

Monitoring, Assessment, and Performance Measures

A Project Performance Measure Table has been developed for each project in the Proposal. Each table provides the following information:

- Project Goals
- Desired Project Outcomes
- Appropriate Project Performance Measures, including:
 - Output Indicators, representing measures to efficiently track outputs¹.
 - Outcome Indicators, representing measures to evaluate change that is a direct result of the project work² and can be linked through a weight-of-evidence approach to the project outputs.
 - Measurement Tools and Methods that will be used to document the project performance.
 - Measurable Targets that can be met during the life of the project.

The proposed performance measures generally consist of output and outcomes indicators and measurable targets that were deemed adequate or feasible based on staff experience and performance measures used on similar projects.

These project performance measures will continue to be refined as the projects continue to be developed and the PAEP for each project created as shown in the schedule for each project. It is anticipated that, as part of this refinement process, more complete performance measures will be defined; for example, the percent reduction on imported water dependence for the Central Basin Southeast Water Reliability Project—which constitutes a measurable target for the project—has not been defined yet, but will be defined in the PAEP. All PAEPs are scheduled for completion and submittal by February 2007 as shown in Attachment 7 and discussed in Attachment 5.

¹ Project output is synonymous with project activity (e.g., concrete structure demolition, herbicide application, treatment facilities construction).

² For example, the result of appropriate herbicide application (project work) can be the restoration of native habitat (outcome).

1. Central Basin Southeast Water Reliability Project

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The Project Performance Measure Table for this project is provided at the end of this section. The performance measures, including quantifiable targets, will continue to be refined as the project is further developed at the PAEP prepared by February 2007.

Adequacy of Selected Output Indicators

The output indicators used to track the progress of the project are as follows:

1. Recycled water usage - This output indicator will provide an accurate account of the amount of recycled water being distributed throughout the system, which translates to the amount of potable water being conserved.
2. Monitoring; water flow volumes are measured to assess the impacts of tertiary wastewater- This output indicator monitors the tertiary treated wastewater that is discharged into the rivers and the recycled water that is distributed to customers throughout the Central Basin service area. This will adequately determine the reduction in wastewater discharged to the San Gabriel River.
3. Potable water usage- This output indicator will determine the potable water savings by monitoring the customer meters to determine the percent reduction due to increased recycled water usage.
4. Additional acre-feet of recycled water supply from local sources- This output indicator will provide information on the percent reduction on imported water and/or other local supplies.
5. Number of acre-feet of new water generated- This output indicator will provide increased local water supply reliability in the Central Basin MWD's service area and a reduced dependence on imported water as more local sources are utilized.

Adequacy of Selected Outcome Indicators

1. Actual recycled water usage- This outcome indicator will provide the actual number of recycled water used in the region, replacing imported water and/or groundwater supplies.
2. Reduction in total wastewater discharges- This outcome indicator will provide the information necessary to determine if the recycled water that is distributed to the users is meeting all water quality standards.
3. Percent decrease in annual actual potable water usage-This outcome indicator will provide the actual volume of potable water used in the region to determine if the use of recycled water has decreased the use of potable water.
4. Percent decrease in annual metered volume of imported water usage- Monitoring the annual reduction in imported water usage will adequately indicate how much local supplies are being used to offset imported supplies. Recycled water will be a component of the local supplies.

Feasibility of Meeting Targets

The feasibility of meeting the targets will depend on the ability to serve recycled water to all identified customers which include landscape irrigation and commercial and industrial users. Because many customers have already been identified, and in particular one large customer in the City of Vernon has already contracted with the Central Basin MWD to receive recycled water the feasibility of meeting these targets is high.

1. Central Basin Southeast Water Reliability Project

Project Performance Measures for 1. Central Basin Southeast Water Reliability Project					
Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
1) Increase regional water supply reliability.	1. Imported and Groundwater supplies savings	1. Recycled water usage	1. Actual recycled water usage	1. Each customer's meter will record the amount of recycled water used.	1. Use approximately 20,000 acre-feet of recycled water annually.
2) Improve water quality.	1. Reduced contaminant loading into the San Gabriel River and the ocean	1. Monitoring; water flow volumes are measured to assess the impacts of tertiary wastewater.	1. Actual reduction in total wastewater discharges	1. This will be part of the normal measurements taken by the Sanitation Districts of Los Angeles County.	1. Targeted amounts of contaminants (ppm)
3) Maximize water recycling and water reclamation	1. Recycled water usage increase 2. Water savings	1. Recycled water usage 2. Potable water usage	1. Actual recycled water usage 2. Actual potable water usage	1. Each customer's meter will record the amount of recycled water used. 2. same as above	1. Targeted % usage of available recycled water. 2. Targeted % reduction in potable water usage.
4) Reduce dependence on imported water supplies.	1. Increased recycled water usage.	1. Additional acre-feet of recycled water supply from local sources.	1. % decrease in annual metered volume of imported water usage.	1. Each customer's meter will record the amount of recycled water used.	1. % reduction on imported water dependence.
5) Increase local water supply reliability.	1. Improved water supply security and reliability.	1. # of acre-feet of new water generated.	1. Actual recycled water usage	1. Each customer's meter will record the amount of recycled water used.	1. Zero water disturbances.

2. JWPCP Marshland Enhancement Project

Monitoring, Assessment, and Performance Measures

The Project Performance Measure Table for this project is provided at the end of this section. The performance measures, including quantifiable targets, will continue to be refined as the project is further developed at the PAEP prepared by February 2007.

Adequacy of Selected Output Indicators

The output indicators used to track the progress of the project are as follows:

1. Remove non-native (exotic invasive) vegetation. This output indicator is deemed adequate because it is measurable (annual field surveys are a standard procedure for monitoring the effectiveness of removing non-native vegetation) and is one of the necessary steps to achieve the project goal of habitat restoration and enhancement.
2. Introduce native plant species. This output indicator is deemed adequate because it is measurable (annual field surveys are a standard procedure for monitoring the effectiveness of removing non-native vegetation) and is one of the necessary steps to achieve the project goal of habitat restoration and enhancement.
3. Construct series of pools. This output indicator is deemed adequate because it is measurable using survey techniques and will help achieve the project goal of habitat restoration and enhancement.
4. Introduce native animal species. This output indicator was discussed as item 2.
5. Construct education and viewing area to the north of the marshland. This output indicator is deemed adequate because it is measurable and focuses on the primary means of achieving the project goal of introducing education and recreation opportunities at the JWPCP marshland.
6. Contact reporter(s). This output indicator is deemed adequate because it is measurable and will help achieve the project goal of introducing education and recreation opportunities at the JWPCP marshland.
7. Monitor marshland inlet and outlet. This output indicator is deemed adequate because it uses EPA methods to measure the desired quantities and is the primary means of achieving the project goal of treating Wilmington Drain runoff water through the marshland.
8. Monitor marshland inlet and outlet. This output indicator was discussed in the above item.
9. Site grading. This output indicator is deemed adequate because it is measurable using survey techniques and focuses on the primary means of achieving the project goal of flood protection.
10. Site grading. This output indicator is deemed adequate because it is measurable using survey techniques and focuses on the primary means of achieving the project goal of aquifer replenishment.
11. Specify use of recycled materials where feasible. This output indicator is deemed adequate because it is a measurable quantity and will require that the construction contractor achieve the project goal of demonstrating the use of recycled materials on the site.
12. Construct storm water swale in education and viewing area parking lot. This output indicator is deemed adequate because it is measurable using survey techniques and focuses on the primary means of achieving the project goal of demonstrating the use of a vegetated swale for storm water control.

Adequacy of Selected Outcome Indicators

The outcome indicators, which will be compared to the project targets to measure the success of the project, are as follows:

2. JWPCP Marshland Enhancement Project

1. Non-native (exotic invasive) vegetation coverage decreases. This outcome indicator is considered adequate because it consists of a measurable quantity (field surveys are a standard procedure for monitoring habitat restoration) that can easily be compared to the project goal, which is to restore and enhance the habitat of the 17-acre JWPCP marshland.
2. Greater amount and diversity of native species. This outcome indicator is considered adequate because it consists of a measurable quantity (field surveys are a standard procedure for monitoring habitat restoration) that can easily be compared to the project goal, which is to restore and enhance the 17-acre JWPCP marshland.
3. New open water habitat. This outcome indicator is considered adequate because it consists of a quantity measurable by surveying techniques and comparison with the existing conditions (no open water habitat) to support the project goal, which is to restore and enhance the 17-acre JWPCP marshland.
4. Use of site by birds and other wildlife. This outcome indicator is considered adequate because it consists on a measurable quantity (field surveys are a standard procedure for monitoring habitat restoration) that can easily be compared to the project goal, which is to restore and enhance the 17-acre JWPCP marshland.
5. School children, club members, and residents visit the marshland. This outcome indicator is considered adequate because it consists of a measurable quantity that can easily be compared to the project goal, which is to introduce education and recreation opportunities at the JWPCP marshland.
6. Article(s) in local newspaper(s). This outcome indicator is considered adequate because it consists of a measurable quantity that can easily be compared to the project goal, which is to introduce education and recreation opportunities at the JWPCP marshland.
7. Decrease in ammonia, copper, lead, and coliform through marshland. This outcome indicator is considered adequate because it consists of measurable quantities that can easily be compared to the project goal, which is to treat Wilmington Drain runoff through the marshland.
8. Decrease in metals (arsenic, cadmium, chromium, nickel, selenium, zinc), BOD, total nitrogen, total phosphorus, suspended solids, and volatile organic compounds. This outcome indicator is considered adequate because it consists of measurable quantities that can easily be compared to the project goal, which is to treat Wilmington Drain runoff through the marshland.
9. Decrease in pollution load. This outcome indicator is considered adequate because it consists of measurable quantities that can easily be compared to the project goal, which is to treat Wilmington Drain runoff through the marshland.
10. Additional amount of storm water storage. This outcome indicator is considered adequate because it consists of a measurable quantity that can be compared to the pre-project amount of storm water storage that will indicate the success of the project goal, which is to provide flood protection.
11. Amount and depth of water at the site. This outcome indicator is considered adequate because it consists of a measurable quantity that can be compared to the pre-project amount and depth of water that will indicate the success of the project goal, which is to provide aquifer replenishment.
12. Amount of recycled materials used. This outcome indicator is considered adequate because it consists of measurable quantities that can easily be compared to the project goal, which is to demonstrate the use of recycled materials on site.
13. Observed storm water runoff at site. This outcome indicator is considered adequate because it consists of a measurable quantity that can easily be compared to the project goal, which is to demonstrate the use of a vegetated swale for storm water control.

Feasibility of Meeting Targets

This Project has numerous targets, and the feasibility of meeting these targets is discussed below.

2. JWPCP Marshland Enhancement Project

1. Maximum 15 percent coverage of non-native (exotic invasive) vegetation with no new eucalyptus or palm trees. Meeting these targets is considered feasible because removal activities will be initiated to ensure they are met.
2. Eighty percent plant survival over year 1, 100 percent plant survival over year 2. Meeting these targets is considered feasible because these are the normal specifications for wetlands restoration or introduction and because irrigation water will be supplied to the plants during the first 2 years.
3. Seventy-five percent cover over 3 years, 90 percent cover over 5 years; increase in wildlife utilization over 5 years. Meeting these targets is considered feasible because these are the normal specifications for wetlands restoration or introduction, irrigation water will be supplied to the plants during the first 2 years; and Wilmington Drain provides a water source year-round.
4. 2.2 acres of open water. Meeting this target is considered feasible because the specifications and drawings require that this amount of open water be provided by site grading and because Wilmington Drain provides a water source year-round.
5. 100 percent increase over 5 years in wildlife use. Meeting this target is considered feasible because the native vegetation and open water pools will provide the appropriate habitats for wildlife use.
6. Minimum of 10 school classes per year; average weekly visitation of 20 persons after one year. Meeting this target is considered feasible because local schools will be contacted and information on the marshland will be released to schools, clubs, and residents.
7. Minimum of one article in the Daily Breeze (local newspaper). Meeting this target is considered feasible because local reporters will be contacted and supplied with information regarding the marshland.
8. Average reduction in each constituent (ammonia, copper, lead, and coliform) of 20 percent. Meeting this target is considered feasible because this amount of reduction in these constituents has been demonstrated in a study performed at a similar wetland area.
9. Average reduction in each constituent consistently detected above detection limits (metals (arsenic, cadmium, chromium, nickel, selenium, zinc), BOD, total nitrogen, total phosphorus, suspended solids, and volatile organics) of 20%. Meeting this target is considered feasible because this amount of reduction in these constituents has been demonstrated in a study performed at a similar wetland area.
10. Average reduction in pollutant load of 20 percent. Meeting this target is considered feasible because this amount of reduction in these constituents has been demonstrated in a study performed at a similar wetland area.
11. 8.8 af of new storm water storage. Meeting this target is considered feasible based on the fact that the plans and specifications require grading the site to include this amount of storage in excess of the current amount of storage.
12. Total of 6.9 acres with water depths ranging from 1 to 8 feet. Meeting this target is considered feasible based on the fact that the plans and specifications require this amount of land to be graded at 1 to 8 feet below the water level controlled by the outlet structure.
13. A minimum of 300 feet of eucalyptus logs reused from on site used for pavilions. Meeting this target is considered feasible. More than 300 feet of eucalyptus logs were recovered during site clearing and set aside for use in constructing the on site pavilions.
14. 1,200 square feet of recycled plastic logs used for boardwalks. Meeting this target is considered feasible. At least 1,200 square feet of plastic logs are required in the plans and specifications for the project.
15. Three benches made of recycled materials. Meeting this target is considered feasible, as three benches made of recycled materials are required in the plans and specifications for the project.
16. Three trash receptacles made of recycled materials. Meeting this target is considered feasible, as three trash receptacles made of recycled materials are required in the plans and specifications for the project.

2. JWPCP Marshland Enhancement Project

17. Less storm water runoff from swale going into storm drains. Meeting this target is considered feasible because water will be able to infiltrate into the vegetated swale versus running off from paved areas.

2. JWPCP Marshland Enhancement Project

Project Performance Measures for 2. JWPCP Marshland Enhancement Project					
Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
1) Habitat restoration and enhancement of 17-acre JWPCP marshland	Restored and enhanced wetland, riparian, scrub, and upland habitat quality Introduce open water habitat Increased wildlife use	Remove non-native vegetation Introduce native plant species Construct series of pools Introduce native animal species	Non-native vegetation coverage decreases Greater amount and diversity of native species New open water habitat Use of site by birds and other wildlife	Monitor percent non-native vegetation coverage Monitor percent of plant survival Monitor percent of native vegetation coverage Acreage of open water Types and number of birds and other wildlife using site	Maximum 15% coverage of non-native vegetation, no new eucalyptus or palm trees 80% survival over year 1; 100% survival over year 2 75% coverage over 3 years; 90% coverage over 5 years 2.2 acres of open water 100% increase over 5 years
2) Introduce education and recreation opportunities at the JWPCP marshland	Visitors to marshland from local schools, clubs, and residents Press coverage for opening of marshland to visitors	Construct education and viewing area to the north of the marshland Contact reporter(s)	School children, club members, and residents visit marshland Article(s) in local newspaper(s)	Log of number of school classes, clubs, and residents kept by Districts personnel Log of newspaper articles kept by Districts' personnel	Minimum of 10 school classes per year; average weekly visitation of 20 persons after one year Minimum of one article in Daily Breeze (local newspaper)
3) Improve Wilmington Drain runoff water quality by improving water quality through the marshland.	Reduction of Wilmington Drain TMDL constituents Reduction of other constituents (not TMDLs) in Wilmington Drain	Monitor marshland inlet and outlet Monitor marshland inlet and outlet	Decrease in ammonia, copper, lead, and coliform through marshland Decrease in metals (arsenic, cadmium, chromium, nickel, selenium, zinc), BOD, total nitrogen, total phosphorus, suspended solids, and volatile organics Decrease in pollution load	Standard analytical methods: ammonia (EPA 350.1); copper (EPA 200.7); lead (EPA 200.7); coliform count (SM 9221 B) Standard analytical methods: metals (EPA 200.7); BOD (SM 5210 B); total nitrogen (EPA 351.3); total phosphorus (EPA 365.3); suspended solids (EPA 160.2); volatile organic compounds (EPA 601-602) Mass balance using analytical results and pumping rate	Average reduction in each constituent of 20% Average reduction in each constituent consistently detected above detection limits of 20% Average reduction in pollutant load of 20%
4) Flood protection	Increase in storm water storage available	Site grading	Additional amount of storm water storage	Amount of new storage created	8.8 af of new storm water storage
5) Aquifer replenishment	Increase in soft-bottomed area containing water	Site grading	Amount and depth of water at the site	Acres of water-covered area and depth of coverage	6.9 acres with water depths ranging from 1 to 8 feet
6) Demonstrate use of recycled materials on site	Recycled materials incorporated into education and viewing area structures	Specify use of recycled materials where feasible	Amount of recycled materials used	Feet of recycled materials used for pavilions Square feet of recycled materials used for boardwalks Number of benches made of recycled materials Number of trash receptacles made of recycled materials	A minimum of 300 ft of eucalyptus logs from on site used for pavilion construction 1,200 square feet of recycled plastic logs used for boardwalks 3 benches made of recycled materials 3 trash receptacles made of recycled materials
7) Demonstrate use of vegetated swale for storm water control	Storm water capture and infiltration	Construct storm water swale in education and viewing area parking lot	Observed storm water runoff at site	Documentation of storm water runoff into storm drains	Less storm water runoff from swale going into storm drains

3. Large Landscape Water Conservation, Runoff Reduction, and Educational Program

Monitoring, Assessment, and Performance Measures

The Project Performance Measure Table for this project is provided at the end of this section. The performance measures, including quantifiable targets, will continue to be refined as the project is further developed at the PAEP prepared by February 2007.

Adequacy of Selected Output Indicators

The output indicators used to track the progress of the project are as follows:

1. Completeness and coverage of digitized maps of current areas with an area of 1 acre or greater within the service area- This output indicator is deemed adequate because it will provide the locations to install the landscape controllers, and the location of areas that will have the most beneficial impact to the watershed.
2. Completeness and coverage of maps of historical and current landscape types- This output indicator is deemed adequate because it will provide the locations to install the landscape controllers, and the location of areas that will have the most beneficial impact to the watershed.
3. Digitized map and classification of BMPs and restoration measures- This output indicator is deemed adequate because it will provide a list of the Best Management Practices throughout each of the affected watersheds and the current restoration efforts that are taking place so as to target those areas that are not necessarily getting the proper treatment.
4. Number of residents and commercial businesses installing irrigation controllers to manage their outdoor water usage- This output indicator will provide an estimate of how much water is being conserved by the purchase and use of the irrigation controllers to help the water supply needs of the region.
5. Number of residents attending workshops and the number of demonstration gardens implemented throughout the region- This output indicator will provide an estimate of how many people are being educated on water usage via the workshops as well as the creation of the demonstration gardens.
6. Number of irrigation controllers installed and dry weather urban runoff reduced- This output indicator will provide the critical information that is needed to measure the quantifiable benefits through the number of controllers installed and then to calculate the dry weather urban runoff that is reduced or eliminated as a result of the number of irrigation controllers installed.
7. Monitor water usage-This output indicator will provide the basis for calculating the actual water savings from the use of the irrigation controllers.
8. Runoff monitoring-This output indicator will provide the measurement of the amount of runoff that has been reduced as a result of the use of irrigation controllers and then to measure the beneficial impacts to the local rivers and streams that are benefited by the use of the controllers.
9. Monitoring; water flow volumes will be measured along with various types of nutrient loads that contribute to bacterial growth- This output indicator will provide the measurement of the beneficial impacts to the local rivers and streams by measuring the bacteria and nutrient loading that landscape runoff typically causes with use of regular landscape watering devices and not the weather-based irrigation controllers.
10. Additional acre-feet of water supply saved through the use of irrigation controllers that are managed by a water management system- This output indicator will provide the quantifiable benefits of the project by demonstrating the water supply conserved as a result of the installation of the weather-based irrigation controllers.

3. Large Landscape Water Conservation, Runoff Reduction, and Educational Program

11. Amount of acre-feet of potable water saved- This output indicator is deemed adequate because it shows that through the use of weather-based irrigation controllers, potable water can be saved for other uses and to provide further water reliability of the existing source of water supply for future or other needs.
12. Number of acre-feet of potable water saved- This output indicator is deemed adequate because it shows that through the use of weather-based irrigation controllers, potable water can be saved for other uses and to provide further water reliability and water security of the existing source of water supply for future or other needs.

Adequacy of Selected Outcome Indicators

1. Site-, reach-, or area-specific options for alternative land/water management practices (landscape irrigation technology)- This outcome indicator will provide the information needed to assess the proper location to install the weather-based irrigation controllers to allow for maximum water savings.
2. Site-, reach-, or area-specific options for alternative land/water management practices (landscape irrigation technology)- This outcome indicator will provide the information needed to assess the proper location to install the weather-based irrigation controllers to allow for maximum water savings.
3. TMDL monitoring plan elements related to tracking progress toward long-term TMDL targets- This outcome indicator will provide the information to target specific areas to install the controllers at in order to reduce the TMDLs into the local waterways via the reduction of runoff that is one benefit of using the irrigation controllers.
4. Percent increase in irrigation controllers purchased-This outcome indicator will provide the information to determine if the Landscape and “Ocean Friendly Garden” classes have encouraged residents and businesses to purchase the irrigation controllers. It will also provide necessary data to show which areas are using the irrigation controllers versus areas that are not which will enable us to determine which areas to target for landscape water education as well as the installation of the irrigation controllers.
5. Increase in number of workshops held and demonstration gardens constructed- This outcome indicator will show if other organizations are holding their own landscape classes and if other organizations are constructing demonstration gardens.
6. Percent reduction dry weather runoff volume and contaminant loads- This outcome indicator will show whether or not the installation of landscape controllers have reduced runoff of pollutants into the local waterways, which studies have shown a 70% reduction of runoff as a result of the use of landscape controllers.
7. Actual water usage vs. historical usage- This outcome indicator will provide the comparison of water usage after the controllers have been installed versus the historical water usage prior to the installation of the landscape irrigation controllers. This will show the reduction of potable water use and the subsequent water savings.
8. Pre and post comparison using runoff monitoring devices- This outcome indicator will provide a baseline for comparing data after the irrigation controllers are used to measure the impact of them on runoff as well as the impact to the water quality of the rivers and streams.
9. Percent reduction in coliform- This outcome indicator will show the reduction by measuring pollutants in the runoff as a result of the irrigation controllers that use significantly less water than current watering devices.
10. Percent reduction in nitrogen and phosphorous- This outcome indicator will show the reduction by measuring pollutants in the runoff as a result of the irrigation controllers that use significantly less

3. Large Landscape Water Conservation, Runoff Reduction, and Educational Program

water than current watering devices. Nitrogen and phosphorus typically are derived from fertilizers and herbicides that are used on landscapes for growth, which is carried off by outdoor watering. Therefore, the amount of nitrogen and phosphorus may be reduced by up to 70%.

11. Percent decrease in annual metered volume of imported water usage- This outcome indicator is adequate because it will show the effectiveness of using the irrigation controllers, which use significantly less water than regular watering devices.
12. Pre and post comparison using runoff monitoring devices- This outcome indicator will provide a baseline for comparing data after the irrigation controllers are used to measure the impact of them on the amount of acre feet of new water.

Feasibility of Meeting Targets

The project's target is to achieve a reduction of up to 50% potable water and 70% urban runoff. These goals can be achieved through the proper use of the irrigation controller devices and proper location of them. These figures were based on the Residential, Runoff Reduction Study (R3) in 2004 by the Municipal Water District of Orange County and Irvine Ranch Water District. Since this is a demonstration project for West Basin and Central Basin, these targets are assumptions, but they are used as a baseline for comparison. This study will monitor the effects of the controllers on water savings and the amount of runoff reduced. It will also help to validate the effectiveness of meeting the other targets.

3. Large Landscape Water Conservation, Runoff Reduction, and Educational Program

Project Performance Measures for 3. Large Landscape Conservation/Runoff Reduction Management and Educational Program					
Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
1) Assess the locations that require the use of a landscape management system to use the appropriate amount of water to irrigate their landscape with and which landscape areas are at a high risk of impairing the nearby rivers and streams with runoff.	1. Identification and mapping of "hot spots" to install the controllers and linkage to current land and water management practices, such as areas that currently receive recycled water, close proximity to a waterbody and/or an area of biological significance, and areas of high water demand.	1. Completeness and coverage of digitized maps of current areas with an area of 1 acre or greater within the service areas. 2. Completeness and coverage of maps of historical and current landscape types.	1. Site-, reach-, or area-specific options for alternative land/water management practices (landscape irrigation technology).	1. Discuss "hot spot" locations with the cities within the Districts' service areas that have the knowledge on which landscapes would require the use of irrigation controllers to reduce the amount of runoff that would be the most beneficial to the customer.	1. Broad acceptance of identified hot spots based on discussions with cities within service areas.
2) Identify range of management practices that could mimic historic watershed processes and contribute to meeting site-specific TMDL targets.	1. Development of site-specific and watershed-wide land/water management options capable of mimicking historic watershed functions and processes and capable of meeting TMDL implementation targets. 2. Identification of appropriate index sites for tracking TMDL implementation progress.	1. Digitized map and classification of BMPs and restoration measures.	1. Site-, reach-, or area-specific options for alternative land/water management practices (landscape irrigation technology). 2. TMDL monitoring plan elements related to tracking progress toward long-term TMDL targets.	1. http://www.ctic.purdue.edu/Core4/CT/Choices/Choices.html	1. Adopted list of land/water management options. 2. Adopted list of index sites for TMDL monitoring.
3) Educate residents and business owners about landscape irrigation management systems and runoff issues related to over watering.	1. Increase number of residents and businesses who understand what types of plants to use to reduce water consumption. 2. Other organizations conduct "Ocean-Friendly" and Native Plant landscape classes and construct demonstration gardens.	1. No. of residents and commercial businesses installing irrigation controllers to manage their outdoor water usage. 2. No. of residents attending workshops and the number of demonstration gardens implemented throughout the region.	1. % increase in irrigation controllers purchased. 2. Increase in number of workshops held and demonstration gardens constructed.	1. Opinion/Behavior surveys. 2. Records of the number of irrigation controllers being sold.	1. Increase in number of irrigation controllers purchased per the prior year.
4) Contribute to achievement of TMDL targets.	1. Reduction of TMDLs in waterways attributed to urban runoff from landscape surfaces.	1. No. of irrigation controllers installed and dry weather urban runoff reduced.	1. Percent reduction of dry weather runoff volume and contaminant loads.	1. Water quality testing and comparison to historical data. Survey selected sites to estimate dry weather runoff reduction.	1. Contribute to compliance with TMDLs in affected waterways.
5) Increase regional water supply reliability.	1. Water savings 2. Runoff reduction	1. Monitor water usage 2. Runoff monitoring	1. Actual water usage vs. historical usage. 2. Pre and post comparison using runoff monitoring devices.	1. Actual water usage vs. historical usage. 2. Water quality testing and comparison to historical data.	1. 20%-50% of irrigated water will be conserved. 2. 70% of water runoff will be reduced.
6) Improve water quality.	1. Reduced bacteria loading 2. Reduced nutrient loading	1. Monitoring; water flow volumes will be measured along with various types of nutrient loads that contribute to bacterial growth.	1. % reduction in coliform. 2. % reduction in nitrogen & phosphorous.	1. Runoff will be measured by installing runoff monitoring devices at pre-installation.	1. Targeted amounts of coliform (ppm) 2. Targeted amounts of nitrogen & phosphorous (ppm)

3. Large Landscape Water Conservation, Runoff Reduction, and Educational Program

Project Performance Measures for 3. Large Landscape Conservation/Runoff Reduction Management and Educational Program					
Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
7) Reduce dependence on imported and groundwater supplies.	1. Increased use of water saving technology such as weather-based irrigation controllers.	1. Additional acre-feet of water supply saved through the use of irrigation controllers that are managed by a water management system.	1. % decrease in annual metered volume of imported water usage.	1. System software records water use information every minute on every controller. The water meters are also used to measure flow rates and are compared to the water flow rates at each valve.	1. 20-50% reduction on imported water dependence for landscape surfaces in the areas where the controllers are installed.
8) Increased local water supply reliability.	1. Improved water supply security and reliability.	1. Amount of acre-feet of potable water saved	1. Pre and post comparison using runoff monitoring devices.	1. System software records water use information every minute on every controller. The water meters are also used to measure flow rates and are compared to the water flow rates at each valve.	1. Zero water disturbances.

4. Las Virgenes Creek Restoration Project

Monitoring, Assessment, and Performance Measures

The Project Performance Measure Table for this project is provided at the end of this section. The performance measures, including quantifiable targets, will continue to be refined as the project is further developed at the PAEP prepared by February 2007.

Adequacy of Selected Output Indicators

The output indicators used to track the progress of the project are as follows:

1. Quantity of Concrete Removed – This output indicator is deemed adequate because it shall be used to track percent concrete removed and therefore quantity naturalization of the creek system. As this project shall be the first creek restoration of its kind in an urban setting, it shall be used in future like restoration performed by the City and hopefully neighboring agencies within the region. Net area removed shall be taken during demolition of existing section.
2. Safe and Passable Section for Wildlife – This output indicator is deemed adequate because it shall be used to track percent passable section of the Las Virgenes Creek and surrounding system. This output indicator pertains to the larger project for which the Las Virgenes Creek Restoration Project is apart.
3. Number of Visitors – This output indicator is deemed adequate because it shall be used to measure one of the project's objectives; to spread the message of environmental stewardship. This shall be measured every other weekend from daylight to sunset on Saturday and Sunday.

Adequacy of Selected Outcome Indicators

The outcome indicators, which will be compared to the Project targets to measure the success of the Project, are as follows:

1. Percent of Watershed Segment with Restored Sections – This outcome indicator is considered adequate because it shall measure the area that will be created to promote re-establishment of the natural habitat.
2. Increased Presence of Impacted Species Beyond Project Limits – This outcome indicator is considered adequate because it measures fish and wildlife passage and reestablishment of the species.
3. Public Support for Environmental Projects and Participation in Creek Clean-Ups – This outcome indicator is considered adequate because it shall speak to the strength of the community's desire for environmental protection.

Feasibility of Meeting Targets

Specific targets were set for each selected outcome indicators. These are:

1. 100% naturalization of watershed creeks – This target is considered achievable based on the community's high level of environmental concern.
2. Increase in the number of animals, especially large animals and birds – This target is considered achievable based on historical presence and potential to repopulate.
3. Known as urban watershed with strong environmental stewardship – This target is considered achievable based on the natural setting of the area, community support, and potential to restore natural conditions.

4. Las Virgenes Creek Restoration Project

Project Performance Measures for 4. Las Virgenes Creek Restoration Project					
Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
1. Restore channeled section of Las Virgenes Creek to native conditions	Function and appearance of a natural creek section that will encourage neighboring agencies to do the same.	Quantity of concrete removed.	Percent of each watershed segment with restored sections.	Observation	100% of naturalization of watershed creeks.
2. Provide safe fish passage and restore wildlife corridor.	Restore Steel Head population in the upper Malibu Creek Watershed and reduce urban impact on wildlife corridor.	A fish passable section Safe and passable section of the creek for wildlife.	1. Increased presence of impacted species beyond project limits. 2. Reduced sighting of wildlife (such as mountain lions) in neighboring commercial complex.	Observation	Increase in the number of animals, especially large animals and birds, use of the restored area.
3. Recreational Opportunity	Increase knowledge of the fragile ecosystem	Number of visitors visiting/ reading storyboards	Public support for environmental projects and participation in creek clean-ups.	Public Opinion survey, number of participants in creek clean-ups	To be known as an urban watershed with a strong environmental stewardship

5. Malibu Creek Watershed Water Conservation Runoff Reduction, and Native Flow Restoration Project

Monitoring, Assessment, and Performance Measures

The Project Performance Measure Table for this project is provided at the end of this section. The performance measures, including quantifiable targets, will continue to be refined as the project is further developed at the PAEP prepared by February 2007.

Adequacy of Selected Output Indicators

Each of the selected output indicators is an objective and quantifiable measure of project success, being based on (1) metered water use at each site (2) real-time weather-station based measurement of plant water demand; (3) standard estimates of optimal water use based on water use survey methods in use for many years by the water district; (4) county-maintained stream gaging, calibrated against an on-site generated rating curve.

Adequacy of Selected Outcome Indicators

The selected outcome indicators for goals 1 and 2 are based on direct water district experience with water conservation interventions using identical methods. Water savings per indoor plumbing and irrigation controller retrofit are based on widely-used estimates by the CUWCC and the Metropolitan Water District of Southern California. The selected outcome indicator for goal 3 is harder to quantify, because the frequency of lagoon closure depends on a multitude of factors such as annual variation in rainfall and releases of water from upstream reservoirs. But reduction in lagoon flooding can be quantified nonetheless using existing lagoon volume data and indicators 1 and 2.

Feasibility of Meeting Targets

The project targets are directly linked to the actual conservation measures proposed, such that there is a high degree of confidence that each site will in fact reduce urban runoff and creek discharge in an amount equivalent to the collective water savings provided by the plumbing retrofits that will be funded. If the project is funded, the plumbing retrofits will be installed and water use will be reduced. Currently, excess water from inefficient water use is the primary source of dry weather flows into Malibu Creek. Outdoor use inefficiency enters the creek as runoff, and indoor use inefficiency translates to higher treatment plant discharges into the creek (Nov. 15 – April 15) or a higher risk of such discharges during the summer.

5. Malibu Creek Watershed Water Conservation Runoff Reduction, and Native Flow Restoration Project

Project Performance Measures for 5. Malibu Creek Watershed Water Conservation, Runoff Reduction and Native Flow Restoration Project					
Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
1. Reduce dependence on imported water supplies	1. Decreased outdoor & indoor water use	1. Reduced water use on city-owned landscaped areas, and also at each residence installing WBICs, low-flow devices (ULFTs, HECWs)	1. Decrease in annual metered volume of imported water use at each treated site.	1. System software records water use at each treated site, and can compare actual use with estimated optimal use based on irrigated area and real-time ET data. Creek flows are measured at LADPW gauging station downstream of project site(s).	1. 20-40% reduction on imported water use at each site, depending on current % of overuse
2. Reduce runoff into Malibu Creek and its tributary system (water quality improvement)	2. Decreased runoff	2. Reduced runoff from each treated site as measured by convergence of actual water use on optimal water use	2. Actual water use = optimal estimated water use, and elimination of runoff verified by on-site inspection during peak irrigation		2. Zero runoff confirmed by on-site inspection
3. Reduce non-native flows into Malibu Creek, restoring native flows and reducing frequency of seasonal breaching of Malibu Lagoon (Public Health benefit from bathers being less exposed to lagoon water)	3. Decreased lagoon breaching, lower creek flows	3. Reduced creek flows	3. Reduced creek flows during dry season when adjusted for annual variation in rainfall		3. Reduction in creek flows equivalent to volume of runoff avoided as determined in (1) above.

6. Morris Dam Water Supply Enhancement Project

Monitoring, Assessment, and Performance Measures

The Project Performance Measure Table for this project is provided at the end of this section. The performance measures, including quantifiable targets, will continue to be refined as the project is further developed at the PAEP prepared by February 2007.

Adequacy of Selected Output Indicators

The output indicators used to track the progress of the project are as follows:

1. Additional acre-feet of water supply from local water supply – This output indicator is deemed adequate because lowering the operating pools at Morris Dam will allow native flows (a measurable quantity) currently stored at Morris Dam to be conserved downstream for downstream stakeholder usage.
2. Increased pumping rights by Main San Gabriel Basin – This output indicator is deemed adequate because the Main San Gabriel Basin Watermaster measures a basinwide network of groundwater monitoring wells and collects production data from the various water producers throughout the Basin. Through analysis of spreading data, well measurements, and extraction information the Watermaster determines the amount of replacement water required to replenish safe levels in the Basin. Annually the Watermaster determines the amount of pumping rights various water producers are allowed throughout the Basin. Again this is a measurable quantity that can be determined.
3. The amount by which the conservation pool is lowered indicates additional storage – This output indicator is deemed adequate because lowering the reservoir operating pool will allow Public Works to have a measurable amount of additional flood attenuation capacity at the dam without enlarging the Reservoir footprint.

Adequacy of Selected Outcome Indicators

The outcome indicators, which will be compared to the project targets to measure the success of the project, are as follows:

1. Percent decrease in annual metered volume of imported water usage – This outcome indicator is considered adequate because it consists in a measurable quantity that can be compared to the goals. The Watermaster measures a basinwide network of groundwater monitoring wells and collects production data from the various water producers throughout the Basin. Through analysis of spreading data, well measurements, and extraction information the Watermaster determines the amount of replacement water to order from either a native water release from Morris Reservoir or an imported water purchase. Additional native water supply from Morris Reservoir will conceivably reduce the amount of imported water purchases required.
2. Percent increase in native water spread – This outcome indicator is considered adequate because the Los Angeles County Flood Control District is responsible for conveying the water, released from Morris Dam, past several data recording gaging stations and into downstream spreading grounds where inflow recorders and basin storage recorders measure the amount of water recharged into the groundwater. Groundwater monitoring wells are employed to verify aquifer levels are consistent with groundwater recharge records. The compiled information is provided to the Watermaster and other appropriate agencies.
3. Volume of reservoir that lowered operating pool provides – This outcome indicator is considered adequate because lowering the operating pools to increase water conservation of native flows will allow a measurable amount of additional attenuation of flood flows during a storm event at Morris Dam.

6. Morris Dam Water Supply Enhancement Project**Feasibility of Meeting Targets**

Specific targets were set for each selected outcome indicators. These are:

1. Reduction of imported water supplied by 5,720 AF per year – This target is considered achievable based on the knowledge that Morris Dam stores natural stormwater runoff from the San Gabriel River located in the San Gabriel Mountains. Lowering the operating pool will result in a measurable increase of native water supply that can be stored in the aquifers of the Main San Gabriel Basin. This project will increase the opportunity to capture additional local water during wet years, which will reduce the amount of imported water needed.
2. Additional 5,720 AF of water spread per year – This target is considered achievable because the Dam and reservoir operations, outside of storm events, allows for some flexibility to coordinate water releases with water agency activities for water conservation. The current outlet works at Morris Dam greatly limits our ability to make precise releases to optimize our release strategy. Improvements to the dam's outlet works and control systems, along with existing stream gages, and monitoring at spreading grounds, and monitoring by water agencies and resource agencies will allow for conjunctive management of the additional water made available by this project.
3. Improved flood protection along the San Gabriel River - This target is considered a benefit achieved by lowering the operating pool at Morris Dam. Lowering the pool enables capturing more peak runoff during a storm event at Morris Dam without enlarging the reservoir capacity or footprint. This benefit provides additional flood protection to downstream residents. This project will ensure reliability of the river outlet valves for flood management, while still providing the same level of protection.

Project Performance Measures for 6. Morris Dam Water Supply Enhancement Project					
Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
1. Reduce dependence on imported water supplies.	1. Increased water conservation	1. Additional acre-feet of water supply from local water supply	1. Percent decrease in annual metered volume of imported water usage.	1. Flow totalizing devices at downstream spreading basins.	1. Reduction of imported water supplied by 5,720 AF per year.
2. Increase water supply reliability.	2. Additional flows for downstream spreading	2. Increase pumping rights by Main San Gabriel Basin	2. Percent increase in native water spread	2. Flow totalizing devices at downstream spreading basins.	2. Additional 5,720 AF of water spread per year.
3. Increase flood control protection	3. Increase volume of water that can be captured during storm season.	3. The amount by which the conservation pool is lowered indicates additional storage	3. Volume of reservoir that lowered operating pool relieves can be used to attenuate flood flows.	3. Water surface elevation at Reservoir	3. Improved flood protection along San Gabriel River.

7. North Atwater Creek Restoration Project

Monitoring, Assessment, and Performance Measures

The Project Performance Measure Table for this project is provided at the end of this section. The performance measures, including quantifiable targets, will continue to be refined as the project is further developed at the PAEP prepared by February 2007.

Adequacy of Selected Output Indicators

The output indicators used to track the progress of the project are as follows:

1. Continues native plant repopulation growth – this output is deemed adequate because it is a measure of ecological restoration for this restoration project.
2. Water quality samples – this output is deemed adequate because it will provide the removal efficiency of the treatment wetlands and determine the amount of pollution removed.
3. Number of residents participating in the project, number of student visits and special events held are indicators of the quality and quantity of the ecosystem education that will be provided by this project.

Adequacy of Selected Outcome Indicators

The outcome indicators, which will be compared to the project targets to measure the success of the Project, are as follows:

1. Reduction of non-native plants and species – This outcome is considered adequate because it is a measure of the success of the project whose goals include the elimination of non-native species from this site.
2. Total reduction in contaminant loading to LA River -- Difference in water qualities between before capture and at system overflow outlet provides a measurable quantification of the reduction in the amount of pollution discharge to the LA River from this site. This can be easily compared with existing loadings for runoff discharges into the LA River.
3. The three outcome indicators shown in the accompanied Performance Measures table are deemed adequate because they provide for the quantitative measurement of the educational component of this project.

Feasibility of Meeting Targets

The eradication of the non-native species would be easily accomplished because the City of LA has qualified personnel that can be used to properly identify these species and replace with appropriate native species. The amount of pollution removal that the project would provide is more difficult to determine in advance and the main goal of the project is to assist future applications with obtaining knowledge on pollution removal efficiency of this type of systems. Finally the educational components can be easily attained because of the City of LA's stormwater experience in conducting educational outreach and holding public events.

7. North Atwater Creek Restoration Project

Project Performance Measures for 7. North Atwater Park Project					
Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
1. Creation of wetlands and restoration of riparian and upland habitat.	1. Reduction of non-native plants such as the Castor bean. 2. Native plant repopulation	1. Continues native plant repopulation growth	1. Reduction of non-native plants and species.	1. Survey to determine habitat area successfully restored 2. Hydrologic evaluation 3. Vegetation surveys 4. Documentation of wildlife utilization	100% eradication in upper and middle reaches of watershed; 90% eradication from lower watershed
2. Implementation of non-point source Best management Practices.	1. Reduction of target pollutants	1. Difference in water qualities between before capture and at system overflow outlet.	Total reduction in contaminant loading to LA River.	1. Volume of water treated and stored 2. Constituent sampling 3. River/creek flow monitoring	1. Reduction in contaminant levels.
3. Ecosystem Education	1. Residents knowledge and awareness of local watershed 2. Local school field trips to location 3. Formation of a localize organization for local watershed preservation.	1. Number of residents who attended workshops 2. Number of visits form local schools 3. No. of special events with relevant outreach material;	1. % increase in general watershed knowledge and environmental conditions; 2. Integration of watershed knowledge with school activities 3. No. of Farm Bureau, Builders' Council, and other professional. associations' relevant training classes	1. Opinion/Behavior Surveys	1. Increase in Resident's involvement of local watershed 2. School involvement with watershed preservation 3. A minimum of two professional orgs. have adopted and implemented watershed stewardship curriculum for in-house training.

8. Pacoima Wash Greenway Project: 8th Street Park

Monitoring, Assessment, and Performance Measures

The Project Performance Measure Table for this project is provided at the end of this section. The performance measures, including quantifiable targets, will continue to be refined as the project is further developed at the PAEP prepared by February 2007.

Adequacy of Selected Output Indicators

The output indicators used to track the progress of the project are as follows:

1. Establishment of native plant species – This output indicator is deemed adequate because it is measurable by a present increase of native species acreage. Field surveys are a common practice to measure increase in native plant species.
2. Water usage - This output indicator is deemed adequate because actual water usage will be compared to historical water usages revealing lower levels of water use.
3. Amount of runoff on to site - This output indicator is deemed adequate because the runoff on to site will be monitor and compare to pre and post project development both during dry weather and storm events. Utilizing comparisons of water quantity measured will verify that the goal of water capture was achieved.
4. Observation of discharge from site (off of site) - This output indicator is deemed adequate because the runoff from site will be measured pre and post project development. Thus comparison-based observation utilizes water quantity to verify that the goal was achieved.
5. Water quality - This output indicator is deemed adequate because water quality monitoring will utilize pre and post project development to compare water quality increases based on water quality samples. Thus, utilizing comparisons of water quality will verify that the goal was achieved.
6. Water retention - This output indicator is deemed adequate because water quantity is measurable pre and post project development. Utilizing comparisons of water quantity will verify that the peak flow attenuation goal was achieved.
7. Groundwater level - This output indicator is deemed adequate because groundwater levels will be measured pre and post project development. Thus comparison-based observation will utilizes historic and current groundwater quantity to verify that the goal was achieved.
8. Additional acre-feet of water supply from local sources - This output indicator is deemed adequate because groundwater levels will be measured pre and post project development; therefore, the Watermaster will verify that the safe yield has been increased thereby reducing import water need.

Adequacy of Selected Outcome Indicators

The outcome indicators, which will be compared to the project targets to measure the success of the project, are as follows:

1. Establishment of native upland and riparian species - Field surveys of project will identify the target of establishing 3 acres of habitat has been achieved.
2. Reduction of water usage – 20%-50% of irrigation water will be conserved because native plant species required much less water.
3. Runoff capture – 75% of dry weather runoff will be retained and infiltrated on site through the projects incorporation of the BMPs.
4. Improved quality of water discharge from site – Project BMPs will reduce trash and targeted amounts of nitrogen, ammonia, metals, TSS, oil and grease. This reduction of pollutants in over flow water will increase the overall quality of the Pacoima Wash and groundwater supplies.

8. Pacoima Wash Greenway Project: 8th Street Park

5. Increased water quality – Project BMPs will reduce trash and targeted amounts of nitrogen, ammonia, metals, TSS, oil and grease in runoff from the residential areas before entering Pacoima Wash or groundwater. This reduction of pollutants through onsite filtration and percolation during a 3/4 –inch storm will protect water quality resources on site as well as adjacent resources such as Pacoima Wash.
6. Water retention – On site retention will be achieved through a vegetated bioswale and sand media filter infiltration basin. This will allow for the capture and treatment of 371,500 gallons in a 3/4 inch storm event thus, reducing peak flows during storm events.
7. Increase of groundwater levels – The increased infiltration of water will directly impact targeted groundwater levels. Therefore, the increase of site retention and infiltration will increase aquifer supplies.
8. Increase water supply from local sources – Increased groundwater levels achieved through onsite infiltration will directly contribute to securing local water supplies, thus reducing the demand for imported water.

Feasibility of Meeting Targets

The Project's target is to provide a 3 acres recreational amenity to underserved communities, which will collect, treat and infiltrate 33 acres of residential runoff. This will achieve 100% increase of native species, capture and treatment of a 3/4 inch storm, therefore reducing amounts of nitrogen, ammonia, metals, TSS, oil and grease in runoff and infiltration. The calculated water infiltration rate of 10 afy will contribute to groundwater storage and supply. Both the Pacoima Wash Greenway Master Plan and the Pacoima Wash 8th Street Project: Conceptual Hydrologic Layout recommends that these targets need to be addressed and have feasible applications that should be pursued.

8. Pacoima Wash Greenway Project: 8th Street Park

<p align="center">Project Performance Measures for 8. Pacoima Wash Greenway Project: 8th Street Park</p>					
Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
1. Establish native upland and riparian species in an urban park setting	Provide a habitat corridor along the Pacoima Wash populated with native upland and riparian plant species.	Number of acres of native species planted.	1. Percent increase in native species acreage.	Field Survey	100% increase in native species acreage.
2. Increase water supply reliability.	1. Water savings 2. Runoff reduction 3. Ground Water Recharge	1. Water usage 2. Runoff monitoring 3. Runoff monitoring	1. Actual water usage vs. historic usage for urban parks. 2. Pre and post comparison estimates based on observation. 3. Pre and post comparison estimates based on observation.	1. Water consumption records for this project will be compared to water consumption rates at other parks within the city on a per acre basis. 2. Runoff will be estimated at point entering the park and at a point discharging to the Pacoima Wash from the Park. 3. Runoff will be estimated at point entering the park and at a point discharging to the Pacoima Wash from the Park.	1. 20%-50% of irrigated water will be conserved. 2. 75% of dry weather water runoff will be retained and infiltrated on site. 3. 75% of dry weather water runoff will be retained and infiltrated on site.
3. Improve water quality.	1. Reduced trash loading 2. Reduced nutrient loading 3. Reduced heavy metals loading 4. Reduced sediment loading 5. Reduced oil and grease loading	1. Observation of discharge from the site. 2. Nutrient concentrations will be measured. 3. Metals concentrations will be measured. 4. TSS concentrations will be measured. 5. Oil and grease levels will be measured.	1. % reduction in trash. 2. % reduction in nitrogen & ammonia. 3. % reduction in lead. 4. % reduction in TSS. 5. % reduction in oil and grease.	1. Runoff will be observed. 2. Runoff will be sampled at upstream and downstream sampling locations. 3. Runoff will be sampled at upstream and downstream sampling locations. 4. Runoff will be sampled at upstream and downstream sampling locations. 5. Runoff will be sampled at upstream and downstream sampling locations.	1. Zero trash discharge. 2. Targeted amounts of nitrogen and ammonia (ppm) 3. Targeted amounts of metals (ppm) 4. Targeted amounts of TSS (ppm) 5. Targeted amounts of oil and grease (ppm)
4. Manage & treat residential runoff on the western side of the Pacoima Wash	1. Reduce target pollutants.	1. Water quality samples	1. Difference in water qualities between before capture and at system overflow outlet.	1. Water quality samples.	1. Capture and treat a 3/4-inch storm for trash, heavy metals, sediment, nutrients, bacteria, scum, oil and grease.

8. Pacoima Wash Greenway Project: 8th Street Park

<p align="center">Project Performance Measures for 8. Pacoima Wash Greenway Project: 8th Street Park</p>					
Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
5. Improve stormwater quality before entering Pacoima Wash and groundwater.	<ol style="list-style-type: none"> 1. Reduced trash loading 2. Reduced nutrient loading 3. Reduced heavy metals loading 4. Reduced sediment loading 5. Reduced oil and grease loading 	<ol style="list-style-type: none"> 1. Observation of discharge from the site. 2. Nutrient concentrations will be measured. 3. Metals concentrations will be measured. 4. TSS concentrations will be measured. 5. Oil and grease levels will be measured. 	<ol style="list-style-type: none"> 1. % reduction in trash. 2. % reduction in nitrogen & ammonia. 3. % reduction in lead. 4. % reduction in toss. 5. % reduction in oil and grease. 	<ol style="list-style-type: none"> 1. Runoff will be observed. 2. Runoff will be sampled at upstream and downstream sampling locations. 3. Runoff will be sampled at upstream and downstream sampling locations. 4. Runoff will be sampled at upstream and downstream sampling locations. 5. Runoff will be sampled at upstream and downstream sampling locations. 	<ol style="list-style-type: none"> 1. Zero trash discharge. 2. Targeted amounts of nitrogen and ammonia (ppm) 3. Targeted amounts of metals (ppm) 4. Targeted amounts of toss (ppm) 5. Targeted amounts of oil and grease (ppm)
6. Improve flood management for Pacoima Wash	<ol style="list-style-type: none"> 1. Reduction in peak flow 	<ol style="list-style-type: none"> 1. Amount on site detention/retention 	<ol style="list-style-type: none"> 1. % reduction in discharge. 	<ol style="list-style-type: none"> 1. Flows coming into the site and flows being discharged to the Pacoima Wash will be monitored/observed and photos will be taken during storm events. 	<ol style="list-style-type: none"> 1. Target % reduction in peak flow discharge.
7. Increase groundwater basin yield	<ol style="list-style-type: none"> 1. Increase volume of water infiltrated to the aquifer 	<ol style="list-style-type: none"> 1. Groundwater levels. 	<ol style="list-style-type: none"> 1. % increase in groundwater levels compared to historic levels. 	<ol style="list-style-type: none"> 1. Groundwater monitoring. 	<ol style="list-style-type: none"> 1. Targeted groundwater levels.
8. Reduce dependence on imported water supplies.	<ol style="list-style-type: none"> 1. Reduce local use of imported water. 	<ol style="list-style-type: none"> 1. Additional acre-feet of water supply from local sources. 	<ol style="list-style-type: none"> 1. % decrease in annual metered volume of imported water usage. 	<ol style="list-style-type: none"> 1. Measure changes in imported water supplied to the local area via local water agency records. 	<ol style="list-style-type: none"> 1. % reduction of imported water to the local area.
9. Increased water reliability.	<ol style="list-style-type: none"> 1. Improved water supply reliability, through an increase in the local availability of ground water via infiltration. 	<ol style="list-style-type: none"> 1. Monitor groundwater levels. 	<ol style="list-style-type: none"> 1. % increase in groundwater levels compared to historic usage. 	<ol style="list-style-type: none"> 1. Groundwater monitoring. 	<ol style="list-style-type: none"> 1. Targeted groundwater levels.

9. San Gabriel Valley Riparian Habitat Arundo Removal Project

Monitoring, Assessment, and Performance Measures

The Project Performance Measure Table for this project is provided at the end of this section. The performance measures, including quantifiable targets, will continue to be refined as the project is further developed at the PAEP prepared by February 2007.

Adequacy of Selected Output Indicators

The output indicators used to track the progress of the project are as follows:

1. Regrowth of Native Riparian Vegetation – This output indicator is adequate because the LASGRWC can map and measure the presence of Native Riparian Vegetation. The LASGRWC is engaged in a long term mapping effort for the San Gabriel River to identify native plant populations for use as genetic materials for river restoration projects and has extensive experience in this area. The LASGRWC uses aerial photographs, on-the-ground field work, GIS to produce digital maps. In addition, the Southern California Coastal Water Research Project has a mapping program for inland waterways. Thus, there are at least two organizations that will be monitoring native riparian vegetation in the area restored in this project.
2. Effectiveness of Herbicide Applications – This output indicator is deemed adequate because it is measurable. Field surveys are a standard procedure for monitoring effectiveness of herbicide in removing resprouts and preventing regrowth of *Arundo*, and focuses on the primary mean of achieving the project goals, i.e. eradication of *Arundo*.

Adequacy of Selected Outcome Indicators

The outcome indicators, which will be compared to the project targets to measure the success of the project, are as follows:

1. Acres of Habitat Fully Restored – This outcome indicator is considered adequate because it consists in a measurable quantity (again, field surveys are a standard procedure for monitoring habitat restoration) that can easily be compared to the project goal, which is to restore 24 acres of habitat.
2. Field Surveys Indicating Zero Live Arundo – As with the first outcome indicator, this indicator can be readily measured through field surveys, which will take place as described under Output Indicators.

Feasibility of Meeting Targets

The Project's target is to achieve 100% control of *Arundo* in project areas thereby restoring 24 acres of habitat. Meeting this target is considered feasible based on previous habitat restoration projects completed by Los Angeles and San Gabriel Rivers Watershed Council.

<p align="center">Project Performance Measures for 9. San Gabriel Valley Riparian Habitat Arundo Removal Project</p>					
Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
<p>Eradicate 24 net acres of Arundo from riparian habitat at Whittier Narrows basin, along Rio Hondo channel north of San Gabriel River and along San Gabriel River and crossover channel east of Rosemead Blvd.</p>	<p>1. Restored riparian habitat quality, improved surface water flow, and reduced fire hazard where Arundo is removed. 2. Prevent expansion of Arundo into approximately 120 acres of riparian habitat previously cleared or not yet infested.</p>	<p>1. Regrowth of native riparian vegetation. 2. Success of herbicide applications in preventing Arundo regrowth in project areas, until Arundo is eradicated.</p>	<p>1. Acres of habitat successfully restored. 2. Field survey results indicating zero live Arundo remaining in project areas at conclusion.</p>	<p>1. Field surveys to identify and map native plant communities. 2. Field surveys of project areas to estimate number of live Arundo stalks.</p>	<p>100% removal of Arundo in project areas.</p>

10. Solstice Creek Southern Steelhead Habitat Restoration Project

Monitoring, Assessment, and Performance Measures

The Project Performance Measure Table for this project is provided at the end of this section. The performance measures, including quantifiable targets, will continue to be refined as the project is further developed at the PAEP prepared by February 2007.

Adequacy of Selected Output Indicators

The output indicators used to track the progress of the project are as follows:

1. Barrier removal photographs and water quality measurements. These output indicators are considered adequate because documentation of barrier removal will be clear from photographs showing an absence of barriers in the stream channel. Water quality measurements taken by Heal the Bay will be compared pre and post barrier removal project to demonstrate maintenance of high water quality, low turbidity, and low nutrient levels within the creek, thus demonstrating that the water quality with respect to steelhead was not detrimentally affected by the barrier removal.
2. Number of volunteer and staff hours spent in the field removing invasive species. Number of hours spent in the field planting native plants. Number of hours spent in the nursery growing native plants. These output indicators are considered adequate because they track the amount of effort put into invasive species removal and native plant restoration at the site over the course of the project. These outputs will result in the desired outcomes measured by the relevant outcome indicators (number of infestations removed, acres restored).
3. Number of volunteer and staff hours spent in the field treating invasive species infestations. This output indicator is considered adequate because it directly measures the amount of effort spent on invasive species removal as part of this project. The amount of effort spent removing invasive species and the timing of this effort will indicate whether sufficient invasive species populations were removed under the proper timing (prior to seed set) to prevent downstream movement of invasive plants.

Adequacy of Selected Outcome Indicators

The outcome indicators used to assess the success of the project are as follows:

1. Number of barriers removed and water quality and habitat quality for steelhead assessed. These output indicators are considered adequate because they directly measure habitat quality for steelhead in the creek. Demonstrating the removal of barriers and the maintenance of low nutrient levels and low turbidity in the creek will show that the project has been successful in restoring steelhead habitat.
2. Number of invasive species infestations removed, number of native plants produced, and acres of native habitat restored. These output indicators are considered adequate because they directly measure whether we have reached our project goals with respect to invasive species removal and native habitat restoration. If the total number of invasive species infestations found during mapping is removed and a total of 16 acres are restored, then the project goals will have been reached.
3. Area and number of invasive plant infestations removed. This outcome indicator is considered adequate because if all invasive plant infestations are removed, there will be no downstream spread of invasive plant seeds from the project area. If the number of invasive plant infestations removed matches the number mapped, then we will know that we have achieved our goal of protecting downstream riparian areas from invasive species spread from our project area.

Feasibility of Meeting Targets

Specific targets were set for each selected outcome indicators. These are:

10. Solstice Creek Southern Steelhead Habitat Restoration

1. Remove all barriers to steelhead movement. Maintain water quality within the creek. These targets are considered achievable based on the project work plan and the fact that all barriers have been removed at this time and the final bridge is 90 percent complete. We expect water quality to be maintained throughout the project due to the water quality protection measures that were undertaken as part of the project.
2. Restore 16 acres of riparian habitat and remove all invasive species infestations within the project area. This target is considered achievable based on prior experience removing invasive species in Solstice Canyon and installing native plant species. We have restored 8 -10 acres per year through previous projects at other locations within the Santa Monica Mountains.
3. Protect downstream habitats: no movement of invasive species propagules from the project site. This target is considered achievable based on timely removal of invasive species infestations from the project area. Based on our prior field experience at this and other sites, we can remove all invasive species infestations from the project area in the two-year time frame of this project. Reduction of non-native cover within infestations to less than 10% will limit spread from these areas and protect downstream habitats.

<p align="center">Project Performance Measures for 10. Solstice Creek Southern Steelhead Habitat Restoration Project</p>					
Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
1.) Improve spawning habitat for southern steelhead trout	Removal of barriers from 1.5 miles of Solstice Creek, protection of habitat quality for fish spawning	Removal of barriers Assessment of water quality and habitat quality	All identified barriers are removed Improved water quality. Increase in stream amphibian community.	Photographs showing barriers removed. For water quality measurements, Heal the Bay uses a variety of techniques. Their sampling protocol can be found on the web at www.healthebay.org under stream team. Heal the Bay will measure dissolved oxygen, turbidity, nutrient levels, salinity, nitrates and phosphates, as well as bacteria. This monitoring is done once a month. NPS surveys the stream amphibian community once a year.	All barriers removed within 1.5 mile project area. No statistically significant decline in water quality or habitat quality post barrier removal.
2.) Restore 16 acres of riparian habitat in the coastal ecosystem of Solstice Creek.	Removal of all non-native invasive plant infestations within the 16 acre project area. Replacement of non-native invasive species with appropriate native species.	Number of hours of staff and volunteers spent in the field removing non-native species and planting plants. Number of hours of staff and volunteers spent at the nursery growing plants.	Area and number of non-native invasive plant infestations removed. Area re-planted. Number of native plants planted. Number of native plants produced for this project.	Daily work logs. Volunteer activity sheets. Entries in weed management database (this database includes all non-native species treatments). Assessment of monitoring transects for native and non-native species cover.	100% of mapped non-native invasive species infestations are treated. Assessment of monitoring transects shows less than 10% cover of non-native invasive plant species and over 65% cover native species (some bare ground is acceptable).
3.) Protection of downstream habitats	No invasive plant propagation downstream	non-native invasive plant infestations have been treated prior to seed set. Number of volunteer and staff hours spent in the field treating infestations.	Area and number of non-native invasive plant infestations removed.	Daily work logs. Volunteer activity sheets. Entries in weed management database (this database includes all non-native species treatments). Assessment of monitoring transects for native and non-native species cover.	100% of mapped non-native invasive species infestations are treated. Assessment of monitoring transects shows less than 10% cover of non-native invasive plant species and over 65% cover native species (some bare ground is acceptable).

11. South Los Angeles Wetlands Park Project

Monitoring, Assessment, and Performance Measures

The Project Performance Measure Table for this project is provided at the end of this section. The performance measures, including quantifiable targets, will continue to be refined as the project is further developed at the PAEP prepared by February 2007.

Adequacy of Selected Output Indicators

The selected output indicators are deemed adequate because they provide measures of the performance of the project with respect to treatment, ecological restoration, public education and flood control. These indicators are:

1. Continues native plant repopulation growth near and on the newly constructed wetlands.
2. Improvement on water quality samples taken on site.
3. Reduction of floatable debris and trash flowing into the LA River
4. Increase number of visits from local schools.
5. Increase amount of open space as measured by community events and activities.
 - i. Monitoring of stormwater flow and local groundwater table – is adequate analysis can be done by sampling the stormwater and installing monitoring wells to measure the levels of the groundwater table.
 - ii. Presence of breeding and resident wildlife – the restoration of natural habitats provides breeding grounds for native species
 - iii. Log the wetlands maintenance – maintenance log will track any inconsistencies or problems that can be adapted to correct any issues
 - iv. Recycled Water usage – quantifiable measurements will be used to measure versus potable water usage and promote smart irrigation system. Amount of water flowing through recirculation loop through the project will also be quantified
 - v. Potable water usage – quantifiable amounts will be kept at a minimum to promote use of non-potable water.
 - vi. # of class field trips scheduled
 - vii. # of resident tours of wetlands, water treatment facility, and the rail museum.
 - viii. # of tours of Rail Museum
 - ix. # of newspaper articles for special/community events

Adequacy of Selected Outcome Indicators

The outcome indicators, which will be compared to the project targets to measure the success of the project, are presented in the accompanied table. They re deemed adequate because they are concrete and physical projects such as the creation of wetlands, open space and supporting facilities. The water quality improvement component can also be well defined because water quality samples will determine the removal efficiency of the proposed system and the amount of pollution loads removed by the pretreatment system and by the wetlands themselves. These loads can be easily compared with the established total loadings into the LA River.

Feasibility of Meeting Targets

This project will target a reduction in anthropogenic trash, sediments, and metals, from the surface runoff of a 520-acre drainage area. Furthermore the project will help increase open space for the restoration of wildlife habitats and help eradicate nonnative invasive plants. The project also targets current and upcoming TMDLs. These reduction targets can be easily quantified during the preparation of the project assessment and evaluation report.

11. South Los Angeles Wetlands Park Project

Project Performance Measures for 11. South Los Angeles Wetlands Park Project					
Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
1) Manage & treat runoff from local storm drain	1. Reduce target pollutants. 2. Reuse of water for irrigation & other suitable uses within project area	1. Monitoring, stormwater 2. Monitoring of local groundwater	1. Difference in water qualities before capture and after wetlands treatment	1. Monitoring of influent and effluent of wetland. 2. Comparison of results to Wetlands treatment Performance	1. 74% Removal Efficiency of BOD5 2. 70% Removal of TOSS, 3. 4% Removal of Ammonium Nitrogen (NH4-N) 4. 57% Removal of Total Phosphorous
2) Incorporate native habitat & plant Communities with historical conditions of the Los Angeles Basin	1. Restore native habitat of Los Angeles Basin 2. Populate wetlands with native species and wildlife	1. Presence of breeding and resident wildlife 2. Log the wetlands maintenance	1. Presence of various wetland-dependent wildlife species	1. Installation of roosting boxes, duck and song bird cavity nesting boxes 2. Maintenance of wetlands park	1. Increase of native habitat
3) Maximize water usage	1. Non-potable water usage increases for local area and irrigation uses 2. Water savings	1. Recycled Water usage 2. Potable water usage	1. Comparison of actual recycled water usage vs. historical usage. 2. Comparison of actual potable water usage vs. historical usage.	1. The water meters are used to measure flow rates and are compared to the water flow rates at each valve. 2. same as above	1. Targeted % usage of available recycled water. 2. Targeted % reduction in potable water usage.
4) Educate residents, create science educational facility and rail museum	1. Science field trips to view the wetlands, riparian areas, water treatment facility, and the rail museum. 2. Inspire future studies of the environment 3. Display the history of rail and mass transit in the City of Los Angeles	1. # of class field trips scheduled 2. # of resident tours of wetlands, water treatment facility, and the rail museum. 3. # of tours of Rail Museum	Increased local knowledge of the environment and increased interest by school-age children in science and their community.	Opinion/Behavior Surveys	1. Increase in Resident's involvement of local watershed 2. School involvement with watershed preservation 3. Create science education facility of rail and mass transit in the City of LA.
5) Creation of Open Green Space & Recreation Area	1. Replacement of existing industrial landscape with greenery for passive/active recreation	1. # of newspaper articles for special/community events	1. Completion of a Soccer Field 2. Creation of trails	1. Opinion/Behavior Surveys 2. Visual improvement of community	1. Create new soccer field and trails.
6) Contribute to compliance of TMDLs	1. Reduction of TMDLs in the Los Angeles River	1. Monitoring, stormwater	1. Percent reduction of bacteria 2. Percent reduction of metals 3. Percent reduction of nutrients	1. 85-99% bacteria reduction 2. 60-80% metal reduction 3. 25-50% nutrient reduction	target % of Bacteria TMDL target % of Trash TMDL target % of Metals TMDL target % of nutrients TMDL
7) Flood Reduction	2. Reduced localized flooding	1. Monitoring flow through storm drain	1. Reduced demand on storm drain system	1. Flow monitoring	1. % reduction in storm drain flow

12. Whittier Narrows Water Reclamation Plant UV Disinfection Facilities Project

Monitoring, Assessment, and Performance Measures

The Project Performance Measure Table for this project is provided at the end of this section. The performance measures, including quantifiable targets, will continue to be refined as the project is further developed at the PAEP prepared by February 2007.

Adequacy of Selected Output Indicators

The output indicators used to track the progress of the project are as follows:

1. Quantity of effluent NDMA – This output indicator is deemed adequate because it is measurable and focuses on lowering the NDMA to levels previously observed before NDN treatment began. The monitoring and reporting program for the Whittier Narrows WRP requires quarterly samples. The use of this output indicator should be somewhat qualified by the fact that more quality assurance procedures and sensitivity of measurement give more credence to recent NDMA values than those of the past (before implementation of NDN).
2. Quantity of NDMA removed by UV system – This output indicator is deemed adequate because it is measurable and focuses on lowering the NDMA levels in the effluent. Although a monitoring program which focuses on percent destruction of NDMA through the UV system will not be necessary on a continuous basis, limited sampling will be performed around the time the field commissioning tests are done.
3. Quantity of ammonia – This output indicator is deemed adequate because it is measurable and focuses on lowering the ammonia levels in the effluent. The monitoring and reporting program for the Whittier Narrows WRP requires weekly samples.
4. Quantity of coliforms – This output indicator is deemed adequate because it is measurable and focuses on maintaining compliance with coliform limits in the effluent. The monitoring and reporting program for the Whittier Narrows WRP requires daily samples.
5. Quantity of virus – This output indicator is deemed adequate because it is measurable and focuses on maintaining adequate treatment. The monitoring and reporting program for the Whittier Narrows WRP requires quarterly samples.
6. Quantity of THMs – This output indicator is deemed adequate because it is measurable and focuses on maintaining compliance with THM limits. The monitoring and reporting program for the Whittier Narrows WRP requires quarterly samples.
7. Quantity of cyanide – This output indicator is deemed adequate because it is measurable and focuses on maintaining compliance with cyanide limits. The monitoring and reporting program for the Whittier Narrows WRP requires monthly samples.
8. Flow and/or Quantity of flow treated by facility – This output indicator is deemed adequate because it is measurable and focuses on maintaining the volume of flow treated. The monitoring and reporting program for the Whittier Narrows WRP requires continuous measurement of flow volume.
9. Flow and/or Quantity of Title 22 effluent directed to spreading grounds – This output indicator is deemed adequate because it is measurable and focuses on maintaining the volume of flow diverted for groundwater recharge. The monitoring and reporting program for the Whittier Narrows WRP requires continuous measurement of flow volume.

Adequacy of Selected Outcome Indicators

The outcome indicators, which will be compared to the Project targets to measure the success of the Project, are as follows:

1. Percent change in effluent NDMA levels – This outcome indicator is considered adequate because it consists of a measurable quantity that can be compared to the project goal, which is to restore the effluent NDMA levels to those seen before NDN treatment was implemented.
2. Percent removal of NDMA – This outcome indicator is considered adequate because it consists of a measurable quantity that can be compared to the project goal, which is to destroy approximately 30-40% of the NDMA through the UV reactor.
3. Percent change in ammonia levels – This outcome indicator is considered adequate because it consists of a measurable quantity that can be compared to the project goal, which is to lower ammonia levels to meet effluent limits.
4. Number of coliforms – This outcome indicator is considered adequate because it consists of a measurable quantity that can be compared to the project goal, which is to demonstrate compliance with effluent limits.
5. Number of virus – This outcome indicator is considered adequate because it consists of a measurable quantity that can be compared to the project goal, which is to demonstrate compliance of no detectable live virus.
6. Percent change in THM levels – This outcome indicator is considered adequate because it consists of a measurable quantity that can be compared to the project goal, which is to demonstrate compliance with effluent limits.
7. Percent change in cyanide levels – This outcome indicator is considered adequate because it consists of a measurable quantity that can be compared to the project goal, which is to demonstrate compliance with effluent limits.
8. Maintain current amount of water produced by WN WRP and directed to adjudicated basin – This outcome indicator is considered adequate because it consists of a measurable quantity that can be compared to the project goal, which is to maintain current volume of reclaimed water for groundwater recharge.

Feasibility of Meeting Targets

Specific targets were set for each selected outcome indicators. These are:

1. Reduction of NDMA to pre-NDN levels – This target is considered achievable based on research conducted by the Districts' staff in preparation of designing the UV disinfection system. The research indicated that effluent disinfection by using a chloramination process forms high amounts of NDMA due to the large amounts of precursors associated with increased polymer use of NDN treatment.
2. Thirty to 40 percent destruction of NDMA through UV system – This target is considered achievable based on research conducted by the Districts' staff in preparation of designing the UV disinfection system (from Attachment #8, please see Reference documents #3 (“Large-Scale UV Pilot Plant Study: Tertiary Effluent Disinfection and Effect on NDMA and Cyanide (Jalali et al (LACSD), October 2005, Paper Presented at WEFTEC”) and #9 (“Fate of NDMA in Tertiary Water Reclamation Plants (Huitric et al, October 2005, WEFTEC 2005)”).

12. Whittier Narrows Water Reclamation Plant UV Disinfection Facilities Project

3. Reduction of ammonia to trace levels – This target is considered achievable based on research conducted by the Districts’ staff in preparation of designing the UV disinfection system. The new disinfection system would not require the addition of approximately 1.5 mg/L of ammonia to the secondary effluent in order to produce chloramines for disinfection.
4. Demonstrate compliance with coliform limits – This target is considered achievable based on research conducted by the Districts’ staff in preparation of designing the UV disinfection system. A field commissioning test will be conducted after construction to verify the treated effluent meets or exceeds water quality requirements and will be submitted to the DHS and LARWQCB.
5. Demonstrate compliance of no detectable live virus – This target is considered achievable based on research conducted by the Districts’ staff in preparation of designing the UV disinfection system.
6. Demonstrate compliance with THM limits – This target is considered achievable based on research conducted by the Districts’ staff in preparation of designing the UV disinfection system.
7. Demonstrate compliance with cyanide limits – This target is considered achievable based on research conducted by the Districts’ staff in preparation of designing the UV disinfection system.
8. Maintain current contribution of flow for recharge – This target is considered achievable based on the design requirements for construction. The design capacity of the new disinfection system is 15 MGD and will not decrease the volume of water that can be treated.
9. No net increase of dependence on imported water – This target is considered achievable based on the volume of reclaimed water available for recharge not only from the Whittier Narrows WRP but also from the San Jose Creek WRP and Pomona WRP.

12. Whittier Narrows Water Reclamation Plant UV Disinfection Facilities Project

Project Performance Measures for 12. Whittier Narrows Water Reclamation Plant UV Disinfection Facilities Project						
Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets	
1) Modify the existing chloramination disinfection system at the WN WRP to a dual barrier system that includes free chlorination and UV disinfection.	1. Reduce the amount of NDMA that is produced by chloramination	1. Comparison of NDMA levels after dual barrier system is implemented to historical values	1. 1 to 2 orders of magnitude lower - from approximately 1000 ng/L to 10-100 ng/L, on average	1. NDMA test (EPA 1625 Liquid-Liquid Extraction)	1. Reduction of NDMA to pre-NDN levels	
	2. Have a measurable amount of NDMA destruction by UV	2. Comparison of NDMA levels before and after UV system	2. Percent destruction of NDMA levels		2. 30-40% destruction of NDMA from pre-NDN levels through UV reactor	
	3. Reduce amount of ammonia that is discharged to receiving water	3. Comparison of ammonia levels after UV system is implemented to historical values	3. Percent reduction of ammonia levels to receiving water	2. Ammonia test (Standard Method SM4500-NH3E)	3. Reduction of ammonia to trace amounts or at least less than 0.5 mg/L	
	4. Continue to meet Title 22 requirements for total coliform	4. Comparison of coliform before and after dual barrier system is implemented	4. Number of coliform exceedances after dual barrier system is implemented	3. Total Coliform Test (Standard Method SM9221B)	4. Demonstrate compliance of less than 2.2 MPN/ 100 mL for 7-day median and not above 23 MPN/100 mL on any day.	
	5. Continue to meet Reuse permit conditions requiring no viruses at spreading grounds	5. Comparison of virus hits before and after dual barrier system is implemented	5. Number of virus exceedances after dual barrier system is implemented	4 District Virus Test (Standard Methods for the Examination of Water and Wastewater, 20th Ed. 1998 and USEPA Manual of Methods for Virology, EPA/600/4-84/013)	5. Demonstrate compliance of no live virus	
	6. Continue to keep other disinfection byproducts (DBP) at acceptable levels.		6. Comparison of THM levels before and after dual barrier system is implemented	6. Percent change of THM	5. THM Test (EPA 8260B and EPA 624M)	6. Demonstrate compliance with THM requirements
			7. Comparison of cyanide levels before and after dual barrier system is implemented	7. Percent change of cyanide	6. Cyanide test (EPA 335.2)	7. Demonstrate compliance of cyanide with no increase
2) Groundwater Replenishment	1. Maintain contribution of WN WRP to volume of water recharged in aquifer	1. MGD or acre-feet of water provided by facility	1. Same contribution compared to historic amounts.	1. Plant computer system tracks effluent flow continuously. LACFCD and LACSD track the amount of effluent used from WN WRP.	1. Maintain current contribution until other plant modification project allows increase to capacity of 15 MGD.	
3) Maintain reduced dependence on imported water supplies.	1. Continued use of plant effluent for groundwater recharge	1. MGD of Title 22 effluent directed to spreading grounds	1. Same amount of water produced by WN WRP and directed to adjudicated basin.	1. Plant computer system tracks effluent flow continuously and produces a daily average. District data systems track the diversion of effluent and sums the amount going to various outfalls and receiving waters, which eventually lead to the spreading grounds. LACFCD tracks the amount of effluent used from WN WRP.	1. No net increase of dependence on imported water.	
4) Maintain water reliability by treating the same amount of wastewater everyday for reuse and reclamation.	1. No net decrease in effluent production due to improved disinfection operation that produces less disinfection byproducts.	1. # of acre-feet of effluent produced .	1. Pre-UV and post-UV comparison of effluent production using plant data.	1. Plant computer system tracks effluent flow continuously and produces a daily average. District data systems track the diversion of effluent and sums the amount going to various outfalls and receiving waters, which eventually lead to the spreading grounds. LACFCD tracks the amount of effluent used from WN WRP.	1. Operation that treats nearly the same amount of water every day.	

13. Wilmington Drain Restoration Multiuse Project

Monitoring, Assessment, and Performance Measures

The Project Performance Measure Table for this project is provided at the end of this section. The performance measures, including quantifiable targets, will continue to be refined as the project is further developed at the PAEP prepared by February 2007.

Adequacy of Selected Output Indicators

The output indicators used to track the progress of the project are adequate for the following reasons:

1. Removal of non-native species and introduction of native species is measurable and quantifiable by counting and indicating location of non-native species before removal. Introducing native species, tracking the location of newly introduced species and taking a census of their numbers whether they have increased or decreased.
2. Stormwater treatment – The output indicators of trash removal and water quality improvement are adequate indicators of the pollution removal and stormwater treatment of the proposed project. The primary pollutant of concern targeted by this project is anthropogenic trash and the amount of trash removed by the project will be easily quantified based on the amount of trash captured by the proposed system.
3. Park attendance – This indicator is appropriate because will indirectly measure the value of the park to the community and is a measurable quantity.

Adequacy of Selected Outcome Indicators

The outcome indicators, which will be compared to the project targets to measure the success of the project, are adequate for the following reasons:

1. The number of species planted and the acreage of the area that is restored are easily measurable can be compared to the target of having this entire segment of the Wilmington Drain restored.
2. The amount of trash removed can be compared to the total trash discharged from the drainage area.
3. The number of visitors is an easily measured quantity and will assist in determining the value of the project and the number of visitors the park can accommodate.

Feasibility of Meeting Targets

The project's targets can be easily met through the proper survey and planting of native vegetation, implementation of trash capture systems and by promoting the proper use of the park by the general public.

Project Performance Measures for 13. Wilmington Drain Restoration Multiuse Project					
Project Goals	Desired Outcomes	Output Indicators	Outcome Indicators	Measurement Tools and Methods	Targets
Habitat Restoration	Restoration of native plant species Prevention of habitat destruction	Removal of non-native plant species, introduction of native plant species Fencing of restoration area	Measurement and cataloging before and after: numbers of native plant species Decrease in homeless persons accessing the area Sediment and trash capture	Annual Audubon Society survey and inspection Data collection and validation under MS4 permit	Maximum eradication of non-native plant species and replenishment with 100% native plant species Eliminate all homeless persons encroachment
Stormwater Treatment	Manage and treat stormwater run off from Dominguez channel	Reduce the targeted pollutants, improve water quality, and capture trash	Compare base line levels of targeted pollutants before, during and after the completion of the project	Comply with MS4 permit requirements of monitoring, testing and validation of data	Compliance with MS4 permit levels.
Provide public awareness of adverse impacts on water	Educated public related to coastal wetlands and watersheds	Public reading and following instructions and improving water quality through behavioral change	Improved access to educational material related to conserving water and enhancing water quality. Reduced need for trash removal from Machado Lake	Neighborhood Council participation in water quality matters, increased access of web site (counting hits), school children interested in volunteering to clean up the sites Number of hours spent annually removing trash.	Increase literature, signage, public participation in matters of water conservation and habitat improvement. Reduction in amount of trash found in Machado Lake.
Increase water supply reliability	Run off reduction Reduction in targeted pollutants	Run off monitoring Water of wetlands and outflows will be monitored for targeted pollutants	Maintain adequate water levels in Machado Lake % reduction of targeted pollutants from baseline readings	Runoff will be measured by strategically located monitoring flow devices	65% of Machado Lake water supply will be maintained