facility which carries pollutants to receiving waters while at the same time reducing demand for potable water supply for wetting down arenas and irrigation by the facility.

- Flow monitoring from the new facility will be used to document the rainfall event that is retained on site thereby eliminating discharge of pollutants from the new area of the facility during such rain events.
- Reducing pollutant loading, specifically Total Nitrogen and Total Phosphorous along with sediment, in runoff discharging to Machado Lake which is subject to Nutrient TMDL (Total N, Total P) will assist in achieving water quality objectives.
- Reduction in metered water usage from the facility will document beneficial use of rainwater and reuse of wash water.
- Measurement of area of established native plants pre-and post-project will document the native habitat benefit.
- Revenues from boarding fees, pony camp and trainer fees will document increased recreational use of the facility.

The data will be collected and analyzed as presented below:

- The volume of water stored in the cistern following rainfall events will be recorded using water level indicator and analyzed.
- Grab samples collected during wet weather events to be analyzed for Total Phosphorous and Total Nitrogen consistent with methods established in the Palos Verdes Peninsula Coordinated Monitoring Plan for Compliance with the Machado Lake Nutrient TMDL.
- The volume of rainfall harvested and wash water reused annually will be measured.
- The size of the rainfall event which produces no runoff from the facility will be recorded.
- Measured runoff flow from the new area of the facility will utilize a continuous flow monitoring device to be sited based on project design and hydrologic study (location to be determined as part of design).
- Water quality samples will be collected from the retrofit area from outlet of bioswales.
- Monthly water bills provide usage rates for comparison of pre- and post-project water use at the facility.
- Photo documentation pre-and post-project will be utilized to document native plant establishment.

- Annual revenues from boarding fees, pony camp and trainer fees are separate line items tracked in City Equestrian Fund.
- Comparison of potable water usage pre- and post-project based on separate water meter for the equestrian center will document potable water use reduction.
- Photos will be collected from the same locations pre- and post-project to document extent of native habitat established.
- Change in annual revenues from boarding fees, pony camp and trainer fees will be tracked as separate line items in City Equestrian Fund.

The monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan in the following ways:

- Rainfall that is captured in cisterns reduces wet weather runoff from the facility which carries pollutants to receiving waters while at the same time reducing demand for potable water supply for wetting down arenas and irrigation by the facility.
- Flow monitoring from the new facility will be used to document the rainfall event that is retained on site thereby eliminating discharge of pollutants from the new area of the facility during such rain events.
- Reducing pollutant loading, specifically Total Nitrogen and Total Phosphorous along with sediment, in runoff discharging to Machado Lake which is subject to Nutrient TMDL (Total N, Total P) will assist in achieving water quality objectives.
- Reduction in metered water usage from the facility will document beneficial use of rainwater and reuse of wash water.
- Measurement of area of established native plants pre-and post-project will document the native habitat benefit.
- Revenues from boarding fees, pony camp and trainer fees will document increased recreational use of the facility.

The Project's performance measures, including the goals, desired outcomes, output and outcome indicators, targets, and measurement tools and methods, are presented in Table 6.5.

Table 6.5: Model Equestrian Center Performance Measures

Item	Description
Project Goals	1. Beneficial use of rainfall and reduction in stormwater runoff. 2. Improve water quality of stormwater runoff from equestrian activity in support of water quality objectives. 3. Reduce reliance on imported water by harvesting rainwater and reusing wash water for irrigation. 4. Maintain open space and use native plants for landscaping and as buffers. 5. Increase watershed friendly recreational space for the community.
Desired Outcomes	1. Reduce wet weather runoff from new facility area. 2. Reduce pollutant loads in wet weather runoff from retrofit area. 3. Reduce use of purchased potable water at the facility. 4. Create native habitat buffers for dust control and water quality mitigation. 5. Increase in use of equestrian center facilities.
Output Indicators	1. Water quality monitoring data from retrofit areas. 2. Runoff flow from new facility area, if any. 3. Potable water service use—monthly. 4. Area of established native plants.
Outcome Indicators	1. Measured rainfall beneficially used and runoff flow from new facility area. 2. Reduction in nitrogen and phosphorous concentrations in runoff from retrofit area. 3. Reduction in monthly and annual potable water usage by the facility. 4. Area of established native plants at project completion and one year later. 5. Pony camp participants, boarding facility use, and number of trainers using facility.
Measurement Tools and Methods	1. Evaluate size of rainfall event up to which runoff is retained on site and volume collected in cisterns. 2. Results of wet weather water quality monitoring. 3. Comparison of water meter usage at facility post-project with pre-project data. 4. Pre- and post project native planting area. 5. Tracking of pony camp participants, horse boarding, and trainer use of facility.
Targets	1. Retain ¾ inch rainfall event on site.

Table 6.5: Model Equestrian Center Performance Measures

Item	Description
	2. 50% reduction in nitrogen and phosphorous concentrations in runoff from retrofit area. 3. 30% reduction in potable water use at the facility. 4. 1.25 acres of established native plants at project completion and one year later. 5. Increase pony camp revenues by 30%, increase trainer revenues by 50%, increase boarding fee revenues by 20%.

VIII. 16th Street Watershed Runoff Use Project

The 16th Street Watershed Runoff Use Project (Project) will reduce the amount of stormwater runoff discharged into the Santa Monica Bay (Bay) by using the water from the City of Los Angeles' Penmar Water Quality Improvement and Runoff Reuse Project (Penmar Project) for irrigation at the City of Santa Monica's Marine Park.

The Project will also reduce the demand for imported water by utilizing treated stormwater for irrigation purposes. The Project will convey dry- and wet-weather runoff treated at the Penmar Project to the City of Santa Monica's Marine Park.

The performance measure that applies to this Project is described below. This performance measure applies to the benefits identified as follows:

- Installing a water meter on the discharge pipe from the storm water tanks will allow for measurements of actual quantity of treated storm water that was used for irrigation and equates to the quantity of potable water that was conserved for other uses and the quantity of polluted runoff kept out of the Santa Monica Bay.

The data will be collected and analyzed as presented below.

- The storm water meter will be read and logged on a regular basis as the potable water meters are being read. Map of proposed water meter location has been uploaded to the FTP site.
- Water usage read from the meter will be compared to the annual volume of potable water saved as listed in the economic template.
- Water usage read from the meter will be a direct indication of how much runoff was kept out of the Santa Monica Bay.

The monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan in the following ways:

- Water meter readings will be used to calculate the reduced water volume demand due to the use of treated storm water for irrigation. This volume will help reach the goal of 800,000 acre-feet/year of additional water supply and demand reduction through conservation.

The Project's performance measures, including the goals, desired outcomes, output and outcome indicators, targets, and measurement tools and methods, are presented in Table 6.6.

Table 6.6: 16th Street Watershed Runoff Use Demo Project Performance Measures

Item	Description
Project Goals	1. Optimize use of local water resources to reduce the Region's reliance on imported and local (groundwater) potable water. 2. Comply with water quality regulations (including TMDLs) by improving the quality of urban runoff, stormwater and wastewater. 3. Protect, restore and enhance natural processes and habitats. 4. Maintain and enhance public infrastructure related to flood protection, water resources and water quality.
Desired Outcomes	Reduced potable water demand and reduced runoff discharged into Santa Monica Bay.
Output Indicators	Water meter readings.
Outcome Indicators	1. Water meter readings will be compared to current water usage to estimate reduction in imported/local potable water. 2. Water meter readings will indicate reduction in runoff discharge to Santa Monica Bay.
Measurement Tools and Methods	Water meter reading compared to previous use data.
Targets	Reduce potable water demand and increase potable water supply by a minimum of 70 acre-feet over 20 years through the use of treated storm water and reduce urban runoff discharged into Santa Monica Bay by the same amount.

IX. Surface Water Treatment Plant Improvements Project

The Covina Irrigating Company (CIC) is a water wholesaler that operates the Temple Water Treatment Plant (TWTP). The TWTP receives its water supply from a combination of local water from the San Gabriel River and imported water from the Metropolitan Water District of Southern California (MWD) through its turnout, USG-3, located just below Morris Dam.

The CIC Surface Water Treatment Plant Improvement Project (Project) is needed to improve the Temple Water Treatment Plant's (TWTP) ability to meet new federal water quality standards. Current treatment technology at the TWTP cannot sufficiently treat water diverted from the San Gabriel River to meet new water quality regulations. This project will expand use of local water resourced and reduce demand for imported water.

The Project consists of improvements to the TWTP, specifically the incorporation of UV reactors and chloramination equipment to control DBP formation and prevent pathogen contamination of finished drinking water. TWTP currently cannot reduce Trihalomethane (THM) precursors or carcinogenic DBPs to a level sufficient to meet Stage 1 and the future Stage 2 DBP Rules. The UV reactor and chloramination equipment is essential to keep the facility on-line and in compliance.

Several performance measures will be used to quantify and verify the Project performance. These include:

- With the Stage II DPB Rule on the horizon, the Temple Plant will no longer be able to comply with Water Quality Regulations, forcing the 6 retailers served to purchase more expensive and less available imported water.
- Implementation of the UV aspect of the project will enable the Temple Plant to produce water with lower levels of disinfection by-products, namely Tri-Halo-Methanes and Halo-Acetic Acids. Further, implementation of the Chloramine aspect of the project will limit the escalation of disinfection by-products in the systems of the retailers served.
- Implementation of the UV aspect of the project will also provide a potent barrier against pathogens that are resistant to free chlorine, the current disinfectant used at the facility, such as Giardia Lamblia and Cryptosporidium.

These performance measures apply to the benefits identified in the following ways:

- With respect to local water produced, current connections between CIC and the 6 retailers served are all metered. These meters are tested on a regularly scheduled basis

to ensure that they are within the prescribed percent error for wholesale water purveyors.

- Currently, Stage I DBP samples are taken quarterly by an independent third party (Stetson Engineers) and will continue to perform this service basin-wide for Stage II. Samples are analyzed at an approved laboratory and results are transmitted to the Purveyor, to Stetson Engineers as the Watermaster appointed monitoring agency, and to the Department of Public Health.

- Under the LT2 Surface Water Treatment Rule, Covina Irrigating Company was required to monitor its raw water source for Cryptosporidium over a two year period (24 monthly samples). While no organisms were detected, the City of Azusa (monitoring the same source water) did observe detection. Another round of monitoring is scheduled for Jan. 2015. UV disinfection has been demonstrated to be effective against Cryptosporidium and other pathogens that are resistant to free chlorine alone.

The data will be collected and analyzed as presented below.

- A map of the 12 metered connections with the 6 retailers served has been uploaded to the FTP site.

- Water supply data will be determined by using 12 existing metered connections.

- Water quality monitoring will be analyzed by accredited laboratories, using approved methods for the constituents in question.

The monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan in the following ways:

- The project proposed is directly in line with 2 Objectives set forth in the IRWMP, namely: Increase local water supply reliability and Comply with Water Quality Regulations. The monitoring data collected will be compared to historical data for both water quality and quantity delivered, which would otherwise not be possible due to non-compliance issues.

The Project's performance measures, including the goals, desired outcomes, output and outcome indicators, targets, and measurement tools and methods, are presented in Table 6.7.

Table 6.7: Surface Water Treatment Plant Improvements Performance Measures

Item	Description

Project Goals	1. Optimize use of local water resources to reduce the Region's reliance on imported water. 2. Comply with water quality regulations (including TMDLs) by improving the quality of urban runoff, stormwater, and wastewater.
Desired Outcomes	Improve water quality and reliability of a vital local resource.
Output Indicators	1. Water produced, treated and used over time. 2. Water quality improved and regulations complied with.
Outcome Indicators	Upgraded facility will enable local water purveyor to remain in operation, even in challenging raw water conditions, and producing optimally.
Measurement Tools and Methods	Water meters and water quality analytical methods.
Targets (Measureable targets that are feasible to meet during the life of the project)	Production of up to 12,000 A.F/yr of high quality water, meeting and exceeding all water quality regulations.

X. Central LA County Regional Water Recycling Program

The Central Los Angeles County (CeLAC) Regional Water Recycling Program (Program) was developed by a four-agency collaboration between Glendale Water and Power (GWP), Los Angeles Department of Water and Power (LADWP), Pasadena Water and Power (PWP), and Foothill Municipal Water District (FMWD) to expand the existing regional non-potable system as well as to develop a groundwater recharge project. The Program is intended to further decrease the Region's dependence on imported supplies by 450 AFY and, potentially, an additional 2,700 AFY while expanding the beneficial use of the Plant's tertiary treated supply.

Phase 1a (Project) consists of two components: the Griffith Park South Water Recycling Project (Griffith Park Project) and the Groundwater Replenishment (GWR) Facilities Planning Study (GWR Study). The Griffith Park Project will replace 450 AFY of imported water used for irrigation at the Roosevelt Golf Course with recycled water from the Plant. The Griffith Park Project will also improve the operational efficiency of the existing recycled water distribution system by adding one million gallons of storage. The GWR Study will determine the feasibility of storing up to 2,700 AFY of recycled water from the Plant through groundwater recharge. If feasible, this amount of recharge will reduce the need for an equal amount of imported water.

The performance measure used to quantify and verify the Project performance includes:

- Customer water meters measure the amount of potable water and recycled water the customer uses from each service connection, and the meters are usually read once a month or once every two months for billing purposes. The customer water meter reads from of the Griffith Park South Water Recycling Project will be used to determine how much recycled water is being used each year after the pipeline is in service.

The performance measure applies to the benefits identified in the following ways:

- Currently the Roosevelt Golf Course and other irrigation customers in the Griffith Park South area are serviced with potable water by LADWP. LADWP imports about 89 percent of its water service, while only 10 percent is from local groundwater and 1 percent is from local recycled water. By converting the Roosevelt Golf Course and other irrigation customers from potable water to local recycled water from the Griffith Park South Water Recycling Project, it will help to optimize use of local water resources to reduce the Region's reliance on imported water. Customer recycled water meters off of the Griffith Park South Water Recycling pipeline will be used to determine how much imported potable water was displaced by recycled water.

The data will be collected and analyzed as presented below.

- Data will come from monthly water bills. Currently the Roosevelt Golf Course is being serviced potable water for both domestic and irrigation. The irrigation meter has the following location information.
  - Service number – 557271.
  - Meter number – 96101432.
  - Location description of meter – South side of Commonwealth Cyn Dr, 209 feet East of East Vermont Cyn Dr. L/N.

The monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan in the following ways:

- Increasing the usage of Recycled Water.
- Reducing local dependence on imported water.

The Project's performance measures, including the goals, desired outcomes, output and outcome indicators, targets, and measurement tools and methods, are presented in Table 6.8.

Table 6.8: Central LA County Regional Water Recycling Program Performance Measure

Item	Description
Project Goals	Optimize use of local water resources to reduce the Region's reliance on imported water.
Desired Outcomes	Offset 450 to 515 AFY of imported potable water with local recycled water.
Output Indicators	Monthly water meter reads from recycled water bills of customers serviced off of the Griffith Park South Water Recycling Project.
Outcome Indicators	Monthly water meter reads from recycled water bills of customers serviced off of the Griffith Park South Water Recycling Project will indicate the amount of imported water that was offset by local recycled water.
Measurement Tools and Methods	Water meters, Neptune HP Turbine Meter.

Table 6.8: Central LA County Regional Water Recycling Program Performance Measure

Item	Description
Targets	1. 450 AFY in first full year of service scheduled for 2014.Up to 515 AFY when more customers are added by 2019. 2. Up to 2,700 AFY groundwater recharge, if GWR study determines the project to be feasible.

XI. Tujunga Spreading Grounds Enhancement Project

The Tujunga Spreading Grounds (TSG) Enhancement Project (Project) is proposed to increase stormwater capture at the TSG, enhance local groundwater water supplies in the San Fernando Basin (Basin), and improve the quality of groundwater and surface water downstream of the TSG. The Project also proposes to provide open space, recreational and educational opportunities at the TSG as a benefit to the surrounding disadvantaged community (DAC).

The TSG is owned by the Los Angeles Department of Water and Power (LADWP) and has been operated by the Los Angeles County Flood Control District (LACFCD) since 1990. TSG consists of 17 shallow basins designed to recharge the Basin. The Basin's aquifer is contained by the Santa Monica Mountains to the south, the Simi Hills to the west, the Santa Susana Mountains to the northwest, and the San Gabriel Mountains and Verdugo Hills to the northeast. The Basin's aquifer is located within the Los Angeles River Watershed in Los Angeles County.

Several performance measures will be used to quantify and verify the Project performance. These include:

- Maximizing the local water supply is the primary goal of this project. By combining and deepening existing spreading basins, larger amounts of stormwater will be able to be captured. The additional intake structure will enable capture of additional stormwater from the Pacoima Diversion Channel.

- The Project minimizes potential flooding downstream of the project site by reducing wet weather peak flows. The improvements will allow a substantial portion of stormwater runoff to be captured during a heavy rain event, thus preserving flow capacity in the Tujunga Wash Channel and LA River.

- The City's Bureau of Sanitation has been tasked with reducing the TMDL for the stated contaminants. This project will aide in the reduction of such TMDL levels by minimizing the amount of contaminated stormwater runoff that reaches the LA River. At the spreading basins, dry-weather flows (typically the most contaminated) will be taken into the low-flow basin for natural filtration processes.

- The benefits from increased educational and recreational opportunities through enhanced environmental restoration are difficult to measure. The benefits derived from such activities would enhance the quality of life for the neighboring residents.

These performance measures apply to the benefits identified in the following ways:

- Electronic gauges strategically located throughout the intake structures and basins will record the volume of water being capture and infiltrated into the groundwater basin.
- Readings from the electronic gauges will be used to estimate the amount of diverted from the flood control channels.
- Water quality samples will be taken in the LA River to determine the amount of TMDLs and analyze the Project's effects.
- Current area of open space will be measured against additional open space that might be created by the project. Visitors to the area will be tabulated for additional education and recreational usage.

The data will be collected and analyzed as presented below.

- Several data collectors will be located throughout the facility.
- Stormwater capture volumes will be compared against baseline average years' data prior to the improvements.
- Stormwater samples would be analyzed for trash, nitrogen, and heavy metals pollutants.

The monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan in the following ways:

- Increasing local water supply resources.
- Improvement in water quality.

The Project's performance measures, including the goals, desired outcomes, output and outcome indicators, targets, and measurement tools and methods, are presented in Table 6.9.

Table 6.9: Tujunga Spreading Grounds Improvements Performance Measures

Item	Description
Project Goals	1. Enhance local water supplies through increased capture of stormwater and recharge of the San Fernando Groundwater Basin (SFB). 2. Alleviate local flooding and improve downstream water quality by capturing and infiltrating stormwater that would otherwise be diverted to the storm drain system. 3. Continue implementation of watershed management approach, which emulates and preserves the natural

	hydrologic cycle by taking a polluted product – urban runoff – and turning it into a valuable local resource for reuse. 4. Increase educational and recreational opportunities for the local community to raise awareness of watershed issues and encourage environmental stewardship.
Desired Outcomes	Meet and exceed each goal.
Output Indicators	Implementation of data collectors to effectively track to influent volumes and sample for quality.
Outcome Indicators	1. Increased groundwater levels. 2. Physical drop in localized and downstream flooding. 3. Cleaner downstream water samples. 4. Increased community awareness in water resources, water quality and natural habitats.
Measurement Tools and Methods	1. Monitoring systems using remote telemetry to gage water flow and volumes. 2. Monitoring visitors.
Targets	1. The Project targets to double the current stormwater infiltration amount of 8,000 ac-ft/year. 2. Quantifiable drop of TMDLs for trash, Nitrogen, heavy metals in the LA River (Tujunga Wash Channel is a tributary to the LA River) as required by the state.

XII. San Antonio Spreading Grounds Improvements

The Three Valleys Municipal Water District (TVMWD), a member agency of the MWD, serves drinking water to customers in eastern San Gabriel Valley. The San Antonio Spreading Grounds Improvements Project (Project) would recharge surplus imported water at the San Antonio Spreading Grounds and increase dilution of contaminants within the Six Basins groundwater basin.

Six Basins is an adjudicated groundwater basin located in eastern Los Angeles County and western San Bernardino County. Six Basins is comprised of the Canyon, Upper and Lower Claremont Heights, Pomona, Live Oak and Ganesha Sub-basins. These six sub-basins underlie the cities of Claremont, La Verne, Pomona and the northern portion of the City of Upland. The Basin is managed by the Six Basins Watermaster, a group of nine local agencies. The TVMWD, which provides administrative and technical support to the Six Basins Watermaster, is the lead agency on this project.

The San Antonio Spreading Grounds are one of four spreading grounds which recharge Six Basins, utilizing both imported and local surface water supply. Local surface water supply is obtained from San Antonio Creek, which runs past the San Antonio Spreading Grounds. The Project will provide a pipeline to spread surplus imported water for conjunctive use within the San Antonio Spreading Grounds.

Several performance measures will be used to quantify and verify the Project performance. These include:

- Based on MET (MWDSC) replenishment water availability, TVMWD will measure the AFY spread to offset the delta between the MA's (member agencies' / pumpers) production rights & demand, to available groundwater supplies within TVMWD's service area (Six Basins area). Spreading performance measures will be determined by metering the replenishment water discharged from this proposed facility. MA production rights, demand, and available groundwater supplies will be measured by the governing Six Basins Watermaster board within the service area.

- Given the time & resource restrictions, it would be very difficult to quantify drinking water quality, but through expediting groundwater recharge via spreading available replenishment water, the existing nitrate (& other contaminant) levels will be improved (diluted) within the Six Basins area. Given the time & resource restrictions, it would be very difficult to quantify drinking water quality, but through expediting groundwater recharge via spreading available replenishment water, the existing nitrate (& other contaminant) levels will be improved (diluted) within the Six Basins area.

- The proposed project's approval and construction will help maintain the "Open Space" zoning, reducing the likelihood of future development of the existing Riversidean Alluvial Fan Sage Scrub (RAFSS) habitat. Measurement will be accomplished by ongoing environmental mitigation monitoring of the Riversidean Alluvial Fan Sage Scrub habitat.

- Maintain zoning that allows spreading replenishment water to recharge the local (Six Basins) groundwater aquifers, thus diminishing local demand for treated import water. See G-4 for water quality performance measures. Maintain zoning that allows spreading replenishment water to recharge the local (Six Basins) groundwater aquifers, thus diminishing local demand for treated import water. See G-4 for water quality performance measures.

These performance measures apply to the benefits identified in the following ways:

- There are various monitoring wells within the Six Basins area, seven of which will likely be affected by spreading available MET replenishment water, due to their "downstream" location from the SASG (San Antonio Spreading Grounds).

The data will be collected and analyzed as presented below.

- TVWMD gathers and maintains local groundwater level data for the Six Basins area in its SCADA (supervisory collection and data acquisition) system. This data is obtained through the various monitoring wells located throughout the Six Basins area. Figure 6-X illustrates the locations for monitoring wells locations downstream of SASG.

- The water spread from the proposed project will be collected with groundwater levels analyzed and graphically depicted using hydrograph charts for the Six Basins area. Amount spread will be determined based on groundwater annual storage capacity, local demand, and available MET replenishment water.

The monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan in the following ways:

- Measuring the proposed project's performance via monitoring well data will help gauge the project's progress toward water resource enhancements to reduce dependence on imported water supplies. The project will be considered successful when the delta between pumpers' demand and annual production allocation is met through spreading the available MET replenishment within the SASG. Meeting this objective would satisfy Import Water Supply objective listed in Table 3-1, Section 3, of the Greater Los Angeles County Region IRWMP.

- It is difficult to quantify the groundwater & potable water quality improvement benefits, but dilution is an accepted method of groundwater quality improvement to reduce undesirable constituents, such as nitrates, thus meeting Table 3-1 objective to improve water quality.

- The ongoing environmental mitigation monitoring that will continue for two years after project completion to measure the successful maintenance RAFSS habitat, satisfying the Enhance Habitat objective of Table 3-1.

The Project's performance measures, including the goals, desired outcomes, output and outcome indicators, targets, and measurement tools and methods, are presented in Table 6.10.

Table 6.10: San Antonio Spreading Grounds Improvements Performance Measures

Item	Description
Project Goals	1. Add 15,000-AF of surplus raw-import water to reduce dependence on Metropolitan Water District of Southern California's (MET) firm-treated import water. 2. Provide sustainable management of groundwater basins, local, & state water supplies. 3. Improve groundwater quality in the Six Basins through dilution. 4. Maintain sensitive Riversidean Alluvial Fan Sage Scrub (RAFSS) habitat, a very limited ecosystem as Open Space, as is currently required under Claremont City's Open Space zoning designation.
Desired Outcomes	1. Meet area pumpers' production demand within their allocation rights as prescribed by Six Basins Adjudication, with available replenishment water recharged into the Six Basins area SASG. 2. Obtain positive qualitative feedback from the pumpers regarding their respective production water quality, in reducing the existing nitrate levels within the Six Basins area. 3. Through the environmental mitigation monitoring program, observe and document stable growth of existing fauna & flora within the existing Riversidean Alluvial Fan Sage Scrub (RAFSS) habitat. 4. Expansion of available turnouts to spread available replenishment water into local (Six Basins)

Table 6.10: San Antonio Spreading Grounds Improvements Performance Measures

Item	Description
	groundwater aquifers, therefore documenting the reduced local demand for treated import water. See G-4 for water quality.
Output Indicators	1. Utilize the project pipeline metering and various monitoring wells that will be affected by the spreading activities, to track the reach of water spread to local area pumpers. 2. Ongoing environmental mitigation monitoring to track the stability of the RAFSS habitat maintained from the open space zoning.
Outcome Indicators	1. Utilize the (same) project pipeline meters and various monitoring wells that will be affected by the spreading activities, to measure the result of water spread to local area pumpers. 2. Quarterly environmental mitigation monitoring report to document the health and stability of the RAFSS habitat.
Measurement Tools and Methods	1. Pipeline meters and various monitoring wells within the SASG & Six Basins area. 2. Quarterly environmental mitigation monitoring reports.
Targets	1. Consistently meet pumper demand with their allocated production rights with the Six Basins area. 2. Measure local growth of fauna & flora unique to the RAFSS is stable or improves.

XIII. Leo J. Vander Lans Advanced Water Treatment Plant Expansion

The Leo J. Vander Lans Advanced Water Treatment Plant Expansion Project (Project) proposes to expand the existing treatment capacity at the Plant to produce an additional 4,000 acre-feet per year (AFY) of high quality advanced treated recycled water. The new supply will be used to maintain a seawater intrusion barrier in the West Coast Groundwater Basin and replace imported water that is currently injected into the Barrier. The Project will provide a sustainable and drought-resistant local water supply for groundwater recharge and will also increase the reuse of wastewater effluent in the Greater Los Angeles County Region (Region), thereby decreasing the amount of effluent discharged into the Pacific Ocean.

Several performance measures will be used to quantify and verify the Project performance. These include:

- **Water Supply/Water Quality—**Injection of recycled water at the seawater barrier will directly conserve 4,000 AFY (tertiary effluent discharged to ocean) to increase quantity and quality of local potable supply. The injected water will supply the barrier (seawater intrusion best management practice) to prevent saltwater contamination, reduce salinity of groundwater, and be stored in the aquifer for future water supply.
- **Avoided Supply Shortage—**Offset to imported water usage is calculated as AFY of recycled water produced (equivalent to AFY of imported water not purchased).
- **Avoided Conveyance/Treatment Cost—**Calculable using MWD rates (variable over project life).

These performance measures apply to the benefits identified in the following ways:

- **Water Supply/Water Quality and Avoided Supply Shortage—**Total volumetric flow of recycled water produced and injected at the seawater barrier will be metered at the Vander Lans plant. Volume produced as a result of expansion project will be calculated using total metered flow (reported on monthly or other basis) adjusted by ratio of design capacities (expansion phase vs. total after expansion).
- **Avoided Conveyance/Treatment Cost—**Calculate volume of recycled water produced annually (AFY) to offset imported water use, and avoided conveyance/treatment cost using MWD rates.

The data will be collected and analyzed as presented below.

- Total metered flow from Vander Lans plant will be recorded on continuous basis as standard operating procedure.

- Use AFY injected into barrier (calculated from total metered flow adjusted by expansion-phase design capacity ratio) as basis for water and cost savings. (All recycled water produced at Vander Lans is for injection at seawater barrier.)

The monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan in the following ways:

- The IRWM region's reliance on imported water will be reduced by the measured quantity of recycled water produced by this project. The water produced will result in a measurable long-term offset to imported water use and benefit water quality and supply by preventing saltwater contamination, reducing salinity of groundwater, and augmenting local supply via storage of the injected water in the groundwater basin.

- Recycling/desalinating the measured quantity (4,000 AFY) of municipal wastewater will result in water use efficiency quantifiable through avoided conveyance/treatment cost for the equivalent amount of water that would be imported from the Delta (AFY of water recycled is directly equivalent to AFY of imported water not conveyed/ treated/purchased).

- The plant expansion will result in conjunctive management of infrastructure and water resources that will meet multiple IRWM objectives: Federal/regional/local collaboration to increase water use efficiency and maintain lower-cost supply, and development of local infrastructure to replace 4,000 AFY of the IRWM region's imported water demand with a drought-resistant alternative supply for barrier injection and groundwater replenishment in L.A. and Orange Counties.

- Recycling the measured quantity of tertiary effluent will reduce waste discharge to the ocean by a like amount and mitigate urban runoff. Sustained injection of highly treated low-salinity water will contribute to management of groundwater salinity.

The Project's performance measures, including the goals, desired outcomes, output and outcome indicators, targets, and measurement tools and methods, are presented in Table 6.11.

Table 6.11: Leo J. Vander Lans Advanced Water Treatment Plant Expansion Performance Measures

Item	Description
Project Goals	Expand water recycling plant to supply an additional 4,000 AFY for injection at seawater barrier, improving the barrier's reliability and providing long-term reduction of L.A. region's reliance on imported water. Reduce discharge of tertiary effluent and improve quality of urban runoff while improving quantity/quality of groundwater and potable supply. Prevent saltwater intrusion, protect groundwater quality and replenish groundwater basin. Install infrastructure to provide drought-resistant seawater barrier and replenishment supply, to improve reliability of groundwater resources.
Desired Outcomes	1. Short-term: Construct plant expansion. 2. Long-term: After operation begins, inject an additional 4,000 AFY of highly treated recycled water to replace imported water use at seawater barrier.
Output Indicators	1. Short-term: Construction progress reports, expenditures, and deliverables 2. Long-term (after operation begins): 3. Water Supply/Water Quality: Injection of 4,000 AFY of recycled water at the seawater barrier will increase quantity and quality of local potable supply. The injected water will prevent saltwater contamination, reduce salinity of groundwater, and be stored in the aquifer for future water supply. 4. Avoided Supply Shortage: Offset to imported water usage is calculated as AFY of recycled water produced (equivalent to AFY of imported water not purchased). 5. Avoided Conveyance/Treatment Cost: calculable using MWD rates (variable over project life).
Outcome Indicators	1. Short-term: Completion, testing, and acceptance of construction work. 2. Long-term: Offset to imported water use

Table 6.11: Leo J. Vander Lans Advanced Water Treatment Plant Expansion Performance Measures

Item	Description
	calculated as AFY of recycled water produced/injected.
Measurement Tools and Methods	1. Short-term: Periodic progress/status reporting 2. Long-term: Calculate volume of water injected into barrier (AFY) from total metered plant discharge (adjusted by expansion-phase design capacity ratio) as basis for water and cost savings. (All recycled water produced at Vander Lans is for injection at seawater barrier.
Targets	1. Short-term: Complete construction of plant expansion. 2. Long-term: 4,000 AF produced/injected annually

XIV. Whittier Narrows Conservation Pool Project

The Whittier Narrows Conservation Pool Project (Project), sponsored by the Water Replenishment District of Southern California (WRD), will increase the volume of seasonal detention behind the Whittier Narrows Dam (Dam) and conserve and reuse that stormwater to enhance groundwater replenishment in the Central Groundwater Basin (Central Basin) . Historically, the Central Basin has had perennial overdraft problems, which resulted in wells going dry and sea water intrusion contaminating coastal groundwater. The WRD was founded in 1959 to manage the basin and address these issues. WRD is responsible for replenishing the Central Basin and the adjacent West Coast Basin to fulfill the rights of pumpers, and to protect and preserve the Basins' groundwater quality.

Over the last 30 years, replenishment through surface spreading in the two basins has averaged 130,000 acre-feet per year (AFY), of which 25,000 AFY, or 20 percent of the total spread, was imported water, according to the 2010 WRD Engineering and Survey Report.

Several performance measures will be used to quantify and verify the Project performance. These include:

- **Water Supply/Water Quality—**Groundwater recharge and associated soil/aquifer treatment results in an increased quantity and quality of local potable supply. Direct conservation of the captured 1100 AFY that would otherwise be discharged as urban runoff to the ocean.

- **Avoided Supply Shortage—**Offset to imported water usage is calculated as AFY of storm water recharged (equivalent to AFY of imported water not purchased).

- **Avoided Conveyance/Treatment Cost—**calculable using MWD rates (variable over project life).

- **Habitat & resulting Open Space Enhancement—**Retention of additional water for longer duration will result in 100-500 acres of higher quality habitat and surrounding open space. As a CEQA environmental monitoring measure, biological surveys will be conducted during monitoring period after reservoir re-operation.

These performance measures apply to the benefits identified in the following ways:

- Release rates and volumes of water released from Whittier Narrows Dam for capture in the downstream spreading grounds are regularly monitored and documented by Los Angeles County Flood Control District. Calculate volume of water conserved/recharged annually (AFY) to offset imported water use, and avoided conveyance/treatment cost.

- After reservoir re-operation, conduct biological surveys to monitor habitat enhancement.

The data will be collected and analyzed as presented below.

- Los Angeles County Flood Control District monitors/documents releases from the dam as standard flood control operating procedure.
- Release volumes are calculated using flow rates through flow control valves. (Water is released at the recharge rate of the spreading grounds.) Use AFY recharged into groundwater basin as a result of increased pool elevation as basis for water and cost savings.

The monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan in the following ways:

- Implementation of this project will reduce the IRWM region's reliance on imported water by the measured amount of storm water captured (1100 AFY on average) for local groundwater basin replenishment.
- Increased storm water capture as a result of reservoir re-operation will result in avoided conveyance/treatment cost (AFY of storm water recharged is directly equivalent to AFY of imported water not conveyed/treated/purchased).
- Conjunctive management of infrastructure and water resources will meet multiple IRWM objectives: Flood risk management, Federal/regional/local water use efficiency, maintain lower-cost supply, and develop sustainable groundwater resources.
- Reuse and recharge of storm water will contribute to management of urban runoff and groundwater salinity.

The Project's performance measures, including the goals, desired outcomes, output and outcome indicators, targets, and measurement tools and methods, are presented in Table 6.12.

Table 6.12: Whittier Narrows Conservation Pool Project Performance Measures

Item	Description
Project Goals	Long-term reduction of L.A. region's reliance on imported water for local groundwater basin replenishment (by 1100 AFY).
Desired Outcomes	1. Short-term (seek approval for re-operation): a. USACE updates feasibility study and environmental documentation to include an option to re-operate Whittier Narrows Dam at 205-ft pool elevation to conserve additional storm water for groundwater replenishment. b. USACE develops the recommended conservation plan for implementing re-operation, a step that is required prior to re-operation. (The proposed conservation project will provide additional sustainable and drought-resistant supply for groundwater recharge, eliminating imported water demand and increasing the quality and reliability of potable supply in southern Los Angeles County). 2. Long-term (after re-operation begins): Recharge an additional 1,100 AFY of storm water and reduce like amount of runoff to ocean, which will yield sustained offset to imported water use, and enhance open space and wildlife habitat for surrounding underserved communities.
Output Indicators	1. Short-term: USACE to complete technical studies and produce updated Feasibility Report to further the implementation of the conservation project. 2. Long-term (after re-operation) a. Water Supply/Water Quality: groundwater recharge and associated soil/aquifer treatment will increase quantity and quality of local potable supply. Direct conservation of the captured 1100 AFY that would otherwise be discharged as urban runoff to the ocean. b. Avoided Supply Shortage: Offset to imported water usage is calculated as AFY of storm water recharged (equivalent to AFY of imported water not purchased). c. Avoided Conveyance/Treatment Cost: calculable using MWD rates (variable over project life). d. Habitat & resulting Open Space enhancement: Retention of additional water for longer duration

Table 6.12: Whittier Narrows Conservation Pool Project Performance Measures

Item	Description
	will result in 100-500 acres of higher quality habitat and surrounding open space. As a CEQA environmental monitoring measure, biological surveys will be conducted during monitoring period after reservoir re-operation.
Outcome Indicators	1. Short-term: USACE to update technical studies and feasibility report (includes recommended plan for implementing re-operation, for USACE management's approval). 2. Long-term: Offset to imported water use calculated as AFY of storm water recharged into basin.
Measurement Tools and Methods	1. Short-term: Periodic progress/status reporting. 2. Long-term: Calculate reservoir release volumes using flow rates through flow control valves. (Water is released at the recharge rate of the spreading grounds.). Monitor total volume released. 3. Habitat: Surveys and visual monitoring.
Targets	1. Short-term: Production of Feasibility Report and recommendation for re-operation. 2. Long-term: 1100 AF recharged annually 3. Determine biological monitoring plan for reservoir re-operation.

XV. Water and Energy Efficiency in the Schools and Hotel/Motel Sectors Program

West Basin Municipal Water District (West Basin) provides imported water supplies, purchased through Metropolitan Water District (MWD), to residents, industries, and businesses in the City of Malibu and the unincorporated Topanga area of the County of Los Angeles. The Water and Energy Efficiency in the School and Hotel/Motel Sectors Program would reduce water consumption in the Area through installation of smart irrigation controllers and water efficient fixtures, thereby decreasing demand for imported water. The reduction of water use would also decrease the amount of energy required to convey and treat imported water supplies from northern California and the Colorado River.

Several performance measures will be used to quantify and verify the Project performance. These include:

- Water and energy savings will be determined through water and energy bill analysis through comparing pre and post installation data.
- Water and energy bill analysis will include comparing the usage and the cost, taking into consideration cost increases over the time period from post-installation to bill analysis.

These performance measures apply to the benefits identified in the following ways:

- The Contractor will review the water and energy bills at 30 to 50 percent of the participating sites post-installation of the devices. They will perform calculations to determine the estimated energy and water savings using a weather-normalizing factor to determine savings as a direct result of the devices.

The data will be collected and analyzed as presented below.

- The data from monthly water and energy bills will be collected and compiled by the Contractor for each participating site.
- Post-installation water and energy usage will be compared against baseline or pre-installation water and energy usage data.

The monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan in the following ways:

- This project will help meet the goal “Optimize use of local water resources to reduce the Region’s reliance on imported water” through proving the reduction of 85 acre-feet per

year of imported water through comparing pre-installation and post-installation water usage on bills.

- This project will help meet the goal "Comply with water quality regulations (including TMDLs) by improving the quality of urban runoff, storm water, and wastewater" by reducing the amount of runoff through the use of a weather-based irrigation controller. It is estimated that runoff is reduced by 70 percent by using a properly functioning weather-based irrigation controller. This estimate was derived from the Metropolitan Water District and this is what is used to provide incentives for large landscapes. The water savings estimate per acre is 105,850 gallons per year. Runoff reduction is estimated at 70 percent of the water savings. Therefore the runoff avoided is (105,850 gallons x 70 percent) 74,095 gallons per year from one controller.

The Project's performance measures, including the goals, desired outcomes, output and outcome indicators, targets, and measurement tools and methods, are presented in Table 6.13.

Table 6.13: Water and Energy Efficiency in the Schools and Hotel/Motel Sectors Performance Measures

Item	Description
Project Goals	1. Reduce the use of water in the project area that is currently served 100% by imported water supplies. 2. Reduce dry weather runoff through the use of a smart irrigation controller that applies only the necessary amount of water to the landscape. 3. Provide water and energy efficient devices to large-scale setting including schools and hotels/motels for greater water/energy savings. 4. Reduce sanitation flow from septic systems through the installation of water efficient devices.
Desired Outcomes	Savings of 85 acre-feet of water per year, potential electricity use of 4.2 million kWh and 214,840 therms of gas savings annually.
Output Indicators	Monitoring of customer water usage in target areas.
Outcome Indicators	The measures to track the water and energy savings will be from comparison of monthly water and energy bills.
Measurement Tools and Methods	1. Water meters. 2. Comparison of post and pre-project water usage by target customers.
Targets	Water savings of 85 acre-feet per year, 1,490 acre-feet per year over the 20-year lifetime. Potential electricity savings of 4.2 million kWh annually, or 26.6 million kWH over lifetime of devices.