City of Los Angeles

Water IRP 5-Year Review FINAL Documents

June 2012

City of Los Angeles
Department of Public Works
Bureau of Sanitation
and
Department of Water and Power

City of Los Angeles

Mayor Antonio Villaraigosa

Water Integrated Resources Plan
5-Year Review

Enrique C. Zaldivar, Director
L.A. Bureau of Sanitation

Ron Nichols, General Manager
L.A. Department of Water and Power

Prepared by:
City of Los Angeles
Department of Public Works
Bureau of Sanitation
Wastewater Engineering Services Division

and

Contents

Section

References

Appendices

Tables

Figures

Glossary of Abbreviations and Terms

Groups and Agencies	
BCA	City of Los Angeles Department of Public Works, Bureau of Contract Administration
BOE	City of Los Angeles Department of Public Works, Bureau of Engineering
LA Sanitation	City of Los Angeles Department of Public Works, Bureau of Sanitation
BSS	City of Los Angeles Department of Public Works, Bureau of Street Services
CASA	California Association of Sanitation Agencies
CDPH	California Department of Public Health
CREST	Cleaner Rivers through Effective Stakeholder led TMDLs
DBS	City of Los Angeles Department of Building and Safety
DCP	City of Los Angeles Department of City Planning
DOT	City of Los Angeles Department of Transportation
DPW	City of Los Angeles Department of Public Works
DWPSGS	Department of Water and Power Scattergood Generation Station
EPA	Environmental Protection Agency
GSC	Green Streets Committee
GSD	City of Los Angeles Department of General Services
LADWP	Los Angeles Department of Water and Power
LARWQCB	Los Angeles Regional Water Quality Control Board
LAUSD	Los Angeles Unified School District
MTA	Los Angeles County Metropolitan Transit Authority
MWD	Metropolitan Water District of Southern California
NRDC	Natural Resources Defense Council
OAL	Office of Administrative Law
RAP	City of Los Angeles Department of Recreation and Parks
RWAG	Recycled Water Advisory Group
RWQCB	Regional Water Quality Control Board
SCAG	Southern California Association of Governments
SCCWRP	Southern California Coastal Water Research Project
SWRCB	State Water Resources Control Board
USACE	United States Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WCED	City of Los Angeles Department of Public Works, Bureau of Sanitation, Wastewater Collection Engineering Division
WESD	City of Los Angeles Department of Public Works, Bureau of Sanitation, Wastewater Engineering Services Division
WPD	City of Los Angeles Department of Public Works, Bureau of Sanitation, Watershed Protection Division

Facilities and Sewers	
DCTWRP	Donald C. Tillman Water Reclamation Plant
GBIS	Glendale-Burbank Interceptor Sewer
HTP	Hyperion Treatment Plant
LAGWRP	Los Angeles Glendale Water Reclamation Plant
LCSFVRS	La Cienega-San Fernando Valley Relief Sewer
NEIS	North East Interceptor Sewer
NOS	North Outfall Sewer
TIWRP	Terminal Island Water Reclamation Plant
VSLIS	Valley Spring Lane Interceptor Sewer

Miscellaneous	
AWT	Advanced Water Treatment
AFY	Acre-Feet per Year
BOD	Biological Oxygen Demand
BMPs	Best Management Practices
CECs	Constituents of Emerging Concern
CEQA	California Environmental Quality Act
CIP	Capital Improvement Plan
CMP	Coordinated Monitoring Plan
CO	Carbon Monoxide
CWA	Clean Water Act
EIR	Environmental Impact Report
ELC	Environmental Learning Center
FOG	Fats, Oils, and Grease
GWI	Groundwater Infiltration
GWR	Groundwater Replenishment
HET	High Efficiency Toilets
HSA	Hyperion Service Area
IRP	Integrated Resources Plan
LA RIO	Los Angeles River Improvement Overlay
LAMC	Los Angeles Municipal Code
LARRMP	Los Angeles River Revitalization Master Plan
LID	Low Impact Development
MF	Microfiltration
MGD	Million Gallons per Day
MS4	Municipal Separate Storm Sewer System
MWELO	State of California's Model Water Efficient Landscape Ordinance
NdN	Nitrification/Denitrification
NOx	Nitrous Oxide

Miscellaneous	
NPDES	National Pollution Discharge Elimination System
NPR	Non-Potable Reuse
NRDC	Natural Resources Defense Council
POTWs	Publicly Owned Treatment Works
RO	Reverse Osmosis
RWMP	Recycled Water Master Planning
SCM	Sewer Construction and Maintenance Fund
SPAC	Stormwater Pollution Abatement Charge
SPAF	Stormwater Pollution Abatement Fund
SSOs	Sanitary Sewer Overflows
SUSMP	Standard Urban Stormwater Mitigation Plan
SVI	Sludge Volume Index
TIRE	Terminal Island Renewable Energy Project
TM	Technical Memo
TMDL	Total Maximum Daily Load
UWMP	Urban Water Management Plan
WCIP	Wastewater Capital Improvement Fund
WQCMPUR	Water Quality Compliance Master Plan for Urban Runoff
WW	Wastewater

THIS PAGE IS INTENTIONALLY LEFT BLANK

Executive Summary

ES.1 Introduction

In 2006, the City of Los Angeles adopted its award-winning Water Integrated Resources Plan (IRP), an implementable facilities plan through the year 2020 that integrates water supply, water conservation, water recycling, runoff management, and wastewater facilities planning using a regional watershed approach. The adopted IRP contains recommendations that would be achieved through a series of projects and policy directions to staff.

Over the past five years, the Bureau of Sanitation (L.A. Sanitation), the Department of Water and Power (LADWP), and other City departments have been working on implementing the recommended IRP projects and policies. Remarkable progress has been made resulting in numerous accomplishments in managing the City's water resources. Despite this progress, many of the drivers for the IRP projects have not come to fruition, and other regulations and technologies have emerged instead. Thus, the City developed the IRP 5-Year Review document to revisit the IRP recommendations, to reflect changes in the last 5 years, and to review recommendations accordingly.

The IRP 5-Year Review is essentially a compilation of progress updates not merely covering specific IRP recommendations, but also new projects and programs that relate to and impact these recommendations. Due to new programs and new information since the adoption of the IRP, the City has been able to defer some of the recommended projects and has saved approximately $545 million in construction costs within the 2020 IRP time frame. Translated into Sewer Service Charge (SSC) savings, with the current rate structure, in Fiscal Year 2020-2021 the typical annual Single Family Residential (SFR) customer bill will be $636 as opposed to almost $800 if the City had constructed all of the recommended IRP projects within the IRP timeframe of 2020.

As a result of the IRP, great strides have been made towards integrated water planning and management. The City has embraced a new way of thinking and functioning: City Departments and the community work together to effectively manage all of our water as one water. This approach has resulted in citywide benefits including overall cost savings and a reduction of the City's dependence on imported water supplies by putting more recycled water to use, managing more runoff for beneficial uses, and continuing to conserve drinking water.

ES.2 Approach

The approach for the IRP 5-Year Review was to research and identify City programs and projects that were created since 2006 and would significantly impact or affect the City's management of its wastewater, water, and runoff. To accomplish this, a City staff-composed Implementation Strategy (IS) Team was assembled, with members from the Bureau of Sanitation (BOS), Bureau of Engineering (BOE), Department of Water and Power (LADWP), and other departments. Several meetings were held to compile information from each group and discuss new planning parameters and implementation strategy with guidance from an interdepartmental Executive Team. Additionally, a stakeholder meeting was held to obtain input from IRP stakeholders, which included a mix of original stakeholders plus additional interested constituents, including members from LADWP's Recycled Water Advisory Group (RWAG).

This report covers the City's progress in IRP implementation for five years starting from January 1, 2007 to January 1, 2012.

ES.3 Implementation Progress and Accomplishments

ES.3.1 Wastewater Management Progress

- **Terminal Island Renewable Energy Project –** This project is currently demonstrating an innovative technology to convert biosolids into clean energy by deep well injection and geothermal biodegradation.

- **Nitrification/Denitrification (NdN) Upgrades at DCTWRP & LAGWRP –** The City extensively modified the secondary treatment facilities at DCTWRP and LAGWRP to allow operation of a different treatment process to reduce the amount of nitrogen in the plant effluent. Both plants were converted to NdN in 2007.

- **Diamond Cloth Filter Systems at DCTWRP –** Completed in May 2010, this project has improved the filtration performance at DCTWRP and will affect the need to increase flow capacity as was recommended in the IRP Go Project #1.

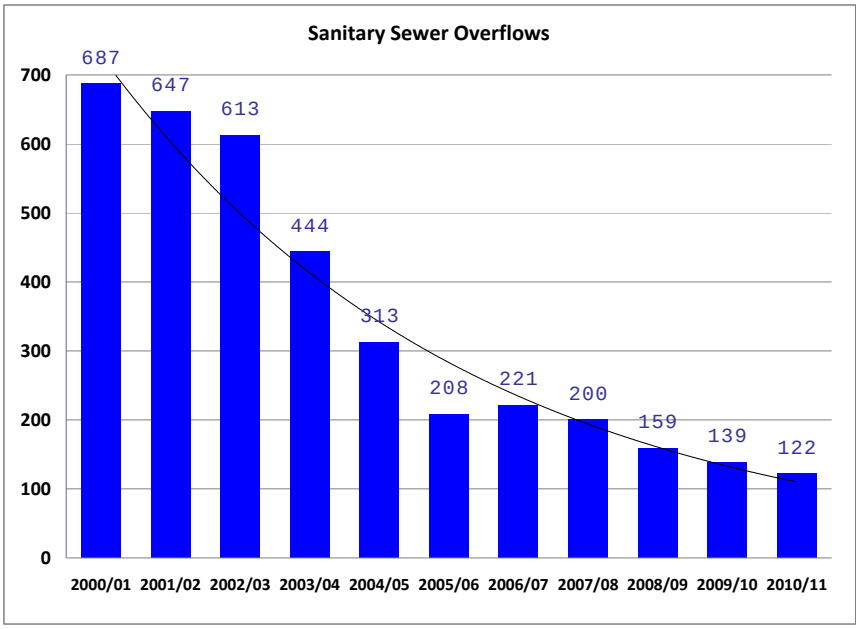
- **Digester FOG Pilot Program –** At HTP, L.A. Sanitation is demonstrating and piloting the use of anaerobic digestion to treat and convert Fats, Oils, and Grease (FOG) into a renewable energy (methane gas). Pilot results have been very promising so far.

- **Wastewater Storage Facilities at DCTWRP (IRP Go Project #1) –** Construction of open lined storage basins is nearly complete. The estimated construction completion date is late 2012; estimated construction cost is $8.7 million.

- **North East Interceptor Sewer (NEIS) Phase II (IRP Go Project #6) –** The design of this project is scheduled to be completed mid 2014, with construction beginning in 2015 and ending in 2022.

- **Collection System Spill Reduction Program –** Since the baseline year of 2000-01, the City of Los Angeles has achieved an 83% reduction of Sanitary Sewer Overflows (SSOs). Figure ES-1 presents a summary of SSOs per fiscal year.

Figure ES-1: Sanitary Sewer Overflows per Fiscal Year



ES.3.2 Recycled Water Progress

- **Constructed 31,800 feet of Purple Pipe Recycled Water Projects in the TIWRP service area, West side, and LAGWRP services areas –** The purple pipes in these service areas are serving 88 customers. These customers have used recycled water for irrigation and industrial purposes in the last 5-years. LADWP's newest major customers connected to the purple pipe system are the Los Angeles Zoo parking lot, the Balboa Sports Complex and Anthony C. Beilensen Park (Lake Balboa Recreation area) within the Sepulveda Basin, the Rio de Los Angeles Park (Taylor Yard Park), and Westchester and Van Nuys Golf Courses, all of which now utilize recycled water for irrigation.

- **Prepared Detailed Recycled Water Master Planning (RWMP) Documents –** Concluded in March 2012, the RWMP effort developed plans to meet the City's goal of achieving 59,000 AFY of recycled water delivered by 2035 along with identifying how the City can maximize recycled water use beyond the 59,000 AFY goal.

- **Conducted Recycled Water Groundwater Replenishment (GWR) Treatment Pilot Study –** Beginning in Spring of 2010, a 16-month pilot testing study was conducted to evaluate the proposed treatment processes for the GWR project using DCTWRP effluent. The pilot study evaluated microfiltration, reverse osmosis, and advanced oxidation processes, including ultraviolet radiation/hydrogen peroxide and ozone/hydrogen peroxide. Testing results demonstrated that the proposed AWP processes provide exceptional water quality that is safe for GWR.

- **Prepared Recycled Water GWR Master Planning Report –** LADWP is developing this project to recharge groundwater supplies with purified recycled water. Planning has been in parallel with the development of RWMP documents. The GWR Master Planning Report describes a project to spread 15,000 AFY of advanced treated water by 2022 and up to 30,000 AFY by 2035 to offset future demand of imported water supplies.

- **Established Recycled Water Advisory Group (RWAG) and conducted stakeholder engagement activities –** The group is composed of approximately 60 stakeholders representing diverse interests and demographics throughout the City and was formed to provide input during the development of the Recycled Water Master Planning Documents.

ES.3.3 Water Conservation Progress

- **Reduced overall water usage by nearly 20% through implementation of Water Conservation Ordinance** – In response to ongoing water supply challenges beginning in FY 2007-2008, LADWP began implementing outdoor irrigation restrictions in June 2009, and currently allows outdoor watering three days per week.

- **Increased Rebates for Water Efficient Fixtures and Appliances –** LADWP provides rebates for its residential customers on numerous water efficient devices, such as high efficiency toilets and washing machines, weather-based irrigation controllers, and sprinkler nozzles. In addition, LADWP continues to participate in the MWD Save Water Save a Buck Rebate Program for commercial customers. LADWP also distributes free faucet aerators and showerheads to all single-family, multi-family, and commercial customers.

- **Water Efficiency Requirements Ordinance –** Effective December 2009, this ordinance establishes water efficiency requirements for new developments and redevelopments by requiring installation of high efficiency plumbing fixtures in all residential and commercial buildings.

- **Landscape Incentive Programs –** Launched in 2009, the Drought Resistant Landscape Incentive Program pays customers for each square foot of turf

removed and replaced with California-friendly, drought tolerant plants, mulch, or permeable hardscapes and drip irrigation. In addition, LADWP has partnered with the Department of Recreation and Parks to upgrade park facilities with water efficient irrigation and California-Friendly landscaping.

ES.3.4 Stormwater Management Progress

- **Water Quality Compliance Master Plan for Urban Runoff (WQCMPUR) –** Adopted in April 2009 with feedback from stakeholders, **t**his plan provides for a 20-year strategy for clean stormwater and urban runoff to protect the City's rivers, lakes and beaches from pollution.

- **TMDL Implementation Planning –** Since 2005, the City has developed TMDL implementation plans that address stormwater quality impairments for several of the TMDLs that are in effect. L.A. Sanitation is currently implementing the necessary measures to comply with the Trash TMDLs in the Los Angeles River, Ballona Creek and Dominguez Channel watersheds, the Bacteria TMDLs for Santa Monica Bay, the TMDLs for Machado Lake and Echo Park Lake, as well as others. Related efforts are further described in Section 3.4.

- **Los Angeles River Revitalization Master Plan (LARRMP) –** Completed in 2007, this plan represents a 25 to 50-year blueprint for implementing a variety of improvements to make the Los Angeles River a valued landmark and a catalyst for a sustainable environment.

- **Los Angeles River Ecosystem Restoration Feasibility Study –** In line with the LARRMP goal of restoring a functional riparian ecosystem, this USACE study will look at a 10-mile reach of the Los Angeles River. Target completion is December 2013, but progress is contingent upon available funding.

- **Low Impact Development (LID) Ordinance –** Adopted in fall of 2011, it requires 100% of the runoff generated from a 3/4-inch storm to be managed on site. It applies to all development and redevelopment projects that require a building permit to create, add, or replace impervious areas of 500 square feet or more.

- **Rainwater Harvesting Program –** This program was implemented to pilot a Downspout Disconnection Project for rainwater capture and use for irrigation. Targeted residential and commercial properties in CDs 10 & 11 resulted in the installation of 600 rain barrels in January 2010.

- **Green Streets and Green Alleys Program –** Led by L.A. Sanitation, the interdepartmental Green Streets Committee identifies stormwater capture and infiltration opportunities within City streets and alleys, and develops guidelines and standard plans to implement "green elements" in sidewalks, parkways, alleys,

and others. The following are some key projects completed or close to completion under Green Streets:

Elmer Avenue Neighborhood Retrofit Project: This Green Streets Project installed sidewalks, curb and gutter, and catch basins along Elmer Avenue in Sun Valley. This project also installed parkway stormwater gardens, driveway drains and a large infiltration system underneath the street to accept runoff from residential lots adjacent to the project site. This project was completed in March 2010.

Riverdale Avenue Green Street Project: This project installed permeable interlocking concrete pavers, dry wells for monitoring, filters, infiltration basins, street trees and planter beds along both sides of Riverdale Ave. between Crystal St. and the L.A. Los Angeles River to reduce stormwater runoff via infiltration. This project was completed in September 2010.

- **Stormwater Projects under Proposition O –** Numerous stormwater projects with multiple benefits are funded by Prop O have been completed or are either planned, in design, or under construction. Section 3.4.4 provides a summary of these projects. The following are some key projects completed or close to completion under Prop O:

  South Los Angles Wetlands Park: This project consists of transforming an existing rail maintenance yard into constructed wetlands with surrounding walking trails, riparian vegetation and other passive recreation elements. The wetland is designed to capture and treat stormwater and urban runoff from a 540-acre drainage area. UPDATE: This project was completed in February 2012.

- **Stormwater Capture Master Plan –** Expected to begin development in 2012, this plan will investigate and create potential strategies for implementation of stormwater and watershed management programs and projects in the City.

An additional key project is the Garvanza Park Stormwater Infiltration and Use Project, which was funded by US EPA supplemented by State Propositions 40 and 13, the LADWP, and the Stormwater Pollution Abatement fund. This project consists of diverting urban runoff from an existing storm drain and capturing it for cleaning and storage in two underground cisterns. One chamber will allow captured water to infiltrate into the soil to help replenish groundwater. The other chamber will store water for subsurface irrigation at the park. UPDATE: This project was completed in March 2012.

ES.4 Status of Implementation Strategy

This section identifies and describes progress on specific IRP recommendations for wastewater, water, and stormwater management.

Table ES-1: Summary of Status for IRP Go Projects

Recommendations	Trigger Status	Status
Go Projects (2006)		
Go Project 1: Construct Wastewater Storage Facilities at DCTWRP	Project under construction	 Will be Completed in 2012
Go Project 2: Construct Wastewater Storage Facilities at LAGWRP	Plant is at capacity and equalization is not necessary	 Reassign to Go-if Triggered Projects due to trigger not met
Go Project 3: Construct Recycled Water Storage at LAGWRP	Recycled water needs must exceed 16MGD for project to move forward	 Reassign to Go-if Triggered Projects due to trigger not met
Go Project 4: Construct Hyperion Treatment Plant Solids Handling and Truck Loading Facility	Flow triggers not met	 Deferred to beyond 2020
Go Project 5: Construct Glendale-Burbank Interceptor Sewer (GBIS)	Reduced flows have pushed need beyond 2020	 Deferred to beyond 2020
Go Project 6: Construct North East Interceptor Sewer Phase II (NEIS II)	Project is in design phase	 Project design scheduled to be completed mid 2014

Table ES-2: Summary of Status for IRP Go-if-Triggered Projects

Recommendations	Trigger Status	Status
Go-if Triggered Projects (2006)		
Go if Triggered Project 1: Potential upgrades at Tillman to advanced treatment (current capacity)	Detailed planning for GWR in progress	 CEQA document under development
Go if Triggered Project 2: Potential expansion of Tillman to 100 mgd with advanced treatment	Flow triggers not met	 Remain in Go-if Triggered
Go if Triggered Project 3: Potential upgrade of LAG to advanced treatment (current capacity)	Regulation trigger not met	 Remain in Go-if Triggered
Go if Triggered Project 4: Potential upgrade of LAG to advanced treatment (current capacity)	Flow triggers not met	 Remain in Go-if Triggered
Go if Triggered Project 5: Design/construction of up to 12 digesters at Hyperion	Flow (solids loading) trigger not met	 Remain in Go-if Triggered
Go if Triggered Project 6: Prepare alignment study, environmental documentation, and subsequent design/construction of Valley Spring Lane Interceptor Sewer	Advanced planning efforts completed 2009, Flow reductions push need beyond 2020	 Deferred to beyond 2020

Table ES-3: Summary of Status for IRP Go-Policy Directions

Go Policy Directions	Status
1. Maximize use of recycled water for non-potable uses in the TITP, West side, and LAGWRP services areas	 88 existing customers; RWMP has identified new customer & projects
2. Require dual plumbing in the vicinity of recycled water distribution systems in coordination with LARRMP	 Developing a method for evaluating potential developments
3. Coordinate design/construction of purple pipe with other major public works projects	 Coordinating with external agencies to identify opportunities
4. Explore feasibility of implementing groundwater replenishment with advanced treated recycled water	 RWAG assembled to solicit input for RWMP & GWR
5. Continue to provide water from DCTWRP to Lake Balboa, Wildlife Lake, Japanese Garden and L.A. River to meet baseline needs for habitat	 Tertiary treated effluent will continue to be provided from DCT

Go Policy Directions	Status
6. Continue conservation efforts, including using smart irrigation devices	IN PROGRESS New rebates & incentive programs created
7. Continue conservation efforts, including no-flush urinal technology	IN PROGRESS Increased rebates & High Efficiency Plumbing Fixture Ordinance adopted
8. Continue conservation efforts, including requiring individual water meters for new apartment buildings	IN PROGRESS LADWP working w/MWD, Industry, DBS, DCP, & Sustainable Code Officials to evaluate plumbing codes & determine feasibility
9. Continue conservation efforts, including increasing education on climate-appropriate & CA-friendly plants in coordination with LARRMP	IN PROGRESS Drought Resistant Landscape Incentive Program; Increased Public Outreach
10. Consider developing City Directive to require the use of CA-friendly plants in City projects	IN PROGRESS CA friendly plants encouraged under several programs; large developments covered under City's Irrigation Guidelines
11. Review SUSMP to require where feasible on-site infiltration and/or treat/reuse, rather than treat and discharge, including in-lieu fees	COMPLETE 11/2008 – SUSMP Revised promoting on-site infiltration
12(a). Modify codes to encourage feasible BMPs for maximizing on-site capture and retention and/or infiltration of stormwater, including porous pavement	COMPLETE 1/2008 - DBS published Information Bulletin regarding Guidelines for Storm Water Infiltration.
12(b). Evaluate requiring porous pavements in all new public facilities in coordination with LARRMP and large developments	IN PROGRESS Green Streets Committee evaluates & encourages alternative street surfacing materials
13. Evaluate ordinance changes to reduce the area on private properties that can be paved with non-permeable pavement	COMPLETE Permeable materials allowed & encouraged; Front yard non-permeable area limited to 50%
14. Evaluate and implement integration of porous pavements into sidewalks and parkways	IN PROGRESS Alternative street surfacing materials currently allowed & encouraged
15. Prepare a concept report and determine feasibility of powerline easement demonstration project	COMPLETE 3/2011 - Westside Park Rainwater Irrigation Project completed
16. Work with LAUSD to determine feasibility of projects for new & retrofitted schools, & gov./city-owned facilities with stormwater BMPs	IN PROGRESS WPD continues to reach out to LAUSD in search of project opportunities

Go Policy Directions	Status
17. Identify sites that can provide onsite percolation of wet weather runoff in surplus properties, vacant lots, open space, abandoned alleys in & along LA River in East Valley	 3/2010 - Elmer Avenue Neighborhood Retrofit Project completed; searching for more opportunities
18. Maximize unpaved open space in City-owned properties and parking medians through BMPs and removing unnecessary pavements	 Green Streets Committee searching for opportunities
19. Include all feasible BMPs in the construction or reconstruction of highway medians	 Stormwater NPDES requires street projects ≥ 10,000 sq. ft. to incorporate BMPs
20. Coordinate with Million Trees LA to identifying potential locations of tree plantings that would provide stormwater benefit	 Million Trees is progressing but would need more funding to identify stormwater benefits
21. Consider diversion of dry weather runoff from Ballona Creek to constructed wetlands, wastewater system, or urban runoff plant for treatment and/or beneficial use	 Projects identified in TMDL Implementation Plans; Westside Park Rainwater Irrigation Project completed
22. Consider diversion of dry weather runoff from inland creeks and storm drains tributary to wastewater system or constructed wetlands or treatment/retention/infiltration basins	 Diversion not required but Downtown Low Flow diversion & South L.A. Wetlands will contribute towards compliance w/bacteria TMDL
23. Consider incorporating IRP policy decisions in the General Plan, Community Plan, and Specific Plan updates or revisions, and in LARRMP and Opportunity Areas	 IRP policies supported/considered in these plans
24. Include stormwater management BMPs in all new parks	 New & redeveloped parks are required to comply with SUSMP
25. Evaluate feasibility of all City properties identified as surplus for potential development of multiple-benefit projects to improve stormwater management, water quality and groundwater recharge	 Properties are evaluated for stormwater benefits as they become available

ES.5 Financial Update

In the interim period since completion of the IRP in 2006, the departments responsible for implementing the IRP recommendations, L.A. Sanitation for wastewater and runoff management and LADWP for water conservation and recycled water, have been incorporating recommendations into their respective capital budget/funding mechanisms.

As a result of further analysis, several IRP Go Projects have been reassigned to the Go-if Triggered Project category. The City will continue to monitor specific triggers for each project to determine if future implementation is needed. Cost for these projects -- which may or may not be implemented -- has been deferred to outside of the IRP 2020 timeframe. Additionally, the cost for two IRP Go Projects, which are currently in progress, has been revised due to new information. Consequently, the City has saved approximately $545 million in construction costs within the 2020 IRP time frame.

ES.6 Partnerships and Stakeholder Outreach

Implementing the recommendations in the IRP requires partnerships between departments and divisions within the City as well as between the City and the IRP stakeholders. The following partnership and outreach activities have occurred since the IRP was adopted in 2006:

- **Implementation Strategy Team Meetings –** This interdepartmental team met 20 times between 2005 and 2010 to discussing implementation schedule, monitoring of project triggers, regulatory/permit monitoring, status of Go and Go-If Triggered Projects and Go Policy Directions, and stakeholder engagement.

- **Joint Board of Public Works and LADWP Board of Commissioners Meetings –** Within the last 5 years, two joint meetings were held. These meetings were open to the public and several IRP stakeholders participated and provided public comments.

- **City Council Progress Updates –** Starting in 2008, L.A. Sanitation staff prepared annual status reports in collaboration with other City Departments. In addition, in September 2011, City Council commended IRP staff and stakeholders for the receipt of the 2011 Clean Water Prize.

- **Stakeholder Annual Meetings –** Annual stakeholder meetings have been conducted every year since IRP adoption in 2006. These meetings serve to provide an update on the status of IRP implementation, and a venue for the City to receive feedback on its activities.

- **IRP Newsletters –** Ten newsletters have been distributed to provide progress updates to the IRP Stakeholders on implementation activities.

- **IRP Website –** The City developed a web site (www.lacity.org/san/irp) to provide ongoing information sharing about the IRP.

Thanks to these many efforts, the IRP has been selected for numerous national and local awards. In the coming years, the IRP Team will continue to engage the IRP Stakeholders with annual meetings as well as through IRP Newsletters. The team will also begin to develop a strategy plan with the stakeholders for the next IRP, as well as continue coordinating with other City departments and organizations.

ES.7 Acknowledgments

The Water IRP 5-Year Review was commissioned in 2010 as a tool to assess and summarize the progress of the 2006 adopted IRP. The project was initiated by the L.A. Sanitation, in partnership with LADWP and support from BOE, DCP, DBS, RAP, and BSS. Critical to the development of the IRP 5-Year Review documents was a diverse team of contributors and reviewers. The following individuals have dedicated significant time and effort to ensuring a sustainable water future for the City of Los Angeles.

Department General Managers

Enrique C. Zaldivar
Director, L.A. Sanitation

Ron Nichols
General Manager, LADWP

Gary Lee Moore
City Engineer

City Executive Management

Adel Hagekhalil
Assistant Director, L.A. Sanitation

David Pettijohn
Director of Water Resources, LADWP

Kenneth Redd
Deputy City Engineer, Wastewater Program, BOE

Project Leaders

Ali Poosti
Division Manager, BOS WESD

Doug Walters
Assistant Division Manager, BOS WESD

Susan Rowghani
Assistant Director of Water Engineering and Technical Services, LADWP

Patricia Bohlmann,
BOS WESD

Evelyn Cortez-Davis,
LADWP Water Recycling

Wing Tam
BOS, WPD

Heather Boyle VanMeter,
CDM Smith

Jennifer Thompson
CDM Smith

Project Team and Contributors

Roshanak Aflaki, BOS
Samara Ali-Ahmad, BOE
Carlos Amaya, BOE
Carol Armstrong, BOE
Michael Bell, BOS
Jennifer Coryell, CDM Smith
Hubertus Cox, BOS
Renee Curtis, BOE
Hampik Dekermenjian, CDM Smith
Christopher DeMonbrun, BOS
Jim Doty, BOE
Penny Falcon, LADWP
Steven Fan, BOS
Tom Gibson, RAP
Darren Hartwich, CDM Smith
Rafael Herrera, LADWP
Lawrence Hsu, BOE
Deborah Kahen, DCP
Shahram Kharaghani, BOS
Paul Liu, LADWP
Alfredo Magallanes, BOS
Lenise Marrero, BOS
Richard Meyerhoff, CDM Smith
David Moering, MARRS
Omar Moghaddam, BOS
Hiddo Netto, BOS
Steven Nikaido, BOS
Andy Niknafs, LADWP
Alfred Novato, CDM Smith
Hassan Rad, BOS
Dan Rodrigo, CDM Smith
Todd Rother, LADWP
Michael Sarullo, BOE
Mark Starr, BOS
Deborah Weintraub, BOE
Jim Yannotta, LADWP
Eric Yoshida, LADWP
Osama Younan, DBS

THIS PAGE IS INTENTIONALLY LEFT BLANK

Section 1
Wastewater Management Review

1.1 Introduction

This section provides a description of new information emerging since the IRP adoption in 2006. It identifies new programs, projects, efforts, and regulations that relate to wastewater management and impact the implementation of IRP recommendations.

1.2 Background and Approach

In 2006, the City Council adopted the IRP, which was prepared by LA Sanitation, with LADWP as a key partner. The IRP integrated a future vision of wastewater, water, and urban runoff management by addressing all of the water related needs of the City towards the year 2020. In order to accomplish this, the final IRP included a series of volumes: an Executive Summary; a Summary Report; a Facilities Plan (5 volumes); a Final Environmental Impact Report (EIR); a Financial Plan; and a Public Outreach Report. The *Facilities Plan* was divided into the following volumes:

- Volume 1: Wastewater Management
- Volume 2: Water Management
- Volume 3: Runoff Management
- Volume 4: Alternatives Development and Analysis
- Volume 5: Adaptive Capital Improvement Program (CIP)

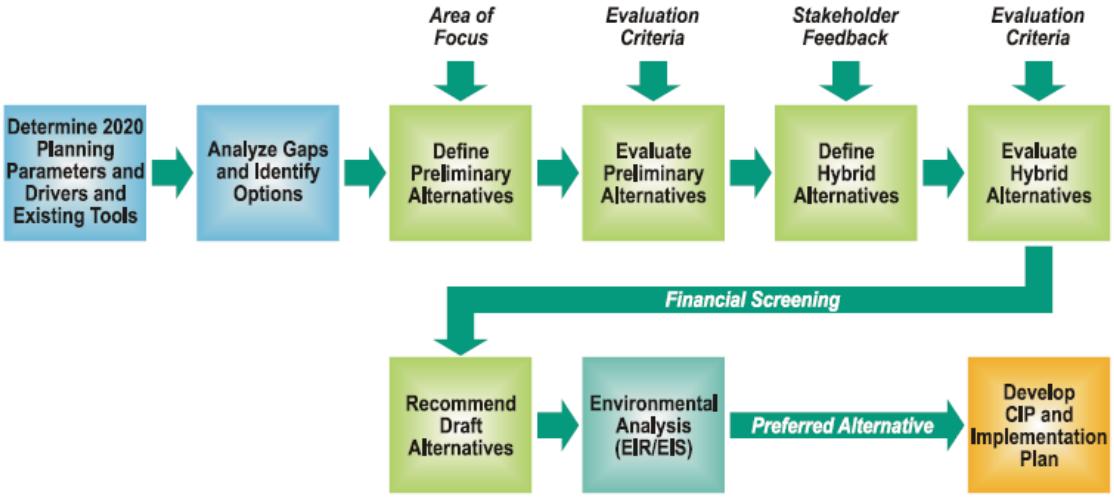
This section reviews the Wastewater Management Volume of the *Facilities Plan* (Volume 1).

1.2.1 Summary of the 2006 IRP Findings for Wastewater Management

The approach for wastewater management in the IRP was to determine the 2020 planning parameters and drivers and existing programs for wastewater, analyze the

gaps and identify options, define preliminary alternatives, evaluate alternatives, recommend draft alternatives, conduct environmental analysis (EIR), and develop an implementation plan for the recommended alternative. Figure 1-1 provides a summary of this overall process.

Figure 1-1: IRP Approach to Creating Alternatives



The recommended alternative for implementation (Alternative 4 – Tillman Water Reclamation Plant Expansion/High Potential for Water Resources Projects) included 12 projects that were further evaluated in an Environmental Impact Report (EIR), prepared in accordance with California Environmental Quality Act (CEQA) requirements. These projects were separated into two categories, 1) Go Projects for immediate implementation and 2) Go-If Triggered Projects for implementation in the future once a trigger is reached. Triggers for these projects included wastewater flow, population, regulations or operational efficiency. The Go Projects consisted of six capital improvement projects. At the time when the IRP EIR was approved, the triggers for these projects were considered to have been met. The Go-If Triggered Projects consisted of six capital improvement projects, whose triggers were considered to have not been met at the time of the approval of the IRP EIR.

The following is a brief description of the six IRP Go Projects:

1. Construct wastewater storage facilities at Donald C. Tillman Water Reclamation Plant (DCTWRP) that will provide the needed wet weather wastewater storage and operational storage.

2. Construct wastewater storage at Los Angeles Glendale Water Reclamation Plant (LAGWRP) that will allow operations to be more efficient while increasing our ability to provide consistent recycled water flows to customers.

3. Construct recycled water storage at Los Angeles Glendale Water Reclamation Plant (LAGWRP) that will allow LAGWRP to deliver recycled water to customers at times when wastewater flows are low (i.e., during the night.)

4. Construct solids handling and truck loading facility at the Hyperion Treatment Plant (HTP) that will provide more efficient operations and will also meet future solids handling production.

5. Construct Glendale-Burbank Interceptor Sewer (GBIS) that will provide relief and additional capacity in the near future to prevent overflows and spills.

6. Construct North East Interceptor Sewer (NEIS) Phase II that will relieve the section of the North Outfall Sewer (NOS) south of LAGWRP and convey additional wastewater from GBIS to provide additional capacity in the near future to prevent overflows and spills.

The following is a brief description of the six IRP Go-If Triggered Projects

1. Upgrades at DCTWRP to advanced treatment (current capacity) may be triggered by regulations and/or a decision to reuse recycled water for groundwater replenishment (advanced treatment may be necessary in order to meet all applicable requirements).

2. Expansion of DCTWRP to 100 mgd with advanced treatment if an increase in population, regulations, and/or a decision to replenish groundwater basins takes place[1].

3. Upgrades of LAGWRP to advanced treatment (current capacity) if triggered by regulations, downstream sewer capacity, and/or management's decision to reuse[2].

4. Design/construction of secondary clarifiers at the Hyperion Treatment Plant (HTP) to provide operational performance at 450 mgd ,if the optimization of existing secondary clarifiers is unsuccessful.

5. Design/construction of up to 12 digesters at HTP, if an increased biosolids production in the service area takes place[3].

[1] Note that in 2006, it was assumed that DCTWRP could be expanded to 100 mgd with advanced treatment.
[2] Note that in 2006, it was assumed that advanced treatment at current capacity could be required.
[3] Note that in 2006, it was assumed that additional digesters could be required at Hyperion.

6. Design/construction of Valley Spring Lane Interceptor Sewer (VSLIS) to provide additional sewer conveyance capacity between DCTWRP and the Valley Spring Lane/Forman Avenue Diversion structure if flow triggers are met.

1.2.2 Approach for this Wastewater Management Review

The approach for reviewing the IRP Wastewater Facilities information is to research and identify all programs, capital improvement projects, new regulations and studies that have impacted or affected implementation of the IRP recommended projects. Table 1-1 summarizes the various projects and programs that will be used for this update.

Table 1-1: List of References Used to Update the IRP-Recommended Projects

Facility/Project	Wastewater Facility Reference Documents	Year	Department / Lead
DCTWRP	*Flow Equalization and Filtration Concept Report*	2008	BOE
TIWRP	Terminal Island Renewable Energy (TIRE)	2006	LA Sanitation
Various	City of Los Angeles *Water Supply Action Plan*	2008	LADWP
Various	*Recycled Water Master Planning Process Documents*	2012	LADWP
HTP	Secondary Treatment System Optimization Report	2010	BOE
HTP	Primary Solids Thickening Centrifuge Project	2005	LA Sanitation
VSLIS	VSLIS Planning Study	2010	LA Sanitation/ WESD
DCTWRP	Open Lined Basin Evaluation	2009	BOE/WCED
GBIS	GBIS Second Addendum	2010	LA Sanitation/ WESD
NEIS II/GBIS/VSLIS	Sewer Capacity Report	2008	WESD

1.3 Updated Planning Parameters

The following subsections describe new regulations and drivers, adopted after December 2006, which may potentially affect or impact one or more of the original IRP recommendations as related to wastewater management. As a brief background, below is a list of the original planning parameters used in the development of the IRP. For a more detailed description of these parameters please refer to the City of Los

Angeles *Integrated Resources Plan Facilities Plan Volume 1: Wastewater Management* (CH:CDM, 2004).

- Planning Year of 2020 – Remains the same for the purpose of this review
- Water Service Area – Remains the same for the purpose of this review
- Regulatory Requirements – Several regulations have been adopted since 2006. Refer to Section 1.3.1 for more information.
- Population and Employment Projections – Demographic data has been updated. Refer to Section 1.3.2 for more information.
- Guiding Principles Affecting Wastewater Management – Remain the same for the purpose of this review

1.3.1 Regulations

The four treatment plants operate under the federal National Pollution Discharge Elimination System (NPDES) permit requirements.

New Permit Requirements

- **Hyperion Treatment Plant (HTP)**
  On November 22, 2010, the Los Angeles Regional Water Quality Control Board (RWQCB) and the U.S. Environmental Protection Agency (EPA) reissued the federal NPDES permit for HTP which became effective on December 24, 2010. There are no major changes from the previous permit other than the inclusion of monitoring requirements for Constituents of Emerging Concern (CECs).

- **Donald C. Tillman Water Reclamation Plant (DCTWRP)**
  On August 4, 2011, the Los Angeles RWQCB released the NPDES tentative order permit for the DCTWRP. On September 2, 2011, the Bureau submitted comments on the proposed permit, and the RWQCB adopted the permit on December 8, 2011. LA Sanitation commented on the timely adoption of the revised nitrogen Total Maximum Daily Load (TMDL) by the RWQCB to incorporate site-specific ammonia objectives; as well as the methodology used to calculate effluent limits for metals with TMDLs. There are no major changes from the previous permit other than the inclusion of monitoring requirements for CECs.

- **Los Angeles-Glendale Water Reclamation Plant (LAGWRP)**
  On August 4, 2011, the Los Angeles RWQCB released the NPDES tentative order for the LAGWRP. On September 2, 2011, the LA Sanitation submitted comments on the proposed tentative order, and the RWQCB adopted the new permit on December 8, 2011. Similar to DCTWRP, LA Sanitation commented on the timely adoption of the revised nitrogen TMDL by the RWQCB to incorporate site-specific ammonia objectives; as well as the methodology used to calculate effluent limits

for metals with TMDLs. There are no major changes from the previous permit other than the inclusion of monitoring requirements for CECs.

- **Terminal Island Water Reclamation Plant (TIWRP)**
  On May 6, 2010 the Los Angeles RWQCB adopted the NPDES permit for the TIWRP. The NPDES permit prohibits discharge of treated municipal wastewater to the Harbor beyond 2020 but allows brine from the AWTF to be discharged to the Harbor beyond 2020. The new NPDES permit has a water recycling program to implement resolution 94-009 adopted by the City in 1990s. LA Sanitation has filed an abeyance petition with the State Water Control Board and has challenged the prohibition part of the NPDES permit that specifically calls for TIWRP to cease discharge of tertiary treated effluent to the Los Angeles Harbor by 2020.

1.3.2 Other Drivers

Wastewater Flow

Projecting wastewater flows is an important tool for determining the necessity of the wastewater Go and Go-If Triggered Projects. When the IRP *Facilities Plan* was started in 2002, the most up-to-date demographic data available was the Southern California Association of Governments (SCAG) 2001 adjusted data. The projection was adjusted from 1990 Census data. Though the analysis took place in 2002, the Census data for 2000 had not yet become available. At that time it was assumed that the population would increase by 18.7% between 2000 and 2020, causing a subsequent increase in the wastewater flow.

Wastewater flow consists of the following sources:

- Residential - The wastewater that is generated at the home through washing dishes, taking showers and flushing of toilets. In the original IRP, this flow was estimated at 81 gallons per person per day.
- Employment - The wastewater that is generated at the work place through flushing of toilets and washing of hands. In the original IRP this flow was estimated at 24 gallons per employee per day.
- Groundwater Infiltration (GWI) - This is the groundwater flow that enters the wastewater conveyance system through maintenance holes and the small openings between the pipe connections. This flow was estimated at 29.9 mgd for year 2000 and increased to 33.0 mgd by year 2020.
- Industrial - This flow was considered to be constant at 23.2 mgd. It was assumed that no additional industrial users of potable water of significant amount would begin operations in the City of Los Angeles.

Using SCAG projected demographic data, it was estimated that in 2000 the wastewater flow for the Hyperion Service Area (HSA) would be 443 mgd, while the wastewater flow was monitored at 425 mgd. The difference was 4% relative to the projections. Using this as the point of reference, and noting that the historical wastewater flow has increased by 0.77 mgd/year since 1987, the 4% difference was acceptable and it was assumed the wastewater flow would follow the same trends as the 2001 projection and the historical wastewater data.

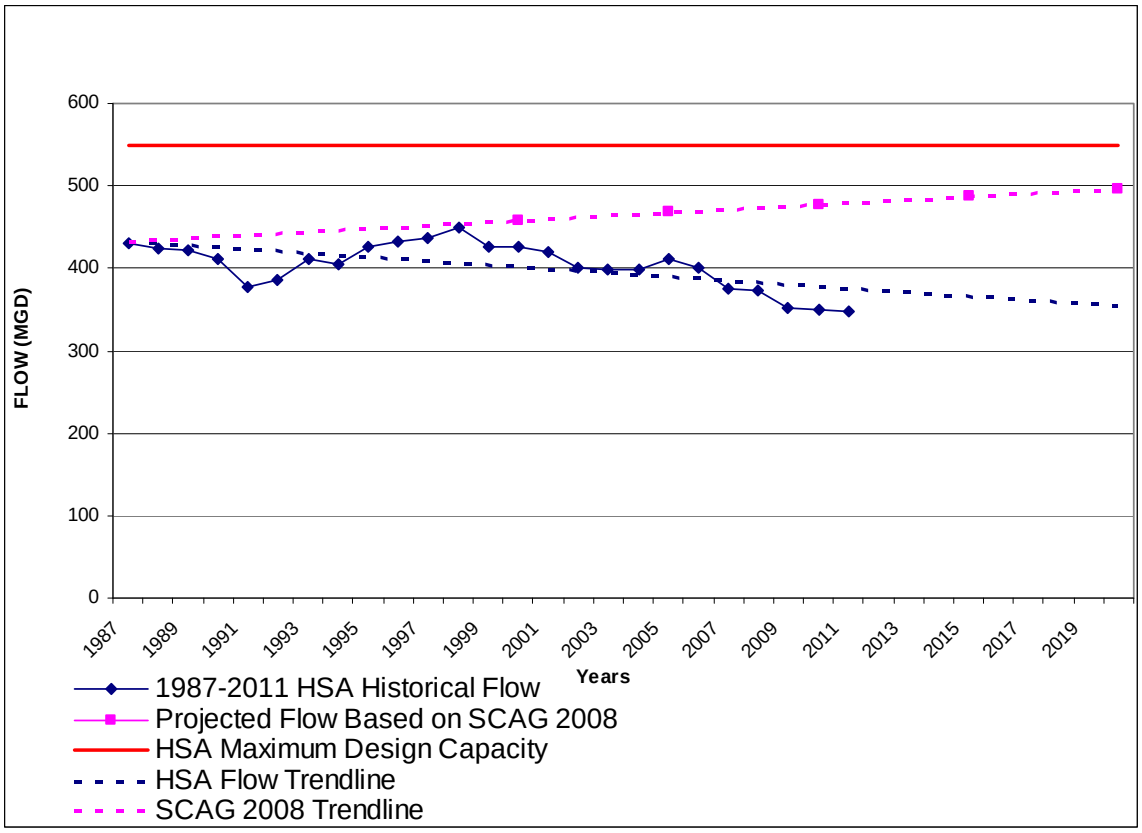
As part of determining the necessity and timing of the projects related to wastewater flow, the flow over the HSA was monitored and compared with the projected data. Since 2006, the projected data has been adjusted twice from the SCAG 2000 data derived from the 2000 Census. In 2006, SCAG released population projections for 2004, and in 2009, SCAG released the 2008 population projection. In the interest of using the most current data, the IRP 5-Year Review Team used the SCAG 2008 data adjusted from 2000. The 2010 Census data was not yet available to use for this 5-Year Review.

Using the SCAG 2008 values, the year 2000 wastewater flow was projected to be 458 mgd while the actual wastewater flow was 425 mgd. It is unclear as to why flow projections were greater in 2000 using the 2008 SCAG demographic data in comparison to the lower projection from the dated 2001 SCAG demographic data, but the ultimate flow for 2020 was projected to be lower than the 2001 projection.

Historical data from 2002 to June 2011 showed a significant decrease in wastewater flow. This could be attributed to water conservation, economic downturn, and DWP Tier 1 and Tier 2 rate adjustments. Using historical wastewater flow data from 1987 to June 2011, it was shown that the flow was actually decreasing at a rate of 2.53 mgd over that time span. From 2002 to June 2011, the average wastewater flow for the HSA was 381 mgd. Using 2010 as a reference point, the wastewater flow for the HSA was measured at 350 mgd while the projection using SCAG demographic data was 430 mgd. This is a difference of 26.5% relative to the 2008 projection.

Figure 1-2 presents a chart showing historic and revised projections for HSA.

Figure 1-2: HSA SCAG 2008 Actual Flow Comparison



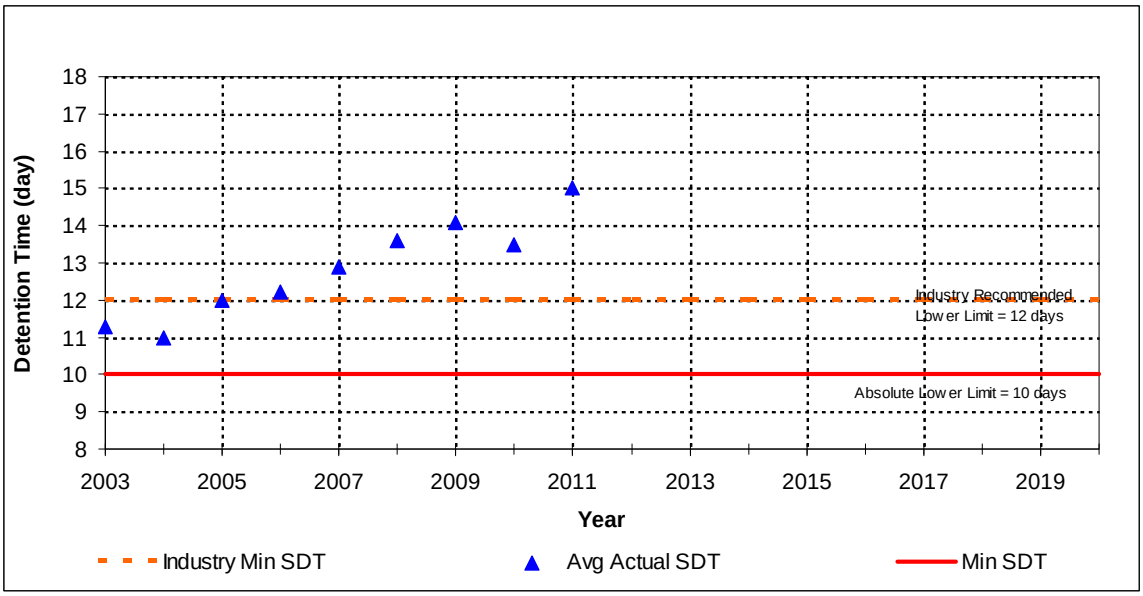
Sludge Detention Time

In an effort to determine the necessity and time frame to design and construct Go-If Triggered Project #5, the design and construction of up to 12 digesters at HTP, the sludge detention time has been monitored. The sludge detention time is the amount of time necessary for biosolids to be processed in the anaerobic digesters and become inert matter to be disposed of without biological contaminants present. Industry recommends this time be at least 12 days while the absolute lowest limit per NPDES is 10-days.

If the detention time were to decrease to below the industry recommendation and trend towards the absolute lower limit, it would signal the need to construct Go-If Triggered Project #5. If this scenario took place it would signal an increase of biosolids that needed to be processed. Given the fact that since 2006 the detention time has been above the industry recommended detention time, it is not likely that the detention time will decrease to below the industry recommendation and necessitate the triggering of Go-If Triggered Project #5.

Figure 1-3 presents a summary of the HTP sludge detention time.

Figure 1-3: HTP Sludge Detention Time

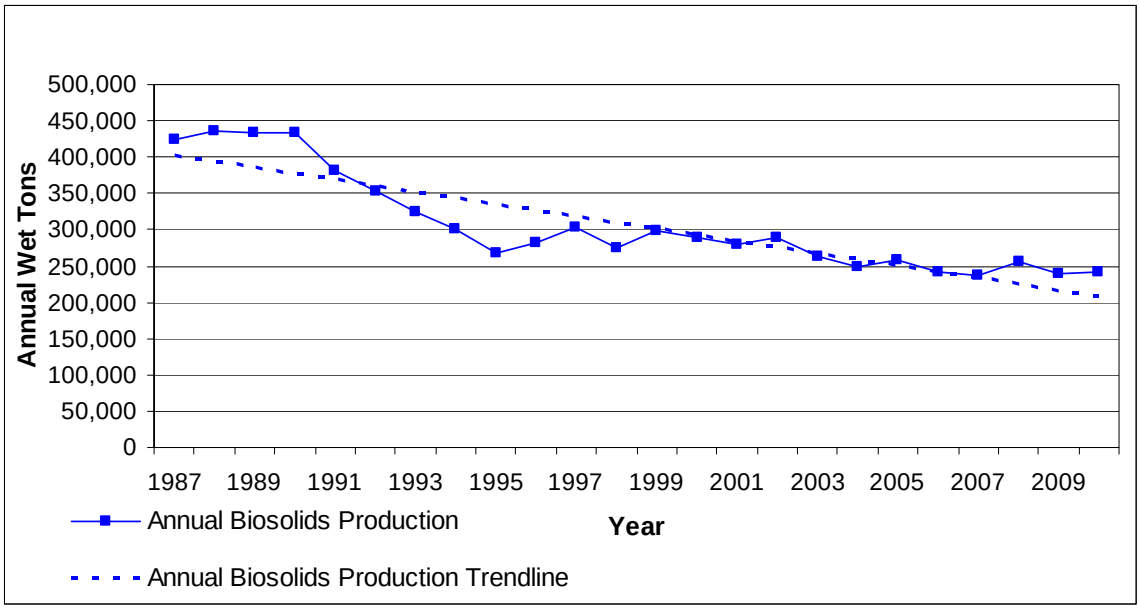


Biosolids Production

In an effort to determine the necessity and time frame to design and construct Go Project #4: Construct solids handling and truck loading facility at HTP, the historical biosolids loading has been monitored. If the biosolids were to increase to levels prior to that of the initiation of the IRP in 2002, there would be the need to construct Go Project #4.

At the time the IRP was drafted, it was assumed that the biosolids production would increase as the flow increased. This assumption turned out not to be the case. As demonstrated in Figure 1-4, since 2002 the biosolids production at HTP has decreased by 13.1%, and since peak biosolids production in 1988 there has been a 45.1% reduction. In the unlikely event that biosolids production will increase to levels near the late 1980's, the necessity to move forward with Go Project #4 will take place.

Figure 1-4: Historical Biosolids Production



1.4 Implementation Progress

This section will discuss new programs and projects that have affected the wastewater Go Projects and Go-If Triggered Projects since the implementation of the IRP.

***Recycled Water Master Planning* Efforts**

In May 2008, the Mayor's Office and the Los Angeles Department of Water and Power published the document titled Securing L.A.'s Water Supply. This document established guidelines on how the City of Los Angeles would meet anticipated water demand. The document established the guidelines for water sustainability through recycled water. To meet the goals set by the Securing L.A.'s Water Supply document, LADWP began the *Recycled Water Master Planning Process* (RWMP) in conjunction with the LA Sanitation. This planning process would look at ways to utilize recycled water within the City of Los Angeles to help meet future potable water demands. The purpose of this effort was to develop plans to meet the City's goal of achieving 59,000 AFY of recycled water delivered by 2035 along with identifying how the City can maximize recycled water use beyond 50,000 AFY goal. The RWMP began in June 2009 and was completed in March 2012. There are six tasks associated with RWMP, see Section 2.4.1 for details.

The master planning process outlined specific recycled water projects that were based on projects from the IRP. These included IRP Go Projects 1, 2 & 3, and Go-If Triggered Projects 1 & 2.

Terminal Island Renewable Energy Project

The Terminal Island Renewable Energy Project (TIRE) is demonstrating an innovative technology to convert biosolids into clean energy by deep well injection and geothermal biodegradation. The EPA issued a permit for the project in 2006 and construction began in 2007. By July 2008, the first bio-slurry material (brine, effluent, digested sludge and biosolids) was injected and to date over 140 million gallons of material has been placed into deep geologic formations below the earth at the TIWRP. All of the biosolids produced at TIWRP and approximately 107 wet-tons from produced from the Hyperion Treatment Plant are injected at the TIRE site. This is approximately 20% of the City's daily biosolids production. Quarterly reports summarizing injection operations, well formation response, and monitoring data are submitted to the EPA.

Project benefits thus far have been carbon sequestration at a rate of 83,000 tons per year, reduction in truck transportation emissions by 84 tons of Nitrogen Oxide ($NO_{x)}$ and 13 tons of Carbon Monoxide (CO) and reduction in transportation costs by $1.6 million annually. Based on these positive results, the City has submitted a new Underground Injection Control permit application to continue demonstrating the project for another five years. The application is under review by the EPA.

The TIRE Project has won numerous awards including the National League of Cities Award for Municipal Excellence, the California Association of Sanitation Agencies' (CASA) Technical Innovation and Achievement Award, and was selected for the Harvard-Ash Award for Innovations in American Government.

Nitrification/Denitrification (NdN) Upgrades at DCTWRP & LAGWRP

The conventional activated-sludge biological treatment process historically used at DCTWRP and LAGWRP did not remove a significant amount of nitrogen, essentially passing through influent nitrogen compounds eventually to the river. Excessive nitrogen impairs the function and health of the Los Angeles River. While nitrogen is essential to a productive ecosystem, too much nitrogen fuels the excessive growth of algae. Algae growth and algae decay inhibit light penetration required to support growth of submerged aquatic vegetation, an important habitat for aquatic life, and reduces dissolved oxygen concentration to unhealthy levels.

The City extensively modified the secondary treatment facilities at DCTWRP and LAGWRP to allow operation of a different treatment process to reduce the amount of nitrogen in the plant effluent discharge. The Modified Ludzak Ettinger (MLE) treatment process allows the plants to reliably comply with the nitrogen compound discharge limits mandated by the "Nitrogen Compounds and Related Effects Total Maximum Daily Load (TMDL) for the Los Angeles River Watershed" amendment to the Los Angeles River Water Quality Control Plan. This was adopted by the Regional Water Quality Control Board on March 2004. These upgrades included modifications

of secondary treatment equipment, such as air diffusers, pumps, valves, meters and floating mixers. The modifications also involved constructing five baffle walls in each of the eighteen aeration tanks to create a series anaerobic, anoxic and aerobic zones sized for optimal nitrification and denitrification. A new, pumped, internal recycle stream from the final aerobic zone to the anoxic zone maximizes the use of the influent biochemical oxygen demand (BOD) for denitrification, thereby minimizing the BOD entering the aerobic zones, with a subsequent reduction in the amount of air required to nitrify. Both LAGWRP and DCTWRP were converted to NdN in 2007.

Trial runs of the retrofitted treatment facilities yielded successful results. In particular, the following improvements were noted: (a) improved Sludge Volume Index (SVI – a measure of secondary treatment performance) running in conventional mode, (b) SVI stability in the modified nitrogen removal process, and (c) enhanced phosphorus removal, which is essentially a bonus since it was not a primary objective. Other modifications included air distribution system modification, improved Dissolved Oxygen (DO) control system and upgrade of systems required for reliable and safe operation.

Diamond Cloth Filter Systems at DCTWRP

On May 2010, the largest Title 22 cloth media tertiary filtration system in the United States was successfully completed and installed at DCTWRP. The existing sand filters were installed in two stages between 1983 and 1990 and were suffering serious mechanical, structural, and performance degradation. Chemical enhancement as well as repeated shock chlorination had been necessary to maintain even moderate performance. In addition, mechanical rehabilitation and media replacement required allocation of considerable resources with substantial investment of both capital and O&M funds.

With a total capacity to process 130 mgd, the Title 22 cloth media tertiary filtration system was implemented in phases; 50 mgd of disc filters to supplement the existing filters, followed by 80 mgd of procurement and installation of AquaDiamond® filters.

The design of the AquaDiamond® filtration system was based on the following research and criteria:

1. The innovative design of this system provides a very high filtration capacity per square foot of equipment footprint and utilizes the existing sand filter concrete infrastructure. Footprint for the AquaDiamond® filters was 50% of traditional sand filters.

2. The excellent performance of the cloth media was demonstrated by full-scale, on site extensive pilot testing of disk-type cloth media filters.

3. The modular design of both the self-contained, in-tank systems offers maximum flexibility and expandability.

4. The new in-tank, AquaDiamond® design offers convenient, efficient cleaning and is easy to maintain as was demonstrated to City staff by personnel from other municipalities who utilize these filters.

5. These cloth filters, both the disc type and the AquaDiamond® have been approved for use in supplying California Title 22 Tertiary Effluent.

6. In-house comparative analysis showed the AquaDiamond® filters to be the most cost effective candidate for tertiary filtration replacement at DCTWRP.

The disk filters were installed in 2007 and the final phase of AquaDiamond® filters was completed in May 2010.

This project has improved the filtration performance at DCTWRP and will affect the need to increase flow capacity, as was recommended in the 2006 IRP by Go Project #1. This is discussed in more detail in Section 1.5.1.

Digester FOG Pilot Program

At HTP, LA Sanitation is demonstrating and piloting the use of the anaerobic digestion process to treat and convert Fats, Oils, and Grease (FOG) into a renewable energy, which is methane gas. In 2010, BOE designed and LA Sanitation built a Pilot FOG Digestion Receiving station. The function of the station is to receive and inject FOG into one or two digesters at the plant. The station began operating in August 2010 and receives up to 10,000 gallons of FOG per day. It has been operating ever since and has been producing a minimum of 30% increase in digester gas production for the digesters being fed. This increase in production equates to savings in electricity costs of the plant because of the energy agreement established with the Department of Water and Power Scattergood Generation Station (DWPSGS), the facility receiving the digester gas from HTP.

The project is a pilot study and many parameters are still being investigated, such as digester performance, impacts on downstream flows, operational impacts, and equipment performance. The results have been very promising so far.

Food Waste Pilot Program

LA Sanitation is also working with the City of Santa Monica to bring some of their restaurant pre-consumer hand sorted food waste to the existing HTP Pilot project. Many details have yet to be worked out before actual delivery of food waste can be made to HTP. A third party needs to take responsibility for converting the solid food

waste into a liquid slurry which can be pumped to the FOG receiving station. Additionally, HTP may need to add a screen and grinder to the feed line to protect the facility from any unforeseen contaminants. Therefore, this part of the Pilot is still in the planning stages.

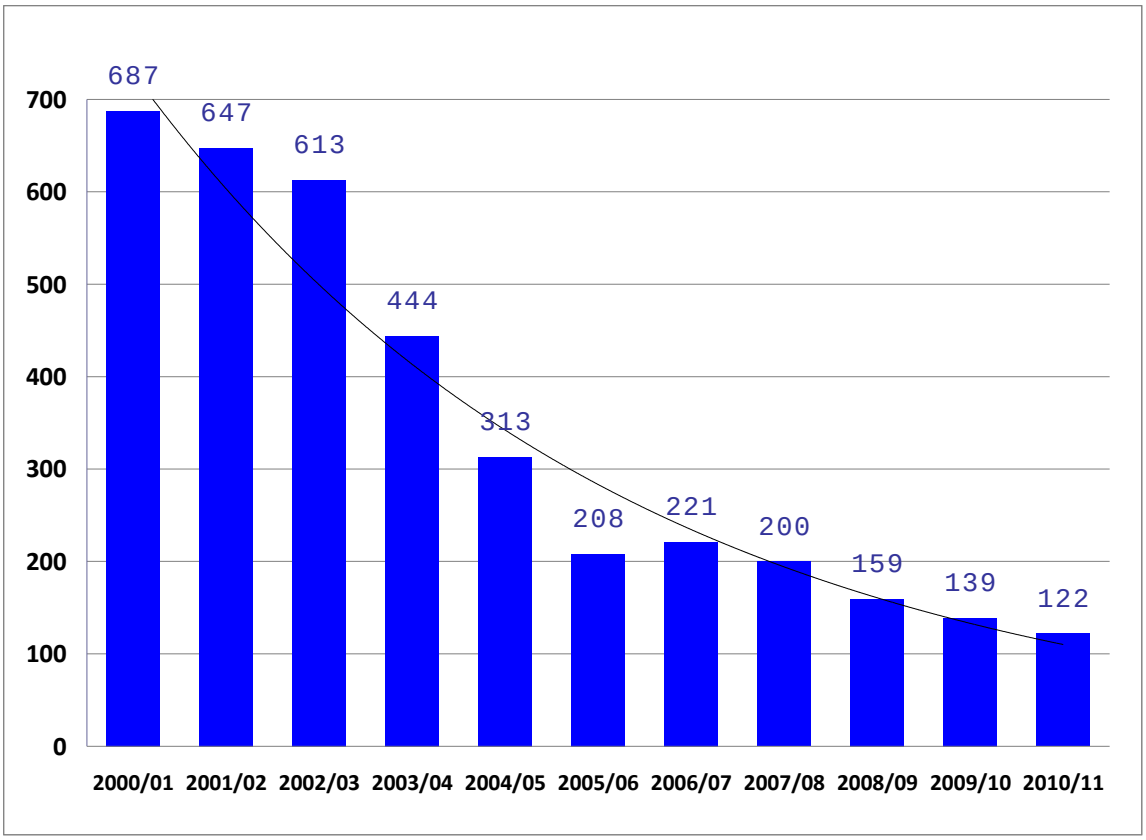
Collection System Spill Reduction Program

Since the baseline year of 2000/01, the City of Los Angeles has achieved an 83% reduction of Sanitary Sewer Overflows (SSOs). The City uses the number of SSOs per 100 miles of sewer-line to measure the effectiveness of its spill reduction efforts and programs. For fiscal year 2010-11, the City reached a record low of 1.82 SSOs per 100 miles. This is one of the lowest in the nation.

Figure 1-5 presents a summary of SSOs per fiscal year. This dramatic decrease shows that the City has taken an aggressive approach in developing and executing operation and maintenance measures that reduce spills throughout the collection system. These results demonstrate the City's continued commitment to the protection of public health and the environment.

The reduction in SSOs is a direct result of the effective implementation of proactive programs by the LA Sanitation, along with assistance from the Bureau of Contract Administration (BCA) and BOE, including enhanced and increased sewer cleaning and inspection; expansion of the FOG control program; the focused tree root control program and improved sewer planning and renewal.

Figure 1-5: Sanitary Sewer Overflows per Fiscal Year



1.5 Updated Implementation Strategy

Based on the recommended alternative, a series of Go Projects, Go-if Triggered Projects and Go Policy Directions were included in the 2006 IRP Implementation Strategy. Most of the Go and Go-if Triggered projects were for wastewater management. Only one (of 25) of the Go Policy Directions were for wastewater. Table 1-2 provides a summary of the wastewater management project recommendations. The statuses of these are described in detail following the table.

Table 1-2: Summary of Wastewater Management Projects

Wastewater Management Projects
Go Project 1: Construct Wastewater Storage Facilities at DCTWRP
Go Project 2: Construct Wastewater Storage Facilities at LAGWRP
Go Project 3: Construct Recycled Water Storage at LAGWRP
Go Project 4: Construct Hyperion Treatment Plant Solids Handling and Truck Loading Facility
Go Project 5: Construct Glendale-Burbank Interceptor Sewer (GBIS)
Go Project 6: Construct North East Interceptor Sewer Phase II (NEIS II)

Wastewater Management Projects (continued)
Go if Triggered Project 1: Potential upgrades at Tillman to advanced treatment (current capacity)
Go if Triggered Project 2: Potential expansion of Tillman to 100 mgd with advanced treatment
Go if Triggered Project 3: Potential upgrade of LAG to advanced treatment (current capacity)
Go if Triggered Project 4: Potential upgrade of LAG to advanced treatment (current capacity)
Go if Triggered Project 5: Design/construction of up to 12 digesters at Hyperion
Go if Triggered Project 6: Prepare alignment study, environmental documentation, and subsequent design/construction of Valley Spring Lane Interceptor Sewer
Go Policy Direction 5 (Los Angeles River Flows): Direct LADWP and Public Works to continue to provide water from DCTWRP to Lake Balboa, Wildlife Lake, and the Japanese Garden at Sepulveda Basin, and the LA River to meet baseline needs for habitat

1.5.1 Wastewater Management Go Projects

As a result of new information since adoption in 2006, the original IRP recommendations of moving forward with construction of projects were further evaluated. Due to the successful water conservation program and economic downturn, the flow projection made by the original IRP is about 30% higher than the actual metered flow (Figure 1-2 HSA SCAG 2008 Actual Flow Comparison Table). Therefore, some "Go Projects" have been moved to the "Go-if Triggered Projects" category. Accounting for updated as well as deferred construction costs, the City is estimated to save approximately $545 million within the 2020 IRP timeframe. The following is a description, background and update of the six IRP Go Projects:

Go Project #1:

Construct wastewater storage facilities at Donald C. Tillman Water Reclamation Plant (DCTWRP)

IRP Background: There is a shortage of wastewater conveyance capacity (sewers) in the western and central portion of the Valley, as well as shortage of treatment capacity at Tillman during wet weather conditions. Adding up to 60 million gallons of storage will be necessary to provide the needed wet weather wastewater storage and operational storage. (Estimated construction cost: $120 million)

Status: 

In 2008, the Flow Equalization and Tertiary Filtration Concept Report was initiated to further assess the need for a wet weather storage at DCTWRP. Based on the standard industry practice of designing for a 10-Year Storm, it was determined that 20 million gallons of storage was sufficient to address the need at DCTWRP. It was also concluded that a below-grade structure of the volume identified in the IRP (60 MG) was a significant investment for a facility that would be rarely used and could potentially become obsolete when the future GBIS and VSLIS are constructed. Constructing the 60 million-gallon underground storage as originally recommended posed significant impact to the community and would face difficulties in permitting a below grade tank in the flood control basin through the US Army Corps of Engineers (USACE). City engineers have also expressed serious concerns regarding designing an underground structure in the flood basin such that it does not float when groundwater is high and the structure is empty. Moving the project inside the berm and the use of open basin would be more feasible and economical. The study estimated the cost of the in-plant storage project to be $55 million, whereas the underground storage was estimated to be $335 million.

Location of the added wastewater facilities at D.C. Tillman Water

In June 2010, Brutoco Engineering and Construction was awarded the design/build contract for the open lined basins for $8.7 million.

In April 2009, the BOE determined that the in-plant storage project is exempt from CEQA under Categorical Exemption Class 1: minor alterations of existing facilities that result in negligible or no expansion of use beyond that previously existing. While reviewing the project as required by the lease, the USACE directed the preparation of an Environmental Assessment (EA), which it published on August 10, 2011. The public comment period closed on August 24 and the USACE determined that the basins would cause no significant impact. On September 1, 2011, full construction operations were resumed.

The estimated construction completion date is late 2012.

Go Project #2:

Construct wastewater storage at Los Angeles Glendale Water Reclamation Plant (LAGWRP)

IRP Background: LAGWRP provides recycled water for LADWP and Glendale for reuse. The volume of recycled water that can be delivered to customers is limited by the

daily variation of flows at the plant. Therefore, providing an up to 5 million gallon storage facility for daily operational wastewater storage will provide more efficient plant operations by making plant inflows more constant, which would also improve recycled water flows to the customers. (Estimated to be online by 2012, estimated total capital cost: $20 million)

Status: 

The IRP recommended construction of up to 5 million gallons of wastewater storage at LAGWRP. The project was intended to meet the fluctuating daily and seasonal demands of wastewater near the plant. LA Sanitation and LADWP have since determined that wastewater equalization will not be needed in the near future. For the recycled water system, the maximum benefit of installing wastewater equalization would be less than 5 mgd recycled water production. This benefit would not be fully utilized until recycled water demands exceed 16 mgd and there is enough recycled water storage available for the LAGWRP System.

This project is being moved to the "Go-if Triggered" category. Recycled water demands will be tracked as the trigger to start this project.

Go Project #3:

Construct recycled water storage at Los Angeles Glendale Water Reclamation Plant (LAGWRP)

IRP Background: The use of recycled water from LAGWRP is dependent on the seasonal and daily demands for the water, which can fluctuate during the day and during the rainy season. Therefore, providing up to 5 million gallons of recycled water storage will allow LAG to deliver recycled water to customers at times when wastewater flows are low (i.e., during the night.) (Estimated construction cost: $8 million)

Status: 

The IRP recommended construction of up to 5 million gallons of recycled water product storage at LAGWRP. The project was intended to meet the fluctuating daily and seasonal demands of recycled water near the plant. LA Sanitation has since determined that there is no available space at LAGWRP to site the storage facility. LADWP is evaluating various potential replacement locations for the recycled water storage facility, including various tank locations in the central area of Los Angeles.

This project is being moved to the "Go-if Triggered" category. Recycled water demands will be tracked as the trigger to start this project.

Go Project #4:

Construct solids handling and truck loading facility at the Hyperion treatment plant (HTP).

IRP Background: Hyperion processes biosolids removed from wastewater generated from throughout the City. A new solids handling and truck loading facility will provide more efficient operations and will also meet future solids handling production. (Estimated construction cost: $89 million)

Existing Truck Loading Facility at HTP

Status: DEFERRED

As discussed on page 1-9, during the development of the IRP, it was assumed that there will be an increase of wastewater flow to the treatment plants and therefore an increase in biosolids production at HTP. The project, as it was originally conceptualized, would incorporate centrifuge dewatering into the design of the new truck loading facility with an estimate cost of $100M. Due to the continuation of biosolids hauling to Kern County and the fact that biosolids production did not increase, a decision was made by LA Sanitation and BOE to delay this project. Project design is scheduled to begin in 2014 with an estimated construction start date in 2017. In the interim, upgrades to the existing truck loading facility and centrifuges will be made so that these processes are functioning adequately.

Go Project #5:

Construct Glendale-Burbank Interceptor Sewer (GBIS)

IRP Background: GBIS is necessary to provide relief and additional capacity in the near future to prevent overflows and spills. GBIS would include construction and operation of approximately 5 ¾ miles of 8-foot-diameter interceptor sewer and associated structures, including diversion and drop structures, maintenance hole structures, and air treatment facilities (if needed). The specific GBIS alignment would begin at the Pecan Grove shaft site, would travel beneath Zoo Drive, then head beneath the northern-most hillside in Griffith Park to reach the Travel Town Shaft Site. It would extend under Forest Lawn Drive to the Barham Shaft Site. GBIS would then be tunneled northwest beneath the Los Angeles River along Pass Avenue, head northward beneath Pass Avenue to Riverside Drive then turn westward beneath Riverside Drive to the western terminus. (Estimated cost: $ 325.3 million)

Status: 

On November 14, 2006, the City unanimously adopted the IRP recommendations and certified the IRP FEIR. On December 13, 2006, Burbank filed a petition for writ of mandate against the City to set aside its certification of the IRP FEIR and approval of the IRP. On October 5, 2007, the Los Angeles Superior Court (Court) issued a legal decision regarding Burbank's petition (Legal Decision). The Court found most of the IRP FEIR adequate, except for certain issues related to the Pass Avenue Connector in the following areas: soil settlement, traffic, traffic mitigation, historic resources, noise and cumulative impacts. On October 29, 2007, the Court issued a Writ of Mandate consistent with the Legal Decision. On December 19, 2007, in compliance with the Legal Decision and Writ, the City Council decertified the IRP FEIR and recertified the IRP FEIR without the GBIS component.

To address the six areas of concern, the City conducted additional environmental analysis that ultimately came in the form of a Second Addendum. On November 9th, 2010, City Council was presented with the Second Addendum for the purpose of re-certifying the existing EIR with the GBIS component. The City Council unanimously adopted the Second Addendum addressing the writ and re-certified the complete IRP EIR with GBIS included. On November 22, 2010, the Court sided with the City of Los Angeles that the Second Addendum to the IRP EIR was sufficient in addressing the environmental concerns.

In July of 2008, the WESD Planning Group performed hydraulic analysis and prepared the TM No. 2008-006 for determining the design flows of three new proposed interceptor sewers, Valley Spring Lane Interceptor Sewer (VSLIS), Glendale Burbank Interceptor Sewer (GBIS) and North East Interceptor Sewer Phase II (NEIS II). The TM discussed the assumptions made in the hydraulic analyses, possible locations for diverting flow from existing sewers into the proposed new interceptor sewers, and the respective design capacities for new interceptor sewers. The hydraulic analysis modeled the Peak Dry Weather Flow (PDWF) for GBIS and its tributaries using the modeling software MIKE URBAN with 2008 adjusted SCAG population data to establish what the flow would be in 2090. The TM stated that GBIS would need to be constructed to accommodate 162cfs using the standard design practice of d/D of 0.5.

Further modeling indicated the time frame when the interceptor sewer would be necessary. The WESD Planning Group utilized modeling software to indicate where SSOs would take place. Planning Group performed the modeling in years 2010, 2025, 2050 and 2090 using a 10-year recurrence, 24-hour design storm to determine when the overflows would take place during wet weather conditions. They determined that the La Cienega-San Fernando Valley Relief Sewer (LCSFVRS) was near its maximum conveyance capacity in 2050 and that it would eventually cause SSOs between then and 2090. MIKE URBAN estimated that the flow through LCSFVRS would be within 2-inches of spilling in 2050. Because of this, the WESD Planning Group determined that the risk was too high to defer GBIS beyond 2050.

The group recommended that one of the following mitigation measures would allow the collection system between the Valley Spring Lane/Forman Ave Diversion Structure and LAG to handle the 10-year design storm until the year 2050.

1) Construction of the NEIS II with an additional project to connect the North Outfall Sewer (NOS) downstream of LAGWRP
2) Construction of a new relief sewer or replacement and upsizing of the NOS extending from the LAGWRP down to the beginning of NEIS phase 1,
3) The construction of wet weather storage at the LAGWRP

The Preliminary Design Report for GBIS was completed with NEIS II in July 2010 by BOE/WCED. As of October 2011, the design and right-of-way acquisition is estimated to begin in 2016/17; construction is estimated to begin 2021/22 and estimated to be completed in 2027/28 (per LA Sanitation's Wastewater Capital Improvement Program).

In light of this determination, the WESD Planning Group recommended that the City commence with the construction of the NEIS II, including an associated project to connect NEIS II to the NOS somewhere near, but downstream of LAGWRP.
This will allow the flexibility to complete the construction of GBIS between 2025 and 2050 before spills occur along the LCSFVRS.

Go Project #6:

Construct North East Interceptor Sewer (NEIS) Phase II

IRP Background: NEIS II would relieve the section of the NOS south of LAGWRP and convey additional wastewater from GBIS to provide additional capacity in the near future to prevent overflows and spills. The proposed NEIS II would include construction and operation of approximately 5 ½ miles of 8-foot-diameter interceptor sewer and associated structures, including diversion and drop structures, maintenance hole structures, and air treatment facilities (if needed). NEIS II extends from the existing NEIS constructed in 2005 (Phase I) at the Division Street Shaft site. It would cross under State Route 2, the Los Angeles River, and Interstate 5 on the way to the Griffith Park Shaft site. It would then extend from the Crystal Springs (Picnic Grounds) shaft site, travel westward beneath Griffith Park Drive, then go north beneath the golf courses to its terminus at Pecan Grove. (Estimated cost: $402.3 million)

Status:

In July 2010, BOE/Wastewater Collection Engineering Division (WCED) completed the Preliminary Design Report (PDR) for NEIS II. The design of the project is ongoing and is estimated to be complete in July of 2014. As discussed earlier under Go Project #5 (GBIS) , the WESD Planning Group performed hydraulic analysis for determining the design flows

and timing of three new proposed interceptor sewers, VSLIS, GBIS and NEIS II. Design flow findings from TM No. 2008-006 showed that only the section of NEIS II south of LAGWRP is necessary at this time to address current flows.

In light of this analysis, the project has been divided into two parts, NEIS 2A and NEIS 2B. NEIS 2A will construct approximately 3.67 miles of sewer and associated structures, including connection to the NOS, south of LAGWRP. Construction is estimated to begin in 2015. The project will extend from the northern terminus of NEIS I to a shaft proposed in Griffith Park and is estimated to be completed by 2019 per LA Sanitation's Wastewater Capital Improvement Program. Currently, construction of NEIS 2B is not necessary, but implementation for the project is anticipated to take place once the need for GBIS has been met. NEIS 2B will be constructed north of LAGWRP, connecting NEIS 2A to GBIS.

NEIS 2A is estimated to cost $190M. Further review of the trigger for the project is underway and continues to occur. The anticipated construction dates may have to be revised to later dates based on the flow conditions in the system and the funding availability.

1.5.2 Go-If Triggered Projects

The following is an update of the six wastewater IRP Go-If Triggered Projects:

<u>Go-if Triggered Project #1:</u>
Upgrades at DCTWRP to advanced treatment
IRP Background: Tillman currently provides tertiary-treated recycled water for irrigation at nearby parks, schools and cemeteries and environmental benefits to Lake Balboa, the Wildlife Lake at Sepulveda Basin, and the Los Angeles River. If triggered by regulations and/or a decision to reuse Tillman recycled water for groundwater replenishment, advanced treatment may be necessary in order to meet all applicable requirements. This will require coordination between Public Works and DWP.

GWR Treatment Pilot Study at DCTWRP

Status: 

Although this trigger has not been reached, the City's *Urban Water Management Plan* (UWMP), released in May 2011, establishes a goal of using 15,000 AFY of advanced treated recycled water for groundwater replenishment (GWR) of the San Fernando Groundwater Basin by 2022. Coordination between Public Works and LADWP has started as part of the RWMP documents with the further goal of 30,000 AFY of advanced treated recycled water by 2035.

The RWMP team completed a study identifying and evaluating potential sites for an advanced treatment facility in the Valley area. Five candidate sites were short-listed, four at or near DCTWRP and one at LADWP's Valley Generating Station. These project sites will be more fully developed and evaluated during the CEQA process for the GWR project.

This project will be guided by the outcome of LADWP's RWMP efforts.

Go-if Triggered Project #2:

Expansion of DCTWRP to 100 mgd with advanced treatment

IRP Background: If triggered by an increase in population, regulations, and/or a decision to replenish groundwater basins, then DCTWRP could be expanded to 100 mgd with advanced treatment. This would require coordination between Public Works and DWP.

Status: 

In November 2009, the LA Sanitation/WESD performed a modeling study to determine the maximum available wastewater flow that could be conveyed to DCTWRP and to compare the maximum flow to the current system capacity. The study team utilized the modeling software MIKE URBAN and projected the flows in the then current year 2009, and in years 2025, 2050 and 2090. The results concluded that under current network settings, DCTWRP would receive 78 mgd in the year 2050 and 95 mgd in 2090. Maximizing the flow determined that in 2050 DCTWRP would receive 97 mgd and 121 mgd in 2090. The results state that even with maximizing flow to DCTWRP the 100 mgd necessary for the project will not be available until beyond 2050, which is beyond the planning window of the current IRP. Therefore the project remains not triggered. Wastewater flows will be tracked as the trigger to start this project.

Go-if Triggered Project #3:

Upgrade of LAGWRP to advanced treatment

IRP Background: LAGWRP currently provides 13.2 mgd tertiary-treated recycled water for irrigation and environmental benefits to the Los Angeles River. If triggered by regulations, downstream sewer capacity, and/or management's decision to reuse,

then advanced treatment at current capacity could be required. This would be subject to a partnership between Public Works and City of Glendale.

Status: 

In February 2010, the RWMP analyzed the feasibility of advanced treated water at LAGWRP. It was concluded that off-site advanced water treatment (AWT) facilities could be provided in the future by LADWP (or another entity) to treat LAGWRP tertiary effluent to advanced treated levels and to supply groundwater replenishment. However, based on preliminary planning performed in the RWMP, the recycled water produced at LAGWRP would likely be used for irrigation and industrial applications. At this time the City of Los Angeles does not envision upgrading LAGWRP to advanced treatment. If the plant were to be utilized as source water for groundwater recharge projects outside the City of Los Angeles, the water would most likely be produced to the Title 22 level at LAGWRP and then conveyed to an advanced treatment facility closer to the recharge location. This action would be performed by an agency other than LA Sanitation (e.g., City of Pasadena).

Currently, the LAGWRP produces 20 mgd of Title 22 tertiary water with nitrification/denitrification (NdN). This water is used for non-potable reuse projects such as irrigation, industrial applications and in-plant usage in lieu of potable water. The remaining water is discharged to the Los Angeles River where it supports wildlife habitat. The City operates the facility but the cities of Los Angeles and Glendale are each 50% owners and each is entitled to 50% of the plant capacity and product water. The City of Glendale has entered into an agreement with the City of Pasadena for up to 60% of Glendale's allotment.

This project will be guided by the outcome of LADWP's RWMP efforts.

Go-if Triggered Project #4:

Design and construction of secondary clarifiers at HTP to provide operational performance at 450 mgd

IRP Background: The existing 36 secondary clarifiers at Hyperion are performing below their rated capacity of 450 mgd. Staff is currently investigating ways to optimize the existing secondary clarifiers to get them operating up to 450 mgd. If these options prove to be unsuccessful, then new secondary clarifiers will be needed to provide operational performance at 450 mgd. (Cost estimate $27M)

Status: 

In July 2010, the Ultimate Build-Out of Secondary Treatment System Report was released for the Hyperion Treatment Plant. It was recommended that "no additional secondary tankage is necessary to accommodate the anticipated ultimate build-out flow of 550 mgd". The

findings showed that through a series of modifications and plant optimizations, HTP would be able to accommodate the potential 550 mgd anticipated in the IRP.
The following were recommendations from the study:
Reactor modifications:

1. Replace the existing Stage 1 125-hp surface aerators in the selector modules with 200-hp surface aerators
2. Convert the non-selector modules to selector modules with recommended modifications

Secondary clarifier modifications:

1. Provide slots in the LA-EDIs to lessen mixed liquor short circuiting from the inlet tub to the sludge withdrawal hopper in the secondary clarifiers
2. Shorten the McKinney (horizontal) side-wall baffle in the secondary clarifiers

Operational changes:

1. Optimize Return Activated Sludge (RAS) flow rates
2. Institute Sludge Retention Time (SRT) control
3. Install effluent samplers on individual modules

The study also noted two points that discourage the implementation of the recommendations.

1. HTP consistently meets all effluent permit requirements
2. Influent flows continue to decrease

The summary concluded that it would make "good business sense" to optimize the treatment process at HTP because of increasing energy costs as well as being considered as a source of recycled water.

LA Sanitation and BOE are working on a secondary treatment system optimization program which includes injecting polymer into the secondary clarifiers, reactor micro-oxygenation, reactor bypass and other options. The implementation of these projects as well as other optimization processes will take 3-5 years to complete. It is anticipated that optimizing the secondary treatment system will delay the need for additional clarifiers for several years.

The design and construction of secondary clarifiers will remain in the "Go-If Triggered" category with assessment of the recommendations.

Go-if Triggered Project #5:

Design/Construction of up to 12 digesters at HTP
IRP Background: If triggered by increased biosolids production in the service area, additional digesters will be required at Hyperion. Based on 2008 projections, expansion would occur some time after 2025. (Capital cost estimated $303M)

Status: 

The Primary Solids Thickening Centrifuge project was initiated to address the need to construct more digesters. This project will install three centrifuges and will thicken solids from the primary tanks and provide hydraulic relief to the digesters. Thus, provide more digestion capacity and delay the need for additional digesters.

Primary Solids Thickening Centrifuge project information:
Total construction cost for the procurement is approximately $8M, and the construction cost for the installation is approximately $11M. The estimated completion date for these two projects is July 2012.

Testing of the Primary Solids Thickening Centrifuges has been successfully completed and the project is nearing completion. Once put into full operation, the LA Sanitation should be able to thicken the primary sludge in the range of 4-8% which will significantly reduce the amount of water going to the digesters. This reduction in water creates available space in the digesters, which in turn increases the amount of sludge that can be added into the digesters and processed. As a result, it is anticipated that these new centrifuges will delay the need for additional digesters for several years.

This project remains in the "Go-if Triggered Projects" category. Sludge detention time will continue to be tracked as the trigger for this project.

Go-if Triggered Project #6:

Prepare alignment study, environmental documentation, and subsequent design/construction of Valley Spring Lane Interceptor Sewer (VSLIS)
IRP Background: To provide additional sewer conveyance capacity between DCTWRP and the Valley Spring Lane/Forman Avenue Diversion structure, this project will be required. Estimated completion: 2030 (Capital cost estimate $598M)

Status: 

In July of 2008, the WESD Planning Group performed hydraulic analysis and prepared the TM No. 2008-006 for determining the design flows of three new proposed interceptor sewers, VSLIS, GBIS and NEIS II. The TM discussed the assumptions made in the hydraulic analyses, possible locations for diverting flow from existing sewers into the proposed new interceptor sewers, and the respective design capacities for new interceptor sewers. The hydraulic analysis modeled the average dry weather flow (ADWF) for VSLIS and its tributaries using adjusted SCAG population data from 2008 to establish what the flow would be in 2090. The TM stated that VSLIS would need to be constructed to accommodate 144 cfs using the standard design practice of d/D of 0.5.

In March of 2010, the WESD Planning Group completed the Valley Spring Lane Interceptor Sewer Planning Study. The study determined the need for VSLIS. It defined the structural, hydraulic and operational parameters. It recommended a preliminary configuration strategy, construction methodology, special diversion and connection structures. It identified, developed and evaluated alternatives, as well as selected a preferred alternative. Finally, it developed an implementation plan and schedule with Class "O" cost estimates.

The modeling results for wet-weather scenarios showed that the capacity of the existing outfall sewer is insufficient to convey the 10-year design storm with DCTWRP operating at 80 mgd. If DCTWRP operates at 120 mgd or 160 mgd, then the existing outfall sewer capacities will become insufficient to convey the peak wet weather flow (PWWF) between the year 2025 and 2050. If DCTWRP operates at 80 mgd with 18.4 million gallons storage, the existing outfall sewer capacities will become insufficient to convey PWWF between the year 2050 and 2090.

In light of this information, and given the status of IRP Go-Project #1, DCTWRP In-Plant Storage, the necessity to design and construct VSLIS is beyond the planning horizon of the IRP. Therefore the status of VSLIS remains not triggered.

This project remains in the "Go-if Triggered Projects" category. Wastewater flows will be tracked as the trigger to start this project.

1.5.3 Go Policy Directions

Go Policy #5 (Los Angeles River Flows):

Direct LADWP and Public Works to continue to provide water from DCTWRP to Lake Balboa, Wildlife Lake, and the Japanese Garden at Sepulveda Basin, and the LA River to meet baseline needs for habitat (i.e., approximately 27 mgd (approximately 30,000 AFY) through flow-through lakes).

Status:

Tertiary treated effluent will continue to be provided from DCTWRP to Lake Balboa, Wildlife Lake, and the Japanese Garden at Sepulveda Basin, and the LA River to meet baseline needs for habitat.

THIS PAGE IS INTENTIONALLY LEFT BLANK

Section 2
Water Management Review

2.1 Introduction

This section provides a description of new information emerging since the IRP adoption in 2006. It identifies new programs, projects, efforts, and regulations that relate to water management and impact the implementation of IRP recommendations.

2.2 Background and Approach

This section reviews the Water Management Volume of the *Facilities Plan* (Volume 2). The purpose of the Water Management Volume was to study the following:

- Water conservation and its impact on potable water demands, wastewater flows, and dry weather urban runoff quantity
- Recycled water and its impact on water supply
- Beneficial use of runoff and its impact on water supply

2.2.1 Summary of 2006 IRP Findings for Water Management

The approach for water management in the IRP was to determine the 2020 planning parameters and drivers and existing programs for water, analyze the gaps and identify options, define preliminary alternatives, evaluate alternatives, recommend draft alternatives, conduct environmental analysis (EIR), and develop an implementation plan for the recommended alternative. See Figure 1-1 in Section 1.

The recommended alternative for implementation (Alternative 4 – Tillman Water Reclamation Plant Expansion/High Potential for Water Resources Projects) included a series of water management options and leadership projects. The implementation strategy for water management folded the options included in the recommended

alternative, and the leadership projects into a series of "go policy actions" to encourage further development of the recommendations. The recommended recycled water options included in Alternative 4 are summarized below, and Table 2-1 provides a breakdown of these options.

- Continue supplying an average of 27 mgd (approximately 30,000 AFY) of tertiary treated effluent to Los Angeles River (L.A. River) through flow-through lakes to maintain habitats.
- Use up to 52,800 AFY of recycled water above existing levels to serve irrigation and industrial demands in the San Fernando Valley, downtown, West Los Angeles, and Harbor areas.

Table 2-1: Potential Recycled Water Use Volumes Per the 2006 IRP

Plant	Level of Treatment	Area of Use	Use	Volume (AFY)
Tillman	Advanced Treatment (MF/RO)	San Fernando Valley	Industrial and Irrigation	25,500
LAGWRP	Title 22 w/ Nitrogen removal	Downtown	Industrial and Irrigation	5,400
Hyperion	Secondary[1]	Westside	Industrial and Irrigation	12,500
Terminal Island	Advanced Treatment (MF/RO)	Harbor	Industrial and Irrigation	9,400
Sub-Total (WW Only)	--	--	--	52,800
Urban Runoff Plant (Stormwater)	Title 22	Ballona and Compton Creeks	Industrial and Irrigation	3,300
Total Reused	--	--	--	56,100

Source: *IRP Facilities Plan, Volume 2: Water Management* (Table 7-6) (CH:CDM 2006)

Notes:
1 - Further treatment (Tile 22) level provided off-site at the West Basin Water Reclamation plant in El Segundo.

Based on this recommended alternative, a series of go-policy actions were included in the 2006 *IRP Implementation Strategy*. Table 2-2 provides a summary of the water management go-policy directions. Additionally, these policies, along with their current status, are described in detail in Section 2.5.3.

Table 2-2: Summary of Water Management Go-Policy Directions

Direction	Lead
1. Maximize use of recycled water for non-potable uses in the TIWRP, West side, and LAGWRP services areas	LADWP, DPW
2. Require dual plumbing in the vicinity of recycled water distribution systems in coordination with LARRMP	DBS, LADWP
3. Coordinate design/construction of purple pipe with other major public works projects	DPW, LADWP
4. Explore feasibility of implementing groundwater replenishment with advanced treated recycled water	LADWP
5. Continue to provide water from DCTWRP to Lake Balboa, Wildlife Lake, Japanese Garden and L.A. River to meet baseline needs for habitat	DPW, LADWP
6. Continue conservation efforts, including using smart irrigation devices	LADWP
7. Continue conservation efforts, including no-flush urinal technology	LADWP, DBS
8. Continue conservation efforts, including requiring individual water meters for new apartment buildings	LADWP, DBS
9. Continue conservation efforts, including increasing education on benefits of climate-appropriate plants with an emphasis on CA friendly plants in coordination with LARRMP	LADWP
10. Consider developing City Directive to require the use of CA friendly plants in City projects	DCP

Source: *IRP Implementation Strategy* (CH:CDM 2006)

2.2.2 Approach for this Water Management Review

Since IRP adoption in 2006, a number of programs have been created by the City and other agencies to improve water management and to secure a reliable water supply in light of depleting water sources. Many of these programs have resulted in the current or planned implementation of projects with potential impacts on IRP recommendations.

In line with the original IRP Guiding Principles, this review is intended to understand any new efforts that may impact the City's potable water supply and consequently impact the implementation of IRP recommended projects and go policy directions.

The approach to updating the water management information was to research and identify City programs and projects that were created after December 2006 and would significantly impact or affect the City's management of its potable water supplies.

To accomplish this, several teams were convened to discuss new programs and efforts. A City staff-composed Implementation Strategy (IS) Team was assembled

and several Implementation Strategy meetings were held. The purpose of these meetings was to compile information from each group and to discuss new planning parameters and updated implementation strategy. Additionally, a number of studies developed or recommended by IS team members were used as reference. Studies used include the *Los Angeles River Revitalization Master Plan* (L.A. River Ad Hoc Committee, 2007), the *Urban Water Management Plan* (LADWP, 2010), the *Recycled Water Master Planning* documents recently completed by RMC/CDM and LADWP, as well as data provided by the LADWP Water Conservation Group.

New information resulting from meeting discussions and the above mentioned studies is summarized in the following subsections.

2.3 Updated Planning Parameters

The following subsections describe new regulations and drivers, adopted after December 2006, which may potentially affect or impact one or more of the original IRP recommendations as related to water management. As a brief background, below is a list of the original planning parameters used in the development of the IRP. For a more detailed description of these parameters please refer to the City of Los *Angeles Integrated Resources Plan Facilities Plan Volume 2: Water Management* (CH:CDM, 2004).

- Planning Year of 2020 – Remains the same for the purpose of this review
- Water Service Area – Remains the same for the purpose of this review
- Population and Employment Projections – Projections have been updated to reflect more recent population data. Please refer to Section 1: Wastewater Management for more details.
- Regulatory Requirements – Several regulations have been adopted since 2006. Please refer to Section 2.3.1 for more information.
- Guiding Principles Affecting Water Management – Remain the same for the purpose of this review.

2.3.1 Regulations

For the IRP, a technical memorandum was generated to document the anticipated regulatory forecast for pretreatment, wastewater collection and treatment, water recycling, air quality, biosolids management, and stormwater /runoff management. This document is titled *Regulatory Forecast Technical Memorandum* (CH:CDM, May 2003) and summarizes existing, emerging, proposed, and forecasted regulations. This section will identify and describe those proposed and forecasted regulations that have come to fruition since 2006 and relate to water management.

Recycled Water

The IRP *Facilities Plan* Volume 2 (Water Management) included the *Regulatory Forecast TM* as an Appendix. Table 2-3 shows a comparison between regulations that

were originally predicted, emerging, or proposed and what has actually transpired since 2006.

Table 2-3: Comparison of Original (2006) vs. Actual (2010) Emerging, Proposed, and Forecasted Recycled Water Regulations

Item	Regulations and Policies	Agency	2006 Status	2011 Updated Status
1	California Code of Regulations, Title 22, Division 4, Chapter 3 (wastewater reclamation criteria)	CDPH	Current	Current
2	Water Quality Control Plan (Basin Plan)	LARWQCB	Current	Current
3	Reclamation NPDES permits	LARWQCB (close coordination with CDPH)	Current	Current
4	Use of reclaimed water in instances where the public may be exposed	L.A. County Health Department	Current	Current
5	Vector control requirements	State and Local	Current	Current
6	Increased degree of removal of pathogens and toxic compounds (e.g., Cryptosporidiium, Giardia)	CDPH	Emerging	Emerging - May be a part of updated draft recharge regulations
7	Establishment of more consistent water reclamation criteria (e.g., site-specific basis)	CDPH	Emerging	Current - 2009 Adopted State Recycled Water Policy
8	TMDLs	LARWQCB	Emerging	Current, (e.g., L.A. River and Tributaries Metals TMDL)
9	Triennial Review Process	LARWQCB	Emerging	Emerging
10	California Toxics Rule	EPA	Emerging	Current
11	Enhanced Surface Water Treatment Rule	EPA	Proposed	Applies only to drinking water reservoirs and systems
12	Proposed Title 22 Revisions	CDPH	Proposed	Proposed
13	Control of endocrine disruptors and disinfection by-products	CDPH	Proposed	Emerging, 2011 SWRCB and CDPH Blue Ribbon Panel on Constituents of Emerging Concern (CECs)

Item	Regulations and Policies	Agency	2006 Status	2011 Updated Status
14	Alternative disinfection methods (e.g., UV radiation)	CDPH	Proposed	Proposed
15	Considerations and/or Proposals for Recognition of Effluent Dependent Water Bodies and Expanded Water Recycling efforts	LARWQCB	Proposed	Proposed
16	Water Conservation and Reclaimed Water Marketing Rules	LARWQCB	Proposed	Not being pursued
17	Advanced treatment processes (reverse osmosis or other membrane-based treatment requirements, ultraviolet disinfection, etc.)	CDPH, EPA, SWRCB, LARWQCB	Crystal Ball	Emerging
18	Dilution allowances for discharges to the ocean and enclosed bays	LARWQCB	Crystal Ball	Crystal Ball
19	Incidental groundwater recharge in the L.A. River	LARWQCB	Crystal Ball	Crystal Ball
20	Direct potable reuse	CDPH	Crystal Ball	Emerging - SB918 requires CDPH issue a feasibility report by 2016
21	Brine lines for disposal of membrane-process wastes	LARWQCB	Crystal Ball	Crystal Ball
22	Revitalization/de-urbanization of the L.A. River (concrete removal, bike paths, public and commercial uses, etc.)	L.A. County, possibly US Army Corps of Engineers	Crystal Ball	Emerging
23	Aquatic/wildlife maintenance flows for the L.A. River	DFG, USFWS	Crystal Ball	Crystal Ball
24	Viruses in reclaimed water (monitoring, DNA verification and identification, etc.)	CDPH	Crystal Ball	Crystal Ball
25	Arsenic limitations due to presence in water supplies	EPA, SWRCB	Crystal Ball	Emerging

Water Conservation

- **Water Conservation Act of 2009:**
  The Water Conservation Act of 2009, Senate Bill X7-7, requires water agencies to reduce per capita water use by 20 percent by 2020 (20x2020). This includes increasing recycled water use to offset potable water use. Water suppliers are required to set a water use target for 2020 and an interim target for 2015 using one of four calculation methods. Failure to meet adopted targets will result in the ineligibility of a water supplier to receive water grants or loans administered by the State.

Effective January 2009, Assembly Bill 1420 amended the Urban Water Management Planning Act to condition the approval of state funding for water management by urban water suppliers to the implementation of water conservation measures. To be eligible for water management grants or loans, urban water suppliers are required to be in compliance with either the Water Demand Management Measures described in the Water Code or the California Urban Water Conservation Council Best Management Practices. Senate Bill X7-7 clarifies that the grant funding conditions required by AB 1420 will be repealed as of July 1, 2016 and replaced with eligibility determined by compliance with 20x2020 targets.

The LADWP Ferraro Building displays California-friendly landscape that uses less water than traditional lawns.

- **State of California's Model Water Efficient Landscape Ordinance:**
  Recently effective State Assembly Bill 1881 (Laird, Water Conservation), aimed at conserving outdoor water use, requires cities and counties to update local Landscape Ordinances so that they are at least as effective as the State of California's Department of Water Resources' updated Model Water Efficient Landscape Ordinance (MWELO). To be in compliance, the City of Los Angeles is implementing the Irrigation Guidelines, which are essentially the same requirements as the State's MWELO and are in addition to any other existing landscape regulations.

  The Irrigation Guidelines are landscape design and installation requirements for certain landscape projects. Requirements include: developing a water budget that landscape irrigation cannot exceed; completing a soil management report; grouping most plants by hydrozones; utilizing automatic irrigation controllers and sensors; and the development and implementation of a post-installation irrigation and maintenance schedule.

- **Assembly Bill 715 (2007), Senate Bill 407 (2009), and the CALGreen Building Standards:**
  There have been numerous regulations approved that increase the water use efficiency requirements of plumbing devices, specifically, Assembly Bill 715 (2007), Senate Bill 407 (2009), and the CALGreen Building Standards. AB 715 requires that all toilet and urinal fixtures sold through retail or installed in existing and new

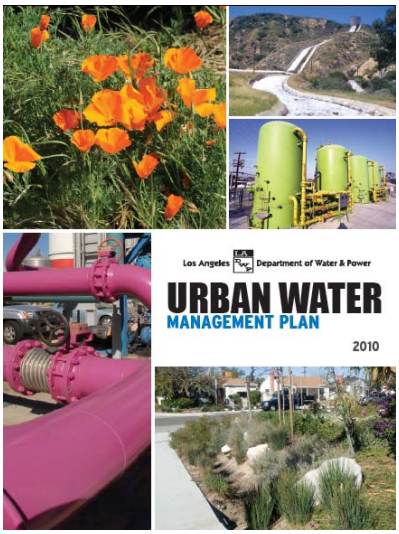
residential and commercial building meet the high efficiency standards by January 1, 2014. SB 407 does not address the sale of plumbing fixtures but adds a requirement that beginning in January 1, 2017, all residential and commercial property sales must disclose all non-efficient plumbing fixtures. CALGreen has an effective date of January 1, 2011 and requires use of water-efficient plumbing fixtures for all new construction and renovations of residential and commercial properties.

2.3.2 Other Drivers

This section describes non-regulatory drivers developed and/or adopted after the 2006 which drive IRP related programs.

LADWP *Urban Water Management Plan* (2010)

The California Urban Water Management Planning Act (first effective on January 1, 1984) requires that every urban water supplier prepare and adopt an Urban Water Management Plan (UWMP) every five years. Since its original enactment, there have been several amendments added to the Act. The main goal of the UWMP is to forecast future water demands and water supplies under average and dry year conditions, identify future water supply projects such as recycled water, provide a summary of water conservation best management practices (BMPs), and provide a single and multi-dry year management strategy.



LADWP's 2010 UWMP serves two purposes: (1) achieve full compliance with requirements of California's Urban Water Management Planning Act; and (2) serve as a master plan for water supply and resources management consistent with the City's goals and policy objectives.

LADWP's Water Recycling Program and Funding Constraints

The City has made great progress in developing a recycled water program and further progress will be dependent on available funding. The LADWP is facing financial difficulties due to decreasing sales while subject to more stringent water quality regulations, and aging infrastructure. In order to meet all new applicable water and power regulation deadlines, the LADWP Water System must prioritize funding needs.

The approved budget for Fiscal Year 2011-2012 supported only basic business needs at minimum service levels and meets legal and contractual requirements. Higher levels

of funding are needed for additional investment in water supply development. Higher levels of funding are also needed for water and power system reliability improvements to more closely match expected service life. Additional local water supply and reliability investments will be considered in the LADWP rates process currently under way.

Local sustainability programs including recycled water, stormwater, and conservation are significantly reduced from what LADWP originally planned to do. The budget does not support this higher level of investment necessary for these investments.

2.4 Implementation Progress

This section identifies and describes programs and projects that have come to fruition since 2006 related to water management.

2.4.1 Recycled Water

The UWMP identified a goal of 59,000 AFY of recycled water deliveries by 2035 to displace imported water. The following efforts are currently being implemented to meet this goal.

Existing and Near-Term Recycled Water Projects

"Near-term" projects are classified in RWMP as projects that will result in recycled water service to achieve approximately 20,000 AFY of recycled water use to displace potable water use. All near-term projects are either in the planning, design, or construction stage. However, many of these projects have been deferred due to funding constraints described in Section 2.3.2. Near-term project target customers have already been identified as potential recycled water users with a total demand of approximately 15,000 AFY. Full implementation of the identified near-term projects with existing projects will result in annual recycled water deliveries of approximately 30,000 AFY, exclusive of both environmental use and DCTWRP in-plant use (26,990 and 2,920 AFY, respectively). Near-term projects fall primarily in the commercial/industrial sector, followed by the irrigation sector.

Purple pipe networks help expand recycled water distribution

Recycled Water Master Planning Documents

The purpose of the RWMP effort was to develop plans to meet the City's goal of achieving 59,000 AFY of recycled water delivered by 2035 along with identifying how the City can maximize recycled water use beyond the 59,000 AFY goal. The RWMP

began in June 2009 and was concluded in March 2012. The following are descriptions for the work undertaken by the RWMP.

- **Master Plan for Groundwater Replenishment (GWR)**
  Master planning documents have been developed to recycle a minimum of 15,000 AFY by groundwater recharge by 2022 and potentially up to 30,000 AFY by 2035. The proposed GWR Project will provide purified advanced recycled water treatment from DCTWRP. After purification, the water will be delivered to the spreading grounds for infiltration and potentially injection wells in the San Fernando Valley for replenishment of the San Fernando Groundwater Basin.

- **Master Plan for Non-Potable Reuse (NPR)**
  Master planning documents have been developed for implementing recycled water projects for non-potable uses such as irrigation and industrial processes. These projects are supplemental to those already in planning, design, or construction and together with our GWR project will allow us to achieve our 59,000 AFY goal of recycled water deliveries.

- **Pilot Study for GWR Treatment Technology**
  Pilot testing was conducted to evaluate the proposed GWR treatment process for the GWR project using DCTWRP effluent. The pilot study evaluated microfiltration, reverse osmosis, and advanced oxidation processes, including ultraviolet radiation/hydrogen peroxide and ozone/hydrogen peroxide. Testing results demonstrated that the proposed AWP processes provide exceptional water quality that is safe for GWR.

- **Concept Report: Maximize Reuse**
  This concept report identified the means by which the City would be able to maximize reuse beyond its 59,000 AFY goal; thus, allowing the City to maximize its recycled water use.

- **Concept Report: Satellite Plants**

  This concept report identified ways to utilize recycled water by means of satellite plants in locations where the expansion of the recycled water distribution system was infeasible.

- **Concept Report: Reliability of Existing Systems**
  This concept report identified improvements needed to enhance the reliability of LADWP's four existing recycled water systems within the framework of water quality, water availability, operational stability, and operational flexibility.

Recycled Water GWR Project

As part of the City's efforts to maximize the use of recycled water, the LADWP has been developing a GWR Project to recharge groundwater supplies with purified recycled water. Planning for this project has been occurring in parallel with the development of the City's *Recycled Water Master Planning* documents. Both of these efforts resulted from IRP recommendations to maximize recycled water use and explore the feasibility of groundwater replenishment with recycled water.

Groundwater Replenishment will be achieved by delivering advanced treated water from DCTWRP into the San Fernando Valley groundwater basin. Since DCTWRP currently treats to a tertiary level, an expansion to advanced treatment would be necessary.

Stakeholders, City and consultant staff visit the GWR Treatment Pilot Plant at DCTWRP (2011)

As projects are implemented in the DCTWRP and LAGWRP service areas, discharges to the Los Angeles River from these plants could be reduced potentially affecting downstream flows in the River. DCTWRP currently discharges tertiary treated flow into the Los Angeles River. It also supplies water that passes through the Japanese Garden and Balboa and Wildlife Lakes and into the river. DCTWRP will provide flows to the Los Angeles River per the 2006 IRP to meet the baseline flow necessary to maintain river habitats. The GWR project will require an evaluation of the potential environmental impacts on the Los Angeles River. The City has begun preparing CEQA documentation for the GWR project, which will assess potential impacts due to modified flows and identify mitigation measures, if needed.

The RWMP goal for GWR is spreading 15,000 AFY of advanced treated water by 2022 and up to 30,000 AFY by 2035 to offset future demand of imported water supplies.

2.4.2 Water Conservation

The following efforts are currently being implemented to continue and increase water conservation.

Water Conservation Ordinance

LADWP first adopted an Emergency Water Conservation Plan Ordinance (Ordinance) in the early 1990s in response to drought conditions. During water shortages, LADWP adopted Ordinance amendments expanding prohibited uses, increasing penalties for violating the ordinance, and modifying water conservation requirements. In response to the ongoing water shortage conditions, LADWP implemented Phase III

restrictions on June 1, 2009, restricting outdoor irrigation to two days per week. Following an Ordinance amendment to address system pressure fluctuations, Phase II implementation began on August 25, 2010, which allows outdoor watering three days per week. Since the implementation of the Ordinance in June 1, 2009 and the patrolling of the Water Conservation Team, LADWP customers have responded with significant water use reductions. City-wide water usage is down almost 20 percent overall from base year usage with the single family residential sector reducing about 24 percent and governmental sector down over 26 percent from FY 06-07 water usage levels.

Increased Rebates for Water Efficient Fixtures and Appliances

In 2008, the Metropolitan Water District of Southern California (MWD) initiated the region-wide SoCal Water$mart Rebate Program for residential water conservation and offered this program to all individual water service providers throughout the MWD service area. LADWP took advantage of this new program to replace the previous LADWP in-house rebate programs. This new regional program set uniform rebate requirements across the Southern California area and provided a clearinghouse for processing all customer rebates. LADWP has opted to increase the MWD baseline rebates for some of the qualifying products to provide customers an added incentive to conserve water. In 2010, the SoCal Water$mart Program discontinued rebates for high efficiency toilets (HET); however, LADWP has continued to provide local funding for rebates for its customers of $100 per HET, which has proven to be highly successful. LADWP also continues to participate in the MWD Save Water Save a Buck Rebate Program for Commercial Customers. LADWP continues to distribute free faucet aerators and showerheads to all single-family, multi-family, and commercial customers.

Water Efficiency Requirements Ordinance (High Efficiency Plumbing Fixture)

LADWP further increased its water efficiency mandates in 2009 with adoption of the Water Efficiency Requirements Ordinance (No. 180822), which became effective on December 1, 2009. This ordinance establishes water efficiency requirements for new developments and renovations of existing buildings by requiring installation of high efficiency plumbing fixtures, such as toilets, urinals, faucets, showerheads, and dishwashers, in all residential and commercial buildings.

Landscape Incentive Programs

In June 2009, LADWP launched a new Drought Resistant Landscape Incentive Program that pays customers $1.00 per square foot of turf removed and replaced with California-friendly, drought tolerant plants, mulch, or permeable hardscapes and drip irrigation. The program is estimated to save 1,010 AFY of potable water over the next 10 years. Past participants in this program have included the Veterans Affairs

Greater Los Angeles Healthcare System, private and public golf courses, and single-family homeowners.

LADWP's Landscape Incentive Programs encourage replacement of turf with California-friendly, drought-tolerant plants

Since 2008, LADWP has been implementing an internal program to retrofit outdoor landscaping at department-owned facilities to California-friendly and native plantings with efficient irrigation systems. Additionally, a joint effort between the Department of Recreation and Parks (RAP) and LADWP is targeting public parks through the City Park Irrigation Efficiency Program. City parks with inefficient irrigation systems, leaks, and runoff problems are identified and upgraded with water efficient distribution systems and sprinkler heads, installation of smart irrigation controllers, and planting of California-friendly landscaping. Since the program began in 2007, seven parks have been completed and four new weather stations have been installed. An additional benefit of this program is the educational, trade training, and employment opportunity given to the youth of Los Angeles.

2.4.3 Stormwater Capture

The following efforts are currently being implemented to supplement water supply as part of LADWP's watershed management program.

Stormwater Capture Master Plan

In the fall of 2012, LADWP will be recommending a consulting contact to its Board for the Stormwater Capture Master Plan that will investigate and create potential strategies for implementation of stormwater and watershed management programs and projects in the City. The Stormwater Capture Master Plan will be used to guide decision makers in the City when making decisions affecting how the City meets its centralized and decentralized stormwater capture goals. It will include evaluation of existing stormwater capture facilities and projects, quantify the maximum stormwater capture potential, develop feasible stormwater capture alternatives, and provide potential strategies to increase stormwater capture. The Stormwater Capture Master Plan will also evaluate the multi-beneficial aspects of increasing stormwater capture, including potential open space alternatives, improved downstream water quality, and peak flow attenuation in downstream channels, creeks, and streams such as the Los Angeles River. It will identify and provide a detailed description of each watershed and sub-watershed within the City and discharging into City jurisdiction. The descriptions will consist of, but not be limited to, areas, volumes, intensities, runoff timing, flow paths, and stormwater infrastructure. A large portion of the City lies within the Los Angeles River watershed and the entire San Fernando Valley is within this watershed boundary. Some of the neighboring

watersheds to the Los Angeles River watershed are the Santa Clara River, Malibu Creek, Ballona Creek, Dominguez Channel, and the San Gabriel River watershed. The plan will also quantify the maximum amount of stormwater potentially available for capture based on watershed and sub-watersheds within the City and discharging into City jurisdiction using modeling tools, historical rainfall patterns, stream flow and runoff characteristics. This analysis will include stream flow from watersheds outside the City that enter the City boundaries.

2.5 Status of Implementation Strategy

2.5.1 Water Management Go Projects

Go Project #3:

Construct recycled water storage at LAGWRP - The use of recycled water from LAGWRP is dependent on the seasonal and daily demands for the water, which can fluctuate during the day and during the rainy season. Therefore, providing up to 5 million gallons of recycled water storage will allow LAGWRP to deliver recycled water to customers at times when wastewater flows are low (i.e., during the night.) (Estimated construction cost: $8 million)

Status:

The IRP recommended construction of up to 5 million gallons of recycled water product storage at LAGWRP. The project was intended to meet the fluctuating daily and seasonal demands of recycled water near the plant. LA Sanitation has since determined that there is no available space at LAGWRP to site the storage facility. LADWP is evaluating various potential replacement locations for the recycled water storage facility, including various tank locations in the central area of Los Angeles.

This project is being moved to the "Go-if Triggered" category.

2.5.2 Go-if Triggered Projects

There are no IRP Go If Triggered Projects related to water management.

2.5.3 Go Policy Directions

Out of 25 IRP Go Policy Directions, policies 1 through 10 are related to water management (maximizing recycled water use and increasing water conservation).

Go Policy #1:

Direct LADWP and Public Works to work together to maximize use of recycled water for non-potable uses in the TIWRP service area, West side, and LAGWRP services areas; LADWP to conduct customer analysis to verify the potential demands and

feasibility. Develop a long-range marketing strategy for recycled water that includes a plan for recruiting (and keeping) new customers.

Status: 

The RWMP documents identified potential new non-potable customers and projects to expand the recycled water infrastructure, along with implementing groundwater replenishment to displace imported water. In addition, the RWMP documents indicated how the City can maximize recycled water use into the future. The recycled water infrastructure was also evaluated so that the system is reliable.

The RWMP effort has identified potential recycled water customers citywide. Further development and evaluation of these customers along with possible project options are being conducted to assess their feasibility.

31,800 feet of purple pipe has been installed since 2006.

Since 2006, the LADWP has installed 31,800 feet of purple-pipe in the service areas, identified in this go-policy direction. The purple pipe in these service areas are serving 88 customers. These customers have used recycled water for irrigation and industrial uses in the last 5-years.

LADWP's newest major customers connected to the recycled water purple pipe system are the Los Angeles Zoo parking lot, the Balboa Sports Complex and Anthony C. Beilensen Park (Lake Balboa Recreation area) within the Sepulveda Basin, the Rio de Los Angeles Park (Taylor Yard Park,) and Westchester and Van Nuys Golf Courses, all of which now utilize recycled water for irrigation.

In the area surrounding LAX, LADWP is conserving potable water supplies by irrigating several miles of medians and streetscape with recycled water on major streets like Imperial Highway, Sepulveda Boulevard, Westchester Parkway, 88th Street and Will Rogers Street.

Phase 1 of the Playa Vista development, the first planned community in Los Angeles, is also now served with recycled water for landscaping irrigation.

Currently under construction is the Harbor Water Recycling Project. The project consists of the expansion of 40,000 ft of 30-inch diameter (and smaller) purple pipe. This project is expected to deliver approximately 9,300 AFY of recycled water to various industrial and irrigation users in the Harbor.

When resources are available, planning and design for other recycled water projects will continue. However, many of these projects are being deferred due to funding constraints described in Section 2.3.2.

Go Policy #2:

Direct the Department of Building and Safety (DBS) and LADWP to evaluate and develop ordinances to require installation where feasible of dual plumbing for new multi-family, commercial and industrial developments, schools and government properties in the vicinity of existing or planned recycled water distribution systems in coordination with *Los Angeles River Revitalization Master Plan* (LARRMP). Proximity and demand will be considered when determining feasibility. The dual plumbing will consist of separate plumbing and piping systems, one for potable water and the second for recycled water for non potable uses such as irrigation and industrial use.

Status: 

The City conducted preliminary research of dual plumbing ordinances that currently exist in other cities. Preliminary research indicated that retrofitting existing buildings with dual plumbing may be cost prohibitive in many cases. Although installations in new facilities could be more cost effective, the payback period depends on how quickly the customer can be connected to the recycled water system after the dual plumbing is installed.

Any requirement to install dual plumbing would be subject to eligibility criteria, such as proximity to the purple pipe system, users' individual water demands, and ability to comply with all onsite construction and inspection requirements set by the Department of Public Health. Such criteria are difficult to define without a clear picture of where and when purple pipes will reach a particular area.

It should be noted that the installation of dual plumbed systems is currently allowed on a voluntary basis in the City. LADWP continues to identify potential areas for recycled water use and methods for evaluating potential developments.

The development of ordinances to require the installation of dual plumbing in commercial buildings to allow toilet flushing with recycled water was put on hold pending the completion of the *Recycled Water Master Planning* Documents. The framework for an implementation strategy to expand the recycled water system is laid out in the RWMP documents. However, funding mechanisms will dictate the timing and sequence for the construction of additional non-potable reuse projects (purple pipes) in different areas of the City. The timeframe for developing any potential dual plumbing ordinance will be determined once the implementation strategy and funding mechanism for the purple pipe expansion is better known.

Graywater use for irrigation is permitted in the City provided system installation and use is pursuant to the 2010 California Plumbing Code. DBS has issued an *Information*

Bulletin (P/PC 2008-012) to inform the public of graywater regulations. In coordination with DBS, the Bureau of Sanitation has created a one-page graywater informational publication to further educate the public on the uses and benefits of graywater, and can be found on the IRP website at www.lacitysan.org/irp.

Go Policy #3:

Direct Public Works and LADWP to coordinate, where feasible, the design/construction of recycled water distribution piping (purple pipe) with other major public works projects, including street widening and LARRMP project areas. Also coordinate with other agencies, including Metropolitan Transit Authority (MTA) and Caltrans on major transportation projects.

Status:

The LADWP is coordinating with external agencies and other City Departments, including Caltrans, LA Sanitation, BOE, and the Bureau of Street Services (BSS) to identify opportunities where purple pipe can be installed in an efficient manner as these public works projects are constructed.

LADWP is collaborating extensively with BOE to incorporate purple-pipe installation in street widening and bridge retrofit projects as they enter the construction phase. Purple-pipe installations are made on project specific basis.

LADWP has partnered with other City agencies on many occasions to include purple pipe in the construction of City infrastructure where it was feasible. In particular, three bridge projects have included purple pipe in their construction.

1) Glenoaks Bridge widening project – purple pipe was included in the bridge for service to Hansen Dam Golf Course

2) Spring St. Bridge widening project – purple pipe was included in the construction of the bridge to cross the LA River for service to the downtown area

3) Taylor Yard Bikeway/Pedestrian Bridge project – purple pipe was included in the construction of the bridge to cross the LA River for service to Elysian Park

In the future, LADWP plans to continue coordination with other agencies to integrate purple pipe in the construction of City infrastructure where it is feasible.

Additionally, the LADWP has worked with BSS to retrofit one street-sweeper to accept recycled water for street-sweeping with plans to retrofit another ten trucks. The LADWP has installed 12 fill-stations throughout the City for these trucks to utilize recycled water in their operations.

Go Policy #4:

Direct LADWP to develop a stakeholders' participatory water reuse planning study to explore the feasibility of implementing groundwater replenishment with advanced treated recycled water.

Status: IN PROGRESS

As part of LADWP's key public outreach strategies, a Recycled Water Advisory Group (RWAG) was assembled in 2009 to solicit input from stakeholders throughout the development of the RWMP process and GWR Project. This group is composed of approximately 60 stakeholders representing diverse interests and demographics throughout the City and was formed to provide input during the development of the Recycled Water Master Planning Documents. Since December 2009, eight workshops have been held, with additional workshops to be scheduled for the future. In addition to RWAG activities, stakeholder engagement efforts have included Recycled Water Forums for the general public conducted in the Spring of 2011, presentations to Neighborhood Councils and other community groups, and briefings for elected officials.

Go Policy #5:

Direct LADWP and Public Works to continue to provide water from DCTWRP to Lake Balboa, Wildlife Lake, the Japanese Garden at Sepulveda Basin, and to the L.A. River to meet baseline needs for habitat (i.e., approximately 27 mgd (approximately 30,000 AFY) through flow-through lakes).

The Japanese Gardens at Sepulveda Basin

Status: IN PROGRESS

Tertiary treated effluent will continue to be provided from DCTWRP to Lake Balboa, Wildlife Lake, the Japanese Garden at Sepulveda Basin, and to the Los Angeles River to meet baseline needs for habitat.

Go Policy #6:

Direct LADWP to continue conservation efforts, including programs to reduce outdoor usage such as using smart irrigation devices on City properties, schools and large developments (those with 50 or more dwelling units or 50,000 gross square feet or larger) and continue to increase incentives to residential properties.

Status: IN PROGRESS

Many water conservation efforts are currently under way. For a description of new programs and efforts, please refer to the Water Conservation portion of section 2.4.1, specifically the Landscape Incentive Program which relates to this Go Policy.

Go Policy #7:

Direct LADWP to work with DBS in continued conservation efforts, including evaluating and considering new water conservation technologies, including no-flush urinal technology.

Status: 

The Water Efficiency Requirements Ordinance is in effect mandating the use of high efficiency plumbing fixtures. No flush urinals (zero water urinals) are International Association of Plumbing and Mechanical Officials (IAPMO) approved and currently permitted for use by the Department of Building and Safety. Additionally, LADWP customers can receive a rebate for installation of both zero and ultra-low water urinals. In recent years many venues have upgraded to no-flush urinals including the L.A. Convention Center and the Hollywood Bowl.

Also, LADWP continues to encourage the installation of sub-meters, as deemed necessary, in order to separately monitor indoor and outdoor water use by individual customers. Beginning January 2011, new irrigated landscapes of 5,000 square feet or more were required to have separate water meters or sub-meters as part of the new 2010 California Green Building Standards Code. There are no rebates for sub-meters at this time.

Go Policy #8:

Direct LADWP to continue conservation efforts, including working with DBS to evaluate and develop a policy that requires developers to implement individual water meters for all new apartment buildings.

Status: 

LADWP is working with MWD, Industry, DBS, City Planning (DCP), and Sustainable Code Officials to evaluate existing plumbing codes to ensure that individual water meters in new apartment buildings is feasible and produces a reduction of water and energy use. At the state level, there has been proposed legislation (AB 1975 and AB 19) that would have required Department of Housing and Community Development to adopt building standards requiring the installation of individual water meters or submeters in newly constructed multi-unit residential buildings. However, these bills have not been adopted during the last two legislative sessions. Locally, LADWP is evaluating various apartment buildings in Los Angeles that have installed individual water meters as pilot programs.

As noted in Go Policy #7, LADWP continues to encourage the installation of sub-meters, as deemed necessary, in order to separately monitor indoor and outdoor water use by individual customers. Beginning January 2011, new irrigated landscapes of 5,000 square feet or more were required to have separate water meters or submeters as part of the new 2010 California Green Building Standards Code.

Go Policy #9:

Direct LADWP to continue conservation awareness efforts, including increasing education programs on the benefits of using climate-appropriate plants with an emphasis on California friendly plants for landscaping or landscaped areas developed in coordination with LARRMP, and to develop a program of incentives for implementation.

Status: 

Upon approval of the revised Water Conservation Ordinance in August 2008 requiring customers to eliminate wasteful water uses, LADWP began a comprehensive public outreach program to communicate these new requirements to customers. These efforts were complemented by a conservation awareness campaign by MWD. The LADWP Drought Busters, also known as the Water Conservation Team, began traversing the City neighborhoods to educate the public on how to conserve on outdoor water use. LADWP also began a Drought Resistant Landscape Incentive Program in June 2009 that encourages customers to remove their grass and plant drought tolerant plants, mulch, or permeable hardscapes by paying $1.00 per square foot of turf removed.

LADWP also sponsored twelve water conservation landscaping workshops with MWD in 2009-2010. The workshops explained the historical background of our water sources and provided LADWP customers with educational materials on effective ways to reduce their outdoor water use, which included soil and site analysis methods, alternatives for permeable hardscape, instructions on how to install drip irrigation, and plant selection criteria for use of California-friendly plants. Instructors also promoted residential rebate programs such as turf replacement, and offered water saving tips to utilize both indoors and outdoors. Participants were also given take home materials and resources to assist them in choosing an affordable and low maintenance water conserving landscape.

In addition, the BSS, through the Green Streets Committee (GSC) has identified a number of low water use, drought tolerant turf substitutes for parkways and medians, which has become part of the City's standard plans. In a joint effort between LADWP and BSS, informational brochures and booklets have been developed and are being distributed to customers.

Go Policy #10:

Direct Planning Department to consider the development of a City Directive to require the use of California friendly plants in all City projects where feasible and not in conflict with other facilities usage.

Status: 

DCP does not regulate public (city) properties, and therefore cannot provide information on public facilities. However, staff is pursuing a new Supplemental Use District, the Los Angeles River Improvement Overlay

(LA RIO), which would affect private properties within a fixed distance from the Los Angeles River. This overlay will likely include a requirement that properties provide native plants for a minimum percentage of landscape area. The LA RIO is still under development.

The new Irrigation Guidelines, which were enacted to comply with the State of California's Model Landscape Ordinance, establish a water allowance. All new projects that include landscaping will be subjected to this water allowance, which, encourages the use of a less water intensive plant palette, including numerous native plants.

THIS PAGE IS INTENTIONALLY LEFT BLANK

Section 3
Runoff Management Review


3.1 Introduction

This section provides a description of new information emerging since the IRP adoption in 2006. It identifies new programs, projects, efforts, and regulations that relate to runoff management and impact the implementation of IRP recommendations.

3.2 Background and Approach

This section reviews the runoff management volume of the *Facilities Plan* (Volume 3). The purpose of the runoff management volume was to study dry weather and wet weather runoff quality and quantity

3.2.1 Summary of 2006 IRP Findings for Runoff Management

The approach for runoff management in the IRP was to 1) determine the 2020 planning parameters, drivers and existing programs for runoff; 2) analyze the gaps and identify options; 3) define preliminary alternatives, evaluate alternatives, and recommend draft alternatives; 4) conduct environmental analysis (EIR); and 5) develop an implementation plan for the recommended alternative.

The recommended alternative for implementation (Alternative 4 – Tillman Water Reclamation Plant Expansion/High Potential for Water Resources Projects) included a series of runoff management options and leadership projects see Figure 1-1 in Section 1. Because runoff management planning was still in its infancy, the runoff management goals of the IRP were less finely developed than the goals of the wastewater service function. Instead the implementation strategy for runoff

management folded the options included in the recommended alternative, and the leadership projects into a series of "go policy actions" to encourage further development of the recommendations.

3.2.2 Approach for this Runoff Management Review

The approach to reviewing the runoff management information included the following steps:

- **Summarize Changes to Planning Parameters:** This includes an update to land use and regulations, as shown in Section 3.3.
- **Summarize Planning and Programmatic Developments:** Since the IRP was adopted in 2006, the City has been advancing the runoff management/stormwater recommendations through a series of detailed planning documents as described in Section 3.4.
- **Update Runoff Management Goals (from Final Alternative) and Progress to Date:** Based on the updates to the planning parameters and the new planning and programmatic developments, the runoff management goals from the 2006 IRP have been updated and are described in Section 3.5. A status update describing the progress of infrastructure projects to date is also included.
- **Status of Implementation Strategy (Status of Go Policies):** Much progress has been made in the runoff Go Policies included in the IRP. The status of each is described in Section 3.6.

Table 3-1 summarizes the documents and programs used to review the runoff management recommendations for 2020 in the IRP.

Table 3-1: Runoff Management Reference Projects and Programs for the IRP Review

Watershed	Project/Program	Year	Department Lead
Various	City of Los Angeles *Water Quality Compliance Master Plan for Urban Runoff*	2008	LA Sanitation WPD
	Green infrastructure task force projects	Various	LA Sanitation WPD
	Prop O implementation projects	Various	LA Sanitation WPD and BOE Prop O
	Los Angeles River, Ballona Creek and Machado Lake Trash TMDL Implementation program	2002	LA Sanitation WPD
	Future reference: LADWP Stormwater Capture Master Plan	Future	LADWP
Santa Monica Bay	"Jurisdictions 2 and 3 Santa Monica Bay Beaches Dry Weather and Wet Weather Bacteria TMDL Implementation Plan"	2005	LA Sanitation WPD
Marina Del Rey	Marina Del Rey Bacteria TMDL Implementation Plan	2005	LA Sanitation WPD
	Marina del Rey Toxic Pollutants TMDL Implementation Plan	2010	LA Sanitation WPD
Ballona Creek	Ballona Creek Metals TMDL Implementation Plan	2010	LA Sanitation WPD
	Ballona Creek Bacteria TMDL Implementation Plan	2009	LA Sanitation WPD
	Ballona Creek Estuary Toxic Pollutants TMDL Implementation Plan	2011	LA Sanitation WPD
Dominguez Channel	Machado Lake Nutrients TMDL Lake Water Quality Management Plan	2010	LA Sanitation WPD
Los Angeles River	Los Angeles River TMDL Implementation Plan for Metals	2010	LA Sanitation WPD
	Los Angeles River Revitalization Master Plan	2007 - Ongoing	BOE Los Angeles River Project Office
	Los Angeles River Ecosystem Restoration Feasibility Study (USACE)	2006 - Ongoing	BOE Los Angeles River Project Office
	Los Angeles River Master Plan	1996 – Ongoing	County of Los Angeles

The following Table 3-2 provides additional information on the Los Angeles River watershed documents.

Table 3-2: Description of Reference Programs Related to the Los Angeles **River**

Los Angeles River Related Program	Description	Year	Lead
Los Angeles River Revitalization Master Plan (LARRMP)	Adopted by the LA City Council; calls for sufficient flows to support habitat in River, including area downstream of DCTWRP and LAGWRP. Supports IRP minimum flow requirements in the Los Angeles River.	2007	BOE/LADWP
Los Angeles River Ecosystem Restoration Feasibility Study (River Study)	City Council-authorized agreement with the United States Army Corps of Engineers (Army Corps) to restore ecological functions in 10-mile stretch of the Los Angeles River, requiring sufficient flows to support habitat in 10-mile stretch of Los Angeles River downstream of Tillman plant with LAG midway through area. Supports IRP minimum flow requirements in the Los Angeles River.	2006	City Council Ad Hoc Committee on the Los Angeles River/BOE
Los Angeles River Navigability Decision	The United States Environmental Protection Agency proclaimed the Los Angeles River as a "traditionally navigable waterway" which accords it full protection under the Clean Water Act and provides legal support for boating in the Los Angeles River. Affects water quality targets for the Los Angeles River watershed.	2010	U.S. EPA/City Council Ad Hoc Committee
Los Angeles River Non-Motorized Boating Program	Los Angeles Conservation Corps and Mountains Recreation and Conservation Authority Program authorized by the Army Corps in 2011; requires sufficient flows in the Los Angeles River downstream of Tillman plant for recreational boating; next phase intended for Glendale Narrows/near LAG outfall. Supports IRP requirement for minimum flows in the Los Angeles River.	2011 – Ongoing	City Council Ad Hoc Committee
Los Angeles River Master Plan	Los Angeles County Master Plan for the lower Los Angeles River. The Master Plan is updated regularly.	1996 - Ongoing	Los Angeles County

3.3 Updated Planning Parameters

The following sections discuss the current status of the baseline planning parameters that influence stormwater management, including changes to watershed conditions such as land use and water quality, and significant policy or regulatory changes that affect the watersheds.

3.3.1 Watershed Land Use and Water Quality

Land Use

Urban watersheds, such as the watersheds in the Los Angeles basin, undergo regular development and redevelopment, which often results in changes to land use designations. Land use designations are regularly updated by SCAG. The original IRP used the 2000 SCAG land use database, and since then the database has been updated. Table 3-3 provides a summary of the 2005 SCAG land use designations.

While the land uses within the watersheds have changed, there have been no changes to the watershed delineations.

Table 3-3: Land Use Summaries within the City of Los Angeles

	Watershed Areas (acres)				
Land Use Type	**Los Angeles River**	**Ballona Creek**	**Santa Monica Bay**	**Dominguez Channel**	**Total**
Commercial	19,286	10,778	1,068	1,930	33,063
Industrial	11,766	2,321	191	3,633	17,910
Multi Family	10,541	9,276	1,010	1,355	22,182
Open Space/Agriculture	41,521	12,392	15,989	1,066	70,968
Single Family High Density	75,076	22,492	5,928	4,073	107,570
Single Family Low Density	4,381	1,620	1,272	8	7,280
Transportation/Utilities/Mixed	21,432	8,284	2,832	2,818	35,366
Water	503	344	70	91	1,008
Other	698	11	0	48	757
Total (in acres)	**185,203**	**67,520**	**28,361**	**15,022**	**296,105**

Source: Watershed Protection Division GIS, based on 2005 SCAG data

Water Quality

Water quality data from the Los Angeles River, Ballona Creek and Marina del Rey watersheds was summarized during the development of the respective Total Maximum Daily Load (TMDL) Implementation Plans (Los Angeles River Metals TMDL Implementation Plan, Ballona Creek Metals TMDL Implementation Plan, Ballona Creek Bacteria TMDL Implementation Plan, Ballona Creek Estuary Toxics TMDL

Implementation Plan, and Marina del Rey Toxics TMDL Implementation Plan). The analyzed data are presented in the appendices of each of the Implementation Plans.

3.3.2 Regulations

This section identifies and describes regulations that have come to fruition since 2006 that are related to runoff management.

Total Maximum Daily Loads (TMDLs)

A Total Maximum Daily Load (TMDL) is the amount of a pollutant that a water body can absorb without impairing any of its beneficial uses. Locally, the Los Angeles Regional Water Quality Control Board (RWQCB) develops these TMDLs, which are subsequently approved by the State Water Resources Control Board (SWRCB), the Office of Administrative Law (OAL) and finally the U.S. Environmental Protection Agency (EPA) before they become a part of the Basin Plan and regulated through various National Pollution Discharge Elimination System (NPDES) permits. The U.S. EPA has also independently developed and issued TMDLs that are currently in effect. Where the City is listed as a responsible jurisdiction, it is required to develop a plan to meet the limits of the TMDL.

As a result of a 1998 lawsuit filed by the National Resources Defense Council (NRDC), along with other environmental groups, against the U.S. EPA, a consent decree established a 13-year schedule to complete the more than 90 TMDLs in the region. More than 60 of these affect the City including 6 for the Los Angeles River watershed alone (including TMDLs for Trash, Nutrients, Metals, Bacteria, Organics, and Oils).

When the original IRP was adopted in 2006, the only TMDLs in effect were Los Angeles River Trash and Santa Monica Bay Beaches Bacteria (Wet and dry Weather). As of May 2012, the U.S. EPA has approved twenty-two TMDLs that list the City as a responsible jurisdiction. These TMDLs are for the Santa Monica Bay, Los Angeles River, Ballona Creek and Dominguez Channel watersheds. Additional TMDLs for these watersheds may be developed in future years. The twenty-two TMDLs that are in effect include:

- Los Angeles River Trash
- Los Angeles River Metals
- Los Angeles River Nutrients
- Los Angeles River Bacteria
- Ballona Creek Trash
- Ballona Creek Metals
- Ballona Creek Bacteria
- Ballona Creek Estuary Toxic Pollutants
- Ballona Creek Wetlands Sediment and Invasive Exotic Vegetation
- Echo Park Lake Nutrients, Organochlorine Pesticides and PCBs, and trash

- Lincoln Park Lake Nutrients and Trash
- Santa Monica Bay Beaches Bacteria (Dry Weather)
- Santa Monica Bay Beaches Bacteria (Wet Weather)
- Santa Monica Bay Nearshore Debris
- Santa Monica Bay DDTs and PCBs
- Marina Del Rey Back Basins Bacteria
- Marina Del Rey Harbor Toxics
- Machado Lake Trash
- Machado Lake Nutrient
- Machado Lake Toxics
- Los Angeles Harbor Bacteria
- Los Angeles and Long Beach Harbors Toxic and Metals

TMDLs are enforced through State and Federal discharge permits issued to the City such as the Municipal Separate Storm Sewer System (MS4) NPDES permit and Publicly Owned Treatment Works (POTWs) permit.

Since 2005, WPD has developed TMDL implementation plans that address water quality impairments for several of the TMDLs that are in effect. The City is currently implementing the necessary measures to comply with the Trash TMDLs in the Los Angeles River, Ballona Creek and Dominguez Channel watersheds, the Toxics and Metals TMDLs for Los Angeles and Long Beach Harbors, the Bacteria TMDLs for Santa Monica Bay, the TMDLs for Machado Lake and Echo Park Lake, as well as other TMDLs. The City's TMDL related efforts are further described in Section 3.4.

Los Angeles River as Navigable Water Body

On July 7, 2010 the U.S. EPA declared the entire Los Angeles River channel "Traditional Navigable Waters". This designation allows the U.S. EPA to enforce Clean Water Act protections throughout its 834-square-mile urban watershed.

Kayakers participating in the non-motorized boating tour of the Los Angeles River.

According to their records, the U.S. EPA considered several factors, including the Los Angeles River's ability to support watercraft navigation with current flow and depth, its historical navigability, the current commercial and recreational uses of the Los Angeles River, and the impact of usage and development plans on the Los Angeles River's potential for navigation. These factors evidenced that the Los Angeles River's past and present physical characteristics and planned future uses are consistent with a Traditional Navigable Waters

designation.

In the context of the IRP, an average of 27 mgd (approximately 30,000 AFY) will continue to be discharged from DCTWRP through Balboa Lake, Wildlife Lake, and Japanese Gardens, to the Los Angeles River. The 27 mgd was determined based on the water needs of Balboa Lake and Wildlife Lake, though the water needs of Sepulveda Basin and the Glendale narrows reaches of the Los Angeles River have not been quantified. As outlined in the IRP, long term water recycling goals are expected to result in reductions in effluent discharge to the LA River, which will be reconciled with the City's long-term River Revitalization efforts. The goal will be to meet baseline habitat needs.

3.4 Completed Planning and Programmatic Projects

This section identifies and describes programs and projects that have come to fruition since 2006 related to runoff management.

Many of the plans described here, including the TMDL Implementation Plans, include proposed projects to be implemented. Most of the projects that are currently being implemented are being funded through Proposition O, a general obligation bond measure approved by City voters in 2004 and authorizing $500 million for projects to meet Clean Water Act requirements (see Section 3.4.8 for additional discussion on Proposition O and Section 3.5 for the status of implemented projects). Proposition O will fund water quality improvement projects through the year 2014. However, new additional funding for the City's Watershed Protection Program is required to fund the implementation of measures proposed in TMDL Implementation Plans that have been recently developed and submitted to the RWQCB.

Many of the efforts listed in this section involve projects that increase onsite infiltration or otherwise reduce the discharge of runoff. Where these projects are within the Los Angeles River watershed, reductions in dry weather flow will have an impact on Los Angeles River flow. Therefore, the reduction of dry weather flow in the Los Angeles River due to these efforts could potentially affect IRP recommendations regarding minimum flows. Given that both dry weather runoff and treatment plant discharges are contributors to Los Angeles River flow, a significant reduction in one or both of these sources will likely affect the Los Angeles River environment and flow in the Los Angeles River will potentially become more dependent upon flow provided by treatment plant discharges. This concept may be a concern for other watersheds as well if minimum flow amounts to their waterbodies are determined to be required to support habitat.

3.4.1 *Water Quality Compliance Master Plan for Urban Runoff* (WQCMPUR)

In March 2007, a City Council motion directed the LA Sanitation to create a master plan that provides strategic direction for planning, budgeting and funding efforts to reduce pollution from urban runoff. The WQCMPUR was developed in 2007 and 2008 in close collaboration with individuals, groups and agencies who are concerned with the quality of the City's waters, and included three large stakeholder workshops and many smaller meetings. The Board of Public Works adopted the WQCMPUR in April 2009. The plan provides for a 20 year strategy for clean stormwater and urban runoff to protect the City's rivers, lakes and beaches from pollution. By promoting green infrastructure, the WQCMPUR seeks a broad watershed-based perspective using green and natural solutions to improve water quality and bring Los Angeles into compliance with current and emerging water quality regulations. Recommended activities of the WQCMPUR support the goals of the IRP and have been grouped in three initiatives:

1. The Water Quality Management Initiative provides guidelines for developing TMDL Implementation Plans for each of the four watersheds, using a green infrastructure approach for stormwater management.
2. The Citywide Collaboration Initiative recognizes that urban runoff management should become a key element in the City's planning process for development and redevelopment, and provides recommendations for Citywide coordination of urban runoff management.
3. The Outreach Initiative outlines recommendations to reduce urban runoff pollution at the source by targeting specific pollutants and polluters and by promoting environmental stewardship.

3.4.2 Los Angeles River TMDL Watershed Implementation Planning

The City's LA Sanitation WPD, with Los Angeles City Council concurrence, is responsible for responding to draft TMDLs proposed by the RWQCB. Once the TMDLs become effective, LA Sanitation is also responsible for complying with the requirements of the TMDL. For each TMDL adopted, the requirements typically include, but are not limited to: preparing and implementing a Monitoring Plan and an Implementation Plan, conducting special studies (if necessary), and achieving compliance with the water quality standards.

Metals

The Los Angeles River and Tributaries Metals TMDL was adopted and became effective on October 29, 2008 (a previous version was approved on January 11, 2006 which was rescinded and later reissued on October 29, 2008). This TMDL divided the Los Angeles River into six jurisdictions (also known as "reaches") with 42 responsible agencies. The Metals TMDL required responsible jurisdictions to submit a Coordinated Monitoring Plan (CMP) to the RWQCB by April 11, 2007, a draft

Implementation Plan by January 11, 2010, and a final Implementation Plan by July 11, 2010. The City, along with the Los Angeles River watershed group, submitted the Metals TMDL CMP to the RWQCB on April 11, 2007; the RWQCB approved the CMP in April 2008 and TMDL monitoring began in October 2008.

An Implementation Plan for the Metals TMDL was developed and submitted separately by the City for the portions of the watershed within its jurisdiction. The Implementation Plan, which was approved by the RWQCB in December 2010, builds upon the expertise and knowledge of stakeholders and improves upon other existing plans. The plan focuses on several multi-benefit best management practices (BMPs), including institutional solutions such as enhanced street sweeping, large-scale regional projects such as infiltration basins and wetlands, and smaller-scale distributed projects such as green streets.

Bacteria

The Los Angeles River Bacteria TMDL was adopted and became effective on March 23, 2012. This TMDL addresses impairments of water quality standards for bacteria in the Los Angeles River Watershed. This TMDL is based on the original work conducted by the "Cleaner Rivers through Effective Stakeholder-led TMDLs" (CREST) stakeholder group, a stakeholder effort initiated by the City for the purpose of developing TMDLs to restore and protect water quality in the Los Angeles River. CREST conducted a groundbreaking study of the dry weather storm drain system inputs to the Los Angeles River, which involved sampling every storm drain in selected reaches of the Los Angeles River and documenting the bacteria inputs and variability from urban areas in the most complete fashion to date.

Trash

On September 19, 2001, the RWQCB adopted a Trash TMDL for the Los Angeles River watershed. The TMDL was subsequently approved by the SWRCB, the OAL, and the U.S. EPA. The TMDL became effective on August 28, 2002. The City and County of Los Angeles both filed petitions and complaints in the Los Angeles Superior Court challenging the Los Angeles River Trash TMDL. Subsequent negotiations led to a settlement agreement, which became effective on September 23, 2003.

Retrofitted catch basin to prevent trash from entering the storm drainage system.

Concurrently, twenty-two other Cities sued the RWQCB and State Water Board and the Appellate Court ordered the State Water Board to set aside and not implement the Trash TMDL until it has been brought into compliance with CEQA. Effective July 17,

2006 the Trash TMDL was set aside. The TMDL was later reissued and became effective on September 23, 2008.

As of March 2012, the City has retrofitted 22,133 catch basins with trash capture or deflecting devices in the Los Angeles River Watershed as well as three netting systems certified as full capture devices have been installed strategically in the Watershed. With these structural devices alone, the City has reduced its trash discharge to the Los Angeles River by approximately 90%, several years ahead of the final TMDL compliance milestone.

3.4.3 Dominguez Channel Watershed TMDL Implementation Planning

The four adopted TMDLs in the Dominguez Channel watershed are the Machado Lake Trash TMDL, the Machado Lake Nutrients TMDL, the Machado Lake Toxics TMDL and the Los Angeles and Long Beach Harbors Toxic and Metals TMDL. The City and various other responsible jurisdictions prepared a Lake Water Quality Management Plan for Machado Lake to address the Nutrients TMDL and submitted it to the RWQCB in September 2010. Similar to the Los Angeles River watershed, the City has been installing trash capture devices Citywide to address the requirements of the Trash TMDL, and the City is ahead of schedule on implementation.

Implementation efforts are already underway to address the Machado Lake TMDLs through the Proposition O funded Machado Lake Ecosystem Rehabilitation Project and Wilmington Drain Multi-Use Project.

3.4.4 Ballona Creek Watershed TMDL Implementation Planning

Similar to the Los Angeles River, the City has been implementing BMPs to meet the requirements of the Ballona Creek Trash TMDL and as of March 2012 has retrofit 16,000 catch basins and has installed ten netting systems and three CDS units certified as full capture devices throughout the Ballona Creek Watershed.

In addition to the Trash TMDL, implementation planning has focused on water quality impairments of Ballona Creek, Ballona Estuary and Sepulveda Channel by bacteria (Ballona Creek Bacteria TMDL, effective date April 27, 2007), impairment of Ballona Creek by metals (Ballona Creek Metals TMDL, effective date October 29, 2008), and impairment of Ballona Creek Estuary by toxic pollutants (Ballona Creek Estuary Toxic Pollutants TMDL, effective date January 11, 2006).

The City is the designated lead agency for the Ballona Creek TMDLs and coordinates all implementation activities on behalf of the seven watershed cities and Caltrans, as well as the County regarding the CMP though the County opted to separately prepare Implementation Plans applicable to areas within its jurisdiction. Table 3-4 provides a summary of planning activities.

Table 3-4: Summary of Planning Activities for Ballona Creek TMDLs

Ballona Creek TMDL	Implementation Summary
Bacteria	• The Coordinated Monitoring Plan was submitted to RWQCB on January 29, 2009. Weekly monitoring began in June 2009. • The Draft Implementation Plan was submitted to RWQCB on November 25, 2009, and is currently under review.
Metals	• The Coordinated Monitoring Plan was submitted to RWQCB on April 29, 2009. Monitoring began in February 2009. • The Draft Implementation Plan was submitted to RWQCB on January 11, 2010. The plan was resubmitted as Final on October 7, 2010, after review by the RWQCB.
Toxic Pollutants	• The Coordinated Monitoring Plan was submitted to RWQCB on April 29, 2009. Monitoring began in August 2009. • The Toxicity Identification Evaluation, a special study by the City and SCCWRP between 2007 and 2010, was submitted to the RWQCB on January 11, 2011. • The Draft Implementation Plan was submitted to RWQCB on January 11, 2011.

Using the WQCMPUR's green infrastructure guidelines for urban runoff management and conforming to IRP recommendations, the Ballona Creek TMDL Implementation Plans propose various measures for water quality improvements, including distributed and regional projects for urban runoff management and institutional measures for pollution source control. Over a period of two years, WPD conducted community stakeholder workshops and one hundred or more one-to-one meetings and field visits to consult with watershed stakeholders to identify projects and locations for stormwater management. This has resulted in the prioritization of 27 Phase 1 distributed projects and 10 regional projects. The majority of these projects rely on urban runoff treatment using natural BMPs and reduction of urban runoff volumes by infiltration and reuse. Phase 2 calls for an additional 11,200 acres of tributary area within the watershed to be treated by BMPs. This includes BMPs that will be installed as required by the SUSMP program. The recommendations of the three Implementation Plans for the Ballona Creek TMDLs are to a large extent similar because proposed BMPs for stormwater management address multiple pollutants.

Institutional measures proposed for source control vary by plan as those measures are pollutant specific.

3.4.5 Santa Monica Bay Watershed TMDL Implementation Planning

The Santa Monica Bay Beaches Bacteria TMDLs for dry weather and wet weather became effective on July 15, 2003. The Coordinated Shoreline Monitoring Plan was submitted to the RWQCB on April 7, 2004, and shoreline monitoring for bacteria began in the same year. The Implementation Plan for the wet weather TMDL was initially submitted in June 2005, and revised in 2007. This plan proposes several regional projects for stormwater management, the majority of which have been or will be constructed under Proposition O.

Marina del Rey Watershed TMDL Implementation Planning

The Marina del Rey watershed, a subwatershed of the Santa Monica Bay watershed, is about 3 square miles and drains into the Santa Monica Bay. The back basins of the Marina del Rey Harbor are regulated for bacteria (Marina del Rey Harbor Bacteria TMDL, effective date March 18, 2004) and toxics (Marina del Rey Harbor Toxic Pollutants TMDL, effective date March 22, 2006). Both TMDLs require the development and implementation of a Monitoring Plan and an Implementation Plan. The Marina del Rey Harbor Bacteria TMDL Implementation Plan was developed jointly by the County, City, Culver City and Caltrans (responsible jurisdictions) and was submitted as final on October 31, 2005 with revisions in 2006 and approval by the RWQCB on April 6, 2006. Most of the recommended implementation efforts are by the County of Los Angeles. For the Marina del Rey Toxics TMDL Implementation Plan, the City developed the plan along with Culver City and Caltrans while the County developed a separate plan. The City's draft plan was submitted to the RWQCB on March 22, 2011 and to date comments have not been received.

3.4.6 *Los Angeles River Revitalization Master Plan* (LARRMP)

Efforts to revitalize the Los Angeles River trace back to the early 1990s when community members united in a common vision to convert Taylor Yard into beneficial park space that would enhance the surrounding neighborhoods. The community process used for transforming the Taylor Yard became the model to follow to renew the Los Angeles River. In 2002, the Los Angeles River Ad Hoc Committee was created to work with stakeholders on major revitalization efforts including recreation, neighborhood identity, wildlife habitat, water replenishment, jobs, tourism and civic pride.

Pedestrian bridge crossing Los Angeles River at Taylor Yard.

Efforts from the Ad Hoc Committee resulted in a 2005 City Council motion backed by Mayor Villaraigosa to develop a stakeholder-driven agenda to revitalize the Los Angeles River. Completed in 2007, the *Los Angeles River Revitalization Master Plan* (LARRMP) represented a 25 to 50-year blueprint for implementing a variety of improvements that would make the Los Angeles River a valued landmark and a catalyst for a sustainable environment.

The Plan's general goals consisted of revitalizing the Los Angeles River, greening the neighborhoods, capturing community opportunities, and creating value for the Los Angeles River and the City in general. LARRMP identifies issues affecting the Los Angeles River revitalization and recommends a series of management actions and proposed projects to improve the Los Angeles River environment. For more information on the LARRMP, including proposed projects, please visit www.lariverrmp.org.

In the context of the IRP, the LARRMP outlines several issues that IRP planning efforts should consider. These are located in Chapter 3 - Issues Affecting the Plan. Pertinent topics include: water quality and ecological function and habitat value.

Water Quality

Water quality was identified in the LARRMP as the need to meet state and federal mandated TMDLs.

- **Comparison to IRP Recommendations:**
  The IRP recommendation to "… continue to provide water from Tillman to Lake Balboa, Wildlife Lake, and the Japanese Garden at Sepulveda Basin, and the Los Angeles River to meet baseline needs for habitat" (Go Policy #5) is valid and in line with LARRMP considerations, provided that water discharged from DCTWRP continues to meet state and federal water quality mandates. It is also important to consider that modifications to the amount of flow discharged from DCTWRP could potentially affect the concentration of potential pollutants or constituents of concern in the Los Angeles River.

  The IRP recommendation to "In the context of developing TMDL Implementation Plans, consider diversion of dry weather runoff from inland creeks and storm drains that are tributary to the Los Angeles River to wastewater system or constructed wetlands or treatment/retention/infiltration basins with consideration for slope and topography" (Go Policy #22) is in line with LARRMP considerations to meet TMDLs for the Los Angeles River. However, the main TMDL standard that may trigger the need for diversion or treatment of low flows into the Los Angeles River is the Bacteria TMDL which is in the process of final approval by the U.S. EPA. The City and other stakeholders are developing a

monitoring plan to determine the sources of bacteria discharges into the Los Angeles River. At this time, there is no requirement or need to consider diversion of dry weather runoff from Los Angeles River tributaries.

Ecological Function and Habitat Value

Ecological function was identified in the LARRMP as the need to maintain riparian habitat along the Los Angeles River

- **Comparison to IRP Recommendations:**
  The IRP recommendation to "… continue to provide water from Tillman to Lake Balboa, Wildlife Lake, and the Japanese Garden at Sepulveda Basin, and the Los Angeles River to meet baseline needs for habitat" (Go Policy #5) is valid and in line with LARRMP considerations, provided that water discharged from DCTWRP continues to meet state and federal water quality mandates and that an average of 27 mgd (approximately 30,000 AFY) from DCTWRP is supplied to the Los Angeles River.

3.4.7 Los Angeles River Ecosystem Restoration Feasibility Study (USACE)

One of the goals of the City Council adopted LARRMP is to restore a functional riparian ecosystem (LARRMP, Chapter 4). In order to realize this goal, the City has entered into an agreement with the USACE to act as a local sponsor for the Los Angeles River Ecosystem Restoration Feasibility Study (Study) (City Council File 06-0496). The Study will look at roughly a 10-mile reach of the Los Angeles River between the northern end of Griffith Park (near Forest Lawn and LADWP Headworks) to the 1st Street Bridge in downtown Los Angeles . This reach of the Los Angeles River includes approximately 6 miles of soft bottom reach of the Los Angeles River through the Glendale Narrows. As of October 2011, the Study is in the F4 – Future with Project Conditions phase. The Study team is aiming to complete the Study by December 2013, however progress is contingent upon available funding.

The IRP Draft EIR (LA Sanitation/LADWP 2005) quantifies effluent reused by Japanese Gardens, Lake Balboa, and Wildlife Lake at 27 mgd and assumes that this minimum effluent discharge will be maintained by DCTWRP.

Although the Glendale Narrows and Sepulveda Basin reaches of the Los Angeles River are listed as impacted habitat areas in several of the IRP's supporting documents (Physical and Biological Assessment for the Los Angeles River, US Bureau of Reclamation 2004; *IRP Los Angeles River Recycled Water Evaluation Study – Phase 1 Baseline Study*, LA Sanitation/LADWP 2005; IRP Draft EIR, LA Sanitation/LADWP 2005; *IRP Final EIR*, LA Sanitation/LADWP 2006), there was no estimation of the water needed to sustain the habitat in these areas. As outlined in the IRP, long term water

recycling goals are expected to result in reductions in effluent discharge to the LA River, which will be reconciled with the City's long-term River Revitalization efforts.

Low Flow Water Needs of the Existing River Habitat

To ensure a successful LA River ecosystem restoration project, a biological resources analysis, including an evaluation of water needs for the LA River, will be conducted as part of project-level environmental analyses for the IRP's elements. The USACE Study team is aiming to design a project that will efficiently utilize available surface waters to facilitate habitat restoration, but it has not yet quantified the amount of water that will be needed.

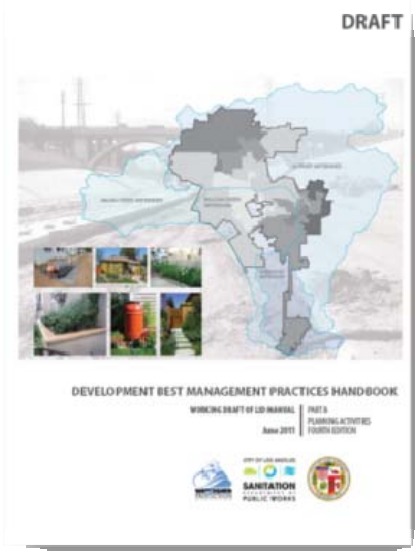
USACE researched the San Pedro River in Arizona and found specific conclusions, which can be reasonably extrapolated to other southwestern river systems. They found that water persistence is critically important to typical river habitats. Along with flow permanence, depth to ground water and inter-annual ground water fluctuation were the most important factors in maintaining desirably riparian vegetation communities.

The desired habitat was maintained when surface flow was present more than 76% of the time, inter-annual ground water fluctuation was less than 1.6 feet, and average maximum groundwater depth was less than 8.5 feet. These findings can be used as a guideline for the Los Angeles River until specific analysis can be completed.

The above information shows the benefit of approaching the Los Angeles River's water needs from a comprehensive understanding, coupling understanding of surface water (affected by urban runoff and treatment plant discharges) and groundwater fluctuations (affected by ground water use and ground water recharge efforts.

3.4.8 Green Infrastructure Programs

The City has undertaken a number of efforts to better manage stormwater and urban runoff. Many of these new programs focus on promoting green infrastructure to efficiently manage stormwater and have resulted in preventing stormwater pollution, offsetting potable water use, improving flood control, and augmenting green spaces within the City. All of these new programs are in line with IRP recommendations and are listed below.



Cover of Working Draft of LID Manual titled "Development Best Management Practices Handbook".

Low Impact Development (LID) Ordinance

This ordinance requires 100% of the runoff generated from a 3/4-inch storm to be managed on site in the priority order of infiltration, evapotranspiration, capture and use, treated by a high removal efficiency bio-filtration/ bio-treatment system, and/or mechanical treatment. It applies to all development and redevelopment projects that require a building permit to create, add, or replace an impervious area of 500 square feet or more.

On January 15, 2010, the Board of Public Works approved the draft LID Ordinance. The City Council adopted the LID Ordinance on September 27, 2011. The LID Ordinance is effective as of May 2012. The LA Sanitation, with the assistance of a Technical Committee, developed the *Development Best Management Practices Handbook* which incorporates Low Impact Development principles and strategies. This handbook was adopted by the City Council by reference along with the LID Ordinance.

Rainwater Harvesting Program

Example of downspout disconnect for residential irrigation.

The City implemented a Rainwater Harvesting Program to pilot a Downspout Disconnection Project for rainwater capture and use for irrigation. The purpose was to help homeowners learn to capture rainwater for beneficial use, and reduce the amount of rainwater flowing from their roofs into the storm drain system. The Program calls for disconnecting downspouts that discharge to impervious areas and redirecting them to areas where rainwater can percolate into the soil, or collect into rain barrels.

Targeted residential and commercial properties were located within the Jefferson and Sawtelle areas in Council Districts 10 & 11. The work to install six hundred rain barrels was completed in January 2010. The LA Sanitation's WPD conducted surveys to monitor the effectiveness of this program. This pilot was so successful that the City is currently looking for funding to expand Citywide. A website has been created at larainwaterharvesting.org where a video of a rain barrel installation can be viewed.

In addition, three guidance manuals were prepared for this Program:

- Volume 1: "Urban Greening Policies and Standards"
- Volume 2: "Green Streets & Green Alleys Design Guideline Standards"
- Volume 3: "A Homeowner's 'How-To' Guide"

The manuals are available at the website:
www.lastormwater.org/Siteorg/program/green.htm

Green Streets and Green Alleys Program

This program is led by the LA Sanitation WPD and includes other Green Streets Committee (GSC) members such as BOE and BSS; DBS; DCP; LADWP, Department of Transportation (DOT); Department of Recreation and Parks (RAP); Board of Public Works and others. This Committee is in charge of identifying stormwater capture and infiltration opportunities within City streets and alleys as well as developing guidelines and standard plans to implement green elements such as porous pavement, planters, and infiltration swales in sidewalks, parkways, alleys, and others.

The Riverdale Green Street Project utilizes stormwater parkway planters to treat and infiltrate polluted urban runoff.

Numerous projects have resulted from this program as well as seven standard plans and design guidelines that developers can follow when building green streets and green alleys. The seven standard plans, the first of their kind in the country, are:

- Parkway swale in oversized right-of-way
- Parkway swales in major/secondary highways
- Parkway swales with no street parking
- Vegetated stormwater curb extension
- Permeable alley gutter retrofit
- Permeable alley pavement for new alleys
- General requirements for green street

The GSC has been working collaboratively on coordinating and implementing the various green street recommendations, which include:

- Institutional changes for all City departments to include green infrastructures
- Preparing design guideline standards
- Adopting standard plans
- Public right-of-way changes
- Developing policies
- Identifying priority projects
- Developing a Green Streets database and website
- Monitoring program
- Permitting flowchart/checklist
- Identifying funding sources
- LID Ordinance

Stormwater Projects under Proposition O

Proposition O, passed in November 2004, authorized the City to issue a series of general obligation bonds for up to $500 million for projects to protect public health by cleaning up pollution, including bacteria and trash, in the City's watercourses, beaches and the ocean, in order to meet CWA requirements.

In addition to protecting water quality, the measure funds improvements that provide flood protection and increase water conservation, habitat protection, and open space. The bonds allow the City to purchase property and/or improve municipal properties for projects that: protect rivers, lakes, beaches, and the ocean; conserve and protect drinking water and other waters sources; reduce flooding and use neighborhood parks to decrease polluted runoff; and capture, clean up, and reuse stormwater.

Numerous stormwater projects with multiple benefits are funded by Prop O and are either planned, in design, under construction, or have been completed. Section 3.5.3 provides a summary of these and other projects.

3.5 Runoff Management Goals

The goals for runoff management incorporated into the original IRP were based on information available at that time. Goals were set based on Citywide extrapolation of the requirements of the Santa Monica Bay Bacteria TMDLs, the only available TMDL during the IRP planning phase. Currently, with the issuance of numerous additional TMDLs, and with the completion of the planning and programmatic documents described in Section 3.3, the City has more robust information pertaining to urban runoff management to use for planning. In several cases the goals of the original IRP have been superseded by more recent planning. This document presents updated goals to be consistent with the carefully evaluated and technically-based strategies and programs presented in the other plans. Note that the status of the IRP Go Policy Actions is discussed separately in Section 3.6.

As the IRP is intended to be a "living document," the City expects to modify runoff goals over time as the City continues to develop strategies, implement multi-benefit projects and perform water quality monitoring. Lessons are learned continuously about what works to improve water quality and what does not; and these lessons learned guide future BMP implementation. The City's original IRP goal was to implement projects that will clean the City's runoff and improve the quality of its waterbodies while viewing urban runoff as a valuable resource. The intent of this goal is not changing. Only the method of achieving this goal is being updated to match the City's latest planning and implementation efforts.

3.5.1 Revised Implementation Strategy

Since the development of the IRP, the City has completed a series of runoff planning efforts, as described in Section 3.3, including the WQCMPUR, completed in 2008. The WQCMPUR, which builds upon the IRP runoff goals, provides a framework for improving urban runoff quality. It also identifies the City's preferred methods for managing and treating urban runoff, which includes implementing green solutions (which are natural BMPs that treat stormwater and improve not only water quality but also enhance the City's environment). The WQCMPUR was developed with extensive stakeholder involvement and was publically supported by key stakeholder groups such as Heal the Bay and Tree People.

Based on the guidelines developed in the WQCMPUR, the City developed the TMDL Implementation Plans described in Section 3.4. These TMDL Implementation Plans identified specific projects or types of projects that will treat runoff from a certain number of tributary acres to achieve compliance with the TMDLs. Guided by the WQCMPUR framework, these projects include green infrastructure, with an emphasis on distributed (on-site) BMPs, institutional measures, and large, regional BMPs that provide natural treatment (such as wetlands).

The following four concepts summarize the changes that have been made in the way the City manages urban runoff and measures progress:

- **Strategic Implementation –** The TMDL Implementation Plans identify high priority areas ("hot spots") for BMP implementation to manage urban runoff. Focused implementation of BMPs in these high priority areas will strategically target pollutant reductions, resulting in the need for less infrastructure and lower costs.
- **Green Solutions –** A focus on green infrastructure for wet and dry weather runoff, with an emphasis on institutional measures, distributed (on-site) BMPs, and large, regional BMPs will provide natural treatment (such as wetlands).
- **Institutional BMPs –** The inclusion of institutional BMPs, which target pollutants before they become entrained in urban runoff (e.g. pet waste pickup to reduce bacteria), involve legislation (e.g., required reduction of copper content in vehicle brake pads), or programmatic changes (e.g., enhancement to the street sweeping program, enforcement of the Low Impact Development ordinance). These BMPs can significantly reduce pollutant loads in urban runoff without building additional infrastructure.
- **Modified Performance Measure –** The TMDL Implementation Plans are based on the management of urban runoff from "tributary acres" rather than a flow-based measure (e.g., mgd). For consistency, the City will also use this tributary acres approach to measure progress towards meeting the IRP goals.

3.5.2 Revised IRP Goals

The 2006 IRP resulted in a Preferred Alternative (Alternative 4) that included dry weather runoff elements that could manage ~42 percent of the estimated dry weather flow (in mgd) and wet weather runoff elements that could manage ~47% of the estimated wet weather flow (in mgd). The runoff management elements and leadership project were folded into a series of go policy actions to encourage further development. Using percent of flow was an acceptable proxy to use in the 2006 IRP to predict water quality benefits of runoff management projects, because at that time stormwater quality planning was in its infancy and detailed technical study had not been conducted. But now, in 2012, the City has the benefit of various studies and implementation plans (discussed in Section 3.4) to use as a basis for predicting water quality benefits. Therefore, these implementation plans will serve as the updated IRP goals for runoff management.

The City's most current runoff management goals are from the existing TMDL Implementation Plans, which are the most specific, quantitative goals in terms of the number of tributary acres that are expected to receive treatment for urban runoff once the plans are fully implemented. Existing TMDL Implementation Plans include:

- Los Angeles River Metals TMDL Implementation Plan
- Ballona Creek TMDL Implementation Plans for Metals, Bacteria and Toxic Pollutants
- Marina del Rey Toxics TMDL Implementation Plan
- Santa Monica Bay Bacteria TMDL Implementation Plans for Wet and Dry Weather

Tables 3-5 and 3-6 summarize the goals for dry and wet weather runoff, respectively, as shown in these TMDL Implementation Plans. Table 3-5 identifies BMPs that are specific to dry weather runoff, however many of the wet weather BMPs shown in Table 3-6 will also treat dry weather flows.

The Los Angeles River, Ballona Creek and Marina del Rey TMDL Implementation Plans quantify the tributary acres expected to require treatment from structural BMPs to achieve compliance with TMDL requirements. As such, the values shown for the Los Angeles River and Ballona Creek watersheds in Tables 3-5 and 3-6 are derived from these plans. Since the Marina del Rey Toxics TMDL Implementation Plan only covers a small portion of the Santa Monica Bay Watershed, and since there are no watershed-wide TMDL Implementation Plans yet developed for the Dominguez Channel Watershed, the goals for the Ballona Creek Watershed (which has similar land use characteristics) were used as the basis for estimating (through extrapolation) what acreage might need to be treated in the City's portion of the Santa Monica Bay and Dominguez Channel Watersheds to be in compliance with current and future TMDLs.

Table 3-6 also identifies the goals for the City's implementation of institutional BMPs.

Table 3-5: Revised IRP Goals for Dry Weather Runoff

Project	Tributary Acres Managed
Santa Monica Bay Low Flow Diversions[1]	12,660
Los Angeles River Downtown Low Flow Diversions[1,5]	4,917
Ballona Creek Low Flow Treatment Facilities[2]	54,497
Dominguez Channel (Low Flow Diversion or Low Flow Treatment Facility)[3]	11,973
Total	**84,000**
% of Total Urban City Area (258,000 acres[4])	**33%**

Note:
1- City's GIS database.
2- Ballona Creek TMDL Implementation Plans (Bacteria, Metals, Toxic Pollutants)
3- Dominguez Channel diversions are not yet identified; acres are based on extrapolation of Ballona Creek numbers.
4- Total urban City area excludes 37,000 acres in the upper, undeveloped and non-urban portion of the Los Angeles River Watershed.
5- Acreage shown includes the drainage area of the existing low flow diversion structure plus that of the planned structures being proposed to address the LA River Bacteria TMDL.

Table 3-6: Revised IRP Goals for Wet Weather Runoff

Project	Tributary Acres Managed
Los Angeles River[1]	
Regional	44,500
Distributed	8,400
Ballona Creek[2]	
Regional	1,446
Distributed	8,831
Dominguez Channel[3]	
Regional	318
Distributed	1,940
Santa Monica Bay[3]	
Regional	602
Distributed	3,679
Total Revised Wet Weather Structural BMP Goal	70,000
% of Total Urban City Area (258,000 acres)[4]	27%
Institutional BMPs (Citywide implementation which overlaps acreage treated by structural BMPs)	
Enhanced Street Sweeping	**258,000**
Vehicle Product Replacement	
Enhanced Pet Waste Pickup	
Total Institutional BMP Goal	**258,000**
Combined Structural and Institutional Goal	**100%**

Notes:

1- Los Angeles River: presented here are the estimated numbers of acres that may need to be treated to meet the LAR Metals TMDL, as presented in the Los Angeles River Metals TMDL Implementation Plan. These projects are proposed to be implemented by 2028. Los Angeles River acres treated are estimated based on current planning efforts, which are subject to change as BMPs are implemented, water quality monitoring is conducted, and lessons are learned that will guide future implementation.

2- Ballona Creek: presented here are the numbers of acres that may need to be treated to meet the Ballona Creek TMDLs, as presented in the Ballona Creek TMDL Implementation Plans (Bacteria, Metals and Estuary Toxics). These projects are proposed to be implemented by 2021. All SUSMP projects are being implemented annually and the rate of implementation is based on past implementation numbers. Ballona Creek acres treated are estimated based on current planning efforts, which are subject to change as BMPs are implemented, water quality monitoring is conducted, and lessons are learned that will guide future implementation.

3-TMDL Implementation Plans have not yet been developed for Dominguez Channel. Therefore, BMPs and associated treated acres have not yet been identified. In addition, Santa Monica Bay TMDL IPs do not list treated acreage. Therefore, Dominguez Channel and Santa Monica Bay acres are based on extrapolations of Ballona Creek numbers and are subject to change. Santa Monica Bay and Dominguez Channel projects are not necessarily on the same timeline as the Ballona Creek projects.

4-The total urban City area excludes 37,000 acres in the upper, undeveloped and non-urban portion of the Los Angeles River Watershed.

BMPs will be located such that they treat runoff from tributary acres identified through analysis as high priority (high pollutant areas). In addition to structural BMPs, the focused, well developed institutional BMPs will further serve to reduce pollutants on a Citywide basis without building treatment facilities. As such, the number of acres

that will need to be treated will vary based on the success of the institutional BMP program and the benefits achieved though targeted structural BMP implementation.

3.5.3 Implemented and Planned Infrastructure Projects

Several projects have been identified, planned, designed and/or built that serve to meet the runoff goals and are summarized in the following tables:

- Table 3-7 shows the projects that are completed.
- Table 3-8 shows the projects that are currently in pre-design, design, or in construction.
- Table 3-9 shows additional projects that have been identified and are in various stages of planning and design, but for which funding has not yet been secured.
- Table 3-10 shows the combined contribution (Tables 3-8, 3-9 and 3-10) towards the revised IRP goals.
- Table 3-11 summarizes the institutional BMPs that have been implemented since the original IRP.

As summarized in Table 3-10, these structural BMP projects have the potential to meet 57 percent of the total revised wet weather structural BMP goal. This percentage does not include the catch basin trash capture devices that are being installed Citywide to meet the zero discharge TMDL requirements because the tributary area overlaps the other BMPs. While the trash capture devices are designed to capture trash, some additional quantities of bacteria and metals are also captured.

Table 3-7: Completed Runoff Management Projects

Project	Tributary Acres Managed
Dry Weather	
Santa Monica Bay Low Flow Diversion (LFD) (Prop O)	12,660
Low Flow Diversions (7th & 8th Streets)	155
Dry Weather subtotal	**12,815**
Percent of Goal (79,300 acres, Table 3-5)	**16%**
Wet Weather (and some dry weather)	
Cesar Chavez Ground Water Improvement (Prop O)	679
Elmer Avenue Green Street Project	40
Garvanza Park Stormwater Infiltration and Use	85
Grand Blvd. Tree Wells (Prop O)	35
Hansen Dam Wetlands Restoration (Prop O)	235
Imperial Highway Sunken Median Stormwater BMP (Prop O)	11
Los Angeles Zoo Parking Lot (Prop O)	28
Mar Vista Recreation Center Stormwater BMP (Prop O)	270
North Atwater Creek Restoration and Park Expansion	62
Oros Green Street (Prop O)	3
Peck Park Canyon Enhancement (Prop O)	222
Riverdale Avenue Green Street Project	15
Westminster Dog Park Stormwater BMP (Prop O)	2
Westside Park Rainwater Irrigation (Prop O)	3,000
Wet Weather Subtotal	**4,687**
Percent of Goal (70,000 acres, Table 3-6)	**7%**
Trash Capture Devices - 22,133 catch basins have been modified with trash capture/deflection BMPs – acreage not listed due to overlap with other BMPs	
Approximately 38,000 catch basins have been retrofitted	

Table 3-8 Runoff Management Projects in Pre-Design, Design or Construction

Project	Tributary Acres Managed
Wet Weather (and some dry weather)	
Aliso Creek Confluence/Reseda River Loop	153
Echo Park Lake Restoration (Prop O)	356
Elmer Avenue Paseo (Prop O)	20
Glenoaks/Sunland Stormwater Capture (Prop O)	302
Headworks Ecosystem Restoration	4,300
Humboldt Stormwater Greenway Project	135
Machado Lake Ecosystem Rehabilitation (Prop O)	14,112
Manchester Neighborhood Greenway Project	2
Mar Vista Roadside Raingardens	221
North Hollywood Alley Project	14
Penmar Water Quality Improvement (Prop O)	1,468
Rosecrans Recreation Center Stormwater Enhancements (Prop O)	13
South Los Angles Wetlands Park (Prop O)	525
Strathern Wetlands Park (Prop O)	929
Sunnynook Park	133
Temescal Canyon Park Stormwater BMP (Prop O)	1,594
Tujunga Spreading Grounds	2,840
Van Ness & Slauson Infiltration Project	220
Westchester Stormwater BMP (Prop O)	2,402
Wilmington Drain (Prop O)	12,097
Woodman Avenue Median Project	130
Wet Weather Subtotal	**41,966**
Percent of Goal (70,000 acres, Table 3-6)	**60%**
Trash Capture Devices - 22,133 catch basins have been modified with trash capture/deflection BMPs – acreage not listed due to overlap with other BMPs	

Table 3-9: Planned Runoff Management Projects (Seeking Additional Funding)

Project	Tributary Acres Managed
Albion Dairy Park - Demolition and Remediation (Prop O) and Water Quality Improvement (Prop O)[1]	255
Aliso Creek and Limkiln Creek Confluence Restoration (Prop O)	12,000
Arroyo-Seco Confluence Restoration Greenway	193
Boyle Heights Joint Use Community Center (Prop O)	9
Bull Creek Restoration	2,800
LADWP Valley Generating Station Stormwater Recharge	155
LADWP Whitnall Powerline Easement Stormwater Capture	185
Los Angeles River Natural Park	225
Old Oak Road Surface	35
Taylor Yard G2 (Prop O)	4,200
University Park Neighborhood Rain Gardens	209
Verdugo Hills Stormwater	875
Westwood Neighborhood Greenway	3
Total Planned Projects	**21,144**
Percent of Goal (70,000 acres, Table 3-6)	**30%**
Additional Trash Capture Devices to achieve 100% capture – acreage not listed due to overlap with other BMPs	

Notes:
1- The Albion Dairy Demolition and Remediation phase is completed, but the water quality improvement portion is awaiting funding.

Table 3-10: Sum of Completed (Completed, Final Design, or Construction) and Planned Runoff Management Projects

Sum of Completed and Planned Wet Weather Projects	Dry Weather Tributary Acres Managed	Wet Weather Tributary Acres Managed
Completed Projects (Table 3-7)	12,815	4,557
Projects in Pre-Design, Design or Construction (Table 3-8)	-	41,966
Planned Projects (Table 3-9)	-	21,144
Total	12,815	67,667
Goal	79,300 (Table 3-5)	70,000 (Table 3-6)
Percent of Total Goal	16%	97%

Table 3-11: Institutional BMPs (Examples)

Institutional BMPs
Legislation driven initiatives (e.g., Vehicle Brake Pad Copper Content Reduction, ban on single use plastic bags, landscape ordinance, rainwater harvesting)
Industrial/commercial inspection
Development/redevelopment (SUSMP/LID)
Public agency programs (e.g., catch basin cleaning and street sweeping)
Education outreach (e.g., pet waste)

3.6 Status of Implementation Strategy

Based on the recommended alternative, a series of go-policy directions were included in the 2006 IRP Implementation Strategy. Out of 25 IRP Go Policy Directions, policies 11 through 25 are related to runoff management. Table 3-12 provides a summary of the runoff management go-policy actions. These policies, along with their current status, are described in detail following the table.

It should be noted that due to the need for further study of water quality benefits of runoff management strategies, the 2006 IRP did not include Go Projects or Go If Triggered Projects related to runoff management.

Table 3-12: Summary of Runoff Management Policy Directions

Direction	Lead
11. Review *Standard Urban Stormwater Mitigation Plan* (SUSMP) to require where feasible on-site infiltration and/or treat/reuse, rather than treat and discharge, including in-lieu fees	DPW
12(a). Modify codes to encourage feasible BMPs for maximizing on-site capture and retention and/or infiltration of stormwater instead of discharge to the street and storm drain, including porous pavement	DBS
12(b). Evaluate requiring porous pavements in all new public facilities in coordination with LARRMP and large developments	DPW, DCP
13. Evaluate ordinance changes to reduce the area on private properties that can be paved with non-permeable pavement	DCP
14. Evaluate and implement integration of porous pavements into sidewalks and parkways	DPW, BSS
15. Prepare a concept report and determine feasibility of powerline easement demonstration project	DPW, LADWP, RAP
16. Work with LAUSD to determine feasibility of developing projects for new and retrofitted schools, and government/city-owned facilities with stormwater BMPs	DPW, LADWP
17. Identify sites that can provide onsite percolation of wet weather runoff in surplus properties, vacant lots, parks/open space, abandoned alleys in East Valley and along Los Angeles River in the East Valley	DPW, GSD, RAP
18. Maximize unpaved open space in City-owned properties and parking medians through BMPs and removing unnecessary pavements	DPW, GSD, DOT
19. Include all feasible BMPs in the construction or reconstruction of highway medians under its jurisdiction	DPW, BSS
20. Coordinate with Million Trees LA to identifying potential locations of tree plantings that would provide stormwater benefit	DPW
21. Consider diversion of dry weather runoff from Ballona Creek to constructed wetlands, wastewater system, or urban runoff plant for treatment and/or beneficial use	DPW
22. Consider diversion of dry weather runoff from inland creeks and storm drains tributary to the Los Angeles River to wastewater system or constructed wetlands or treatment/retention/infiltration basins	DPW
23. Consider incorporating IRP policy decisions in the General Plan, Community Plan, and Specific Plan updates or revisions, and in LARRMP and Opportunity Areas	DCP
24. Include stormwater management BMPs in all new parks	DPW, RAP
25. Evaluate feasibility of all City properties identified as surplus for potential development of multiple-benefit projects to improve stormwater management, water quality and groundwater recharge	GSD, DCP, DPW

Go Policy #11: (SUSMP)

Direct Public Works to review *Standard Urban Stormwater Management Plan* (SUSMP) requirements to determine ways to require where feasible on-site infiltration and/or treat/reuse, rather than treat and discharge, including in-lieu fees for projects where infiltration is infeasible (e.g., similar programs developed by City of Santa Monica).

Status: 

In November 2008, the Board of Public Works approved the SUSMP Infiltration Requirements & Guidelines to determine the appropriate type of volume-reduction BMP in the priority order of infiltration, bio-filtration, stormwater capture and use, mechanical/hydrodynamic units, or combination of the above. Additionally, the Low Impact Development (LID) ordinance was adopted by City Council and became effective in May 2012, and the Rainwater Harvesting Program was created to pilot a Downspout Disconnection Project for rainwater capture and use for irrigation. Both of these programs promote on-site infiltration.

Go Policy #12(a): (Onsite Capture/Retention Codes)

Direct Building and Safety to evaluate and modify applicable codes to encourage all feasible Best Management Practices (BMPs) for maximizing on-site capture and retention and/or infiltration of stormwater instead of discharge to the street and storm drain, including porous pavement. (This is currently handled through variances).

Status: 

In January 2008, Building and Safety published an *Information Bulletin (Doc. No. P/BC 2008-118)* regarding Guidelines for Storm Water Infiltration. This document specifies that infiltration structures approved by the Department of Building and Safety, Grading Division and LA Sanitation, Watershed Protection Division will be considered as an approved drainage facility in compliance with Los Angeles Building Code (LABC) sections 7013.9 and 7013.10.

An ordinance was adopted in September 2007 allowing access driveways to be paved with a permeable material (*See Go policy #13 for more details*).

Go Policy #12(b): (Porous Pavement – Public Facilities)

Direct Public Works and Department of City Planning to evaluate the possibility of requiring porous pavements in all new public facilities in coordination with *Los Angeles River Revitalization Master Plan* and large developments greater than 1 acre. Program feasibility must consider site slope, soil conditions, terrain and proximity to other improvements.

Status: 

LA Sanitation prepared the *Green Infrastructures Program Status Report: CF 05-0752 Alternative Street Surfacing Materials, Green Streets, and CF 08-0102 Green Alleys* on behalf of the Green Streets Committee. The report was approved by the DPW on July 26, 2010 and provides a summary of the progress of various city departments in implementing environmentally friendly street-surfacing materials and other green elements, such as porous pavement. Further, the City's LID ordinance (effective as of May 2012) serves the intent of this Go Policy, but does not limit implementation options to porous pavement specifically. Rather, the LID ordinance requires any new developments and redevelopments of 500 square feet or more to manage onsite 100 percent of the runoff from a 3/4-inch storm with BMPs in priority order of infiltration, capture and reuse, biofiltration, and mechanical treatment. As such, the intent of the Go Policy is being met through the requirements in the LID ordinance.

Go Policy #13: (Private Property Permeable Pavement)

Direct Department of City Planning to evaluate ordinances that would need to be changed to reduce the area on private properties that can be paved with non-permeable pavement (i.e., change/support landscape ordinance and encourage the use of permeable pavement).

Status: 

The Alternative Paving Material ordinance streamlines the permitting process of permeable materials in driveways and parking lots as well as expands the types of materials allowed for installation. This ordinance was approved by the City Planning Commission on July 14th, the Planning and Land Use Management Committee on October 18th and is now being prepared by the City Attorney's Office for Council review. Additionally, the City's LID ordinance, which requires that the runoff from the ¾-inch storm be managed on new or redevelopments of 500 acres helps to meet the intent of this Go Policy. Since infiltration BMPs are the first priority of the LID ordinance, and since the Alternative Paving Material ordinance will make it easier to install permeable pavement, this Go Policy is a success.

Go Policy #14: (Porous Pavement – Sidewalks and Parkways)

Direct Public Works LA Sanitation WPD and BSS to evaluate and implement integration of porous pavements into the sidewalks and parkways where feasible. For example, conduct pilot program in East Valley, taking into consideration soil conditions and Proposition O project criteria, as well as along the future *Los Angeles River Revitalization Master Plan*.

Status: 

The City intends to implement, where feasible, porous pavement on a widespread basis into sidewalks and parkways and in continuously evaluating opportunities to do so. To date, the City has completed and

begun numerous projects that include porous pavement. Below are a few examples.

Porous pavement parking lot at Rio de Los Angeles Park.

DPW has implemented, under Proposition O, the LA Zoo Parking Lot Demonstration on Environmental Sustainability Project. This project, which implemented LID concepts and BMPs, provides a "first exhibit" educational experience, and improved parking lot circulation and pavement. Low impact development concepts that were incorporated into this project are permeable pavement and bioretention cells. Trash capturing devices were placed at strategic points. Additional landscaping was also provided to meet the City's landscape ordinance of one tree per four parking stalls (city ordinance no. 170,978). Construction was completed in March 2011 at a final total project cost of approximately $6M. Related efforts include the development of the Green Streets Committee's *Green Infrastructures Program Status Report: CF 05-0752 Alternative Street Surfacing Materials, Green Streets, and CF 08-0102 Green Alleys.*

The Riverdale Avenue Green Street Project installed permeable interlocking concrete pavers, dry wells for monitoring, filters, infiltration basins, street trees and planter beds along both sides of Riverdale Ave. between Crystal St. and the Los Angeles River to reduce stormwater runoff via infiltration. This project was completed in September 2010.

The North Hollywood Alley project will improve alleys from Oxnard St. to Hatteras St. to allow for better stormwater retention, a more pleasant pedestrian experience, and the reduction of the urban heat-island effect. The project will install permeable interlocking concrete pavers, infiltration trenches and catch basins. The project is in the final phase of construction.

Go Policy #15: (Powerline Easement)

Direct Public Works, LADWP and Department of Recreation and Parks to prepare a concept report and determine the feasibility of developing a powerline easement demonstration project (for greening, public access, stormwater management, and groundwater replenishment).

Status: COMPLETE

The La Cienega/Fairfax Powerline Easement Demonstration Project, funded by Proposition O and State Proposition 50, was replaced by the Westside Park Rainwater Irrigation Project. This project, which is sited in the same LADWP powerline easement, involved installation of a flow diversion facility, a stormwater lift station, a subsurface rainwater irrigation system and a dry creek with a perforated pipe for collecting and returning

excess irrigation water to the existing storm drain. Additionally, recreational elements such as park benches, exercise equipment, and playground structures were installed under State Proposition 50 and City Proposition K funding. Construction for the project began in May 2010, and was completed in March 2011.

The Whitnall Highway Power Line Easement Project involves capturing stormwater runoff at several locations along the easement and then directing it into a network of swales, culverts, hydrodynamic separators and infiltration basins for pre-treatment and infiltration. This proposed project will improve the health and long-term sustainability of the San Fernando Groundwater Basin, increase local groundwater supplies, and reduce the region's reliance on water imports. When funding becomes available, design and construction will commence.

These demonstration projects satisfy Go Policy 15 and, as funding becomes available, the City will continue to evaluate additional opportunities based on the success of the demonstration projects.

Go Policy #16: (LAUSD Stormwater Management)

Direct Public Works and LADWP to work with LAUSD to determine the feasibility of developing projects for both new schools and for retrofitted schools, as well as government/city-owned facilities with stormwater management BMPs. [Provide wet weather runoff storage (cisterns) to beneficially use wet weather runoff for irrigation. Also, schools and government properties to reduce paving and landscape and add infiltration basins to allow percolation of wet weather runoff into the ground where feasible.] As appropriate, integrate with LAUSD's new schools development program.

Status: 

LAUSD initially expressed interest in the multiple benefits of diverting and treating off-site water on the campus of Fremont High School in South Los Angeles (removing pollutants from the local environment, educating students, and creating a community garden). However, after further assessment of its environmental and health standards, LAUSD determined it could not move forward with this or other projects that would bring off-site water onto an LAUSD campus. LAUSD found the potential risk to the health and safety of its students and its exposure to associated liability claims were unacceptable. Thus, the City and LAUSD have determined that at this time it is not feasible to develop projects with stormwater management BMPs for new or retrofitted schools. The City and LAUSD may investigate these projects again in the future.

Go Policy #17: (On Site Percolation in Open/Vacant Surplus Property)

Direct Public Works, General Services, and Recreation and Parks to identify sites that can provide onsite percolation of wet weather runoff in surplus properties, vacant lots, parks/open space, abandoned alleys in East Valley and along the Los Angeles

River in the East Valley where feasible. Program feasibility should consider slope and soil conditions.

Status:

The list of vacant lots and parks in the East Valley has been reviewed and mapped. The team is in the process of searching for infiltration opportunities. Protocols for coordination are being set up.

The Elmer Avenue Neighborhood Retrofit Project installed sidewalks, curb and gutter, and catch basins along Elmer Avenue in Sun Valley. This project also installed parkway stormwater gardens, driveway drains and a large infiltration system underneath the street to accept runoff from residential lots adjacent to the project site. This project was completed in March 2010. *(Photo of project portion shown to the right)*

Photo of retrofitted public easement at Elmer Avenue decentralized Stormwater Management Project.

Other projects that meet the objectives of Go Policy #17 include:
Elmer Avenue Phase II: Elmer Paseo (Prop O; in design)
Riverdale Avenue Green Street Project (completed in September 2010)
Strathern Wetlands (Prop O; in design)
Glenoaks-Sunland Stormwater Capture (Prop O; in design)

Go Policy #18: (Unpaved Open Space)

Direct Public Works and General Services and the Department of Transportation (DOT) to maximize unpaved open space in City-owned properties and parking medians through using all feasible BMPs and by removing all unnecessary pavements.

Status:

DPW has compiled a list of City-owned parking lot sites located in the East Valley. DPW will work with DOT to determine a suitable site for the construction of a stormwater infiltration/BMP demonstration project. This continues to be an area of focus and discussion in the Green Streets Committee.

Go Policy #19: (BMPs in Highway Medians)

Direct Public Works LA Sanitation WPD and BSS to include all feasible BMPs in the construction or reconstruction of highway medians under its jurisdiction.

Status: 

It is anticipated that the upcoming stormwater NPDES permit renewal will require street projects greater than 10,000 sq. ft. to incorporate BMPs. Once this requirement is in place, all street projects are anticipated to be subject to SUSMP requirements. The City is currently implementing BMPs in street projects. For example, in October 2009 the Imperial Highway Median Greening Project, funded by Prop O, was completed. It includes a grass swale, infiltration trench, native vegetation, and local re-grading.

Go Policy #20: (Tree Planting)

Direct Public Works to coordinate with the Million Trees LA team on identifying potential locations of tree plantings that would provide stormwater benefit, with consideration of slope and soil conditions.

Status: 

The Million Trees Los Angeles team successfully continues to plant and distribute trees throughout the City. Over 300,000 trees have been planted with 85% planted in parks, City facilities, and schools. This initiative is privately funded and although all trees provide stormwater benefits, measuring and quantifying these benefits would require additional funding that is currently not available. LA Sanitation will continue to monitor the progress of the program.

Go Policy #21: (Dry Weather Runoff Diversions to Treatment)

In the context of developing TMDL Implementation Plans, direct Public Works to consider diversion of dry weather runoff from Ballona Creek to constructed wetlands, wastewater system, or urban runoff plant for treatment and/or beneficial use. Coordinate with the Department of Recreation and Parks. Coordinate and evaluate the impact with the *Los Angeles River Master Plan*.

Status: 

In response to the implementation requirements of the Ballona Creek TMDLs for bacteria, metals and estuary toxics, LA Sanitation developed three Implementation Plans, two of which are currently in review by the RWQCB (bacteria and estuary toxics) and one that was finalized after receipt of RWQCB comments (metals). These Implementation Plans identified two Low Flow Treatment Facilities specifically for managing a portion of the dry weather runoff in the Ballona Creek watershed. Additionally, the Implementation Plans identified eight potential projects for regional management of stormwater that also provide benefits for dry weather runoff management. These

Concept drawing of the Prop O Westside Park Rainwater Irrigation Project

regional projects are located in several City parks and were identified in consultation with the Department of Recreation and Parks. Diverted dry weather runoff will be treated in various treatment systems, and beneficial use of runoff for infiltration, irrigation and other practices will be maximized.

The Mar Vista Recreation Center Rainwater Irrigation Use Project is located in the Ballona Creek watershed and it captures and treats stormwater and urban runoff for irrigation use in the park to supplement potable water demand. Components of the project include a diversion structure, a pump station, a disinfection system and detention/storage. Construction began in July 2009 and was completed in January 2011.

The Prop O Westside Park Rainwater Irrigation Project, also located in the Ballona Creek watershed, described under Go Policy #15 herein, also meets the objectives of Go Policy #21.

Go Policy #22: (Dry Weather Runoff Diversions to Wastewater)

In the context of developing TMDL Implementation Plans, direct Public Works to consider diversion of dry weather runoff from inland creeks and storm drains that are tributary to the Los Angeles River to wastewater system or constructed wetlands or treatment/retention/infiltration basins with consideration for slope and topography.

Status: 

The main TMDL standard that may trigger the need for diversion or treatment of low flows into the Los Angeles River is the bacteria TMDL which is in the process of final approval by EPA. The City and other stakeholders are developing a monitoring plan to determine the sources of bacteria discharges into the Los Angeles River. At this time, there is no requirement or need to consider diversion of dry weather runoff from Los Angeles River tributaries or storm drains to the wastewater system or constructed wetlands or treatment/retention/ infiltration basins. However, projects such Los Angeles Downtown Low Flow diversion and South Los Angeles Wetlands Park will contribute towards compliance with the Bacteria TMDL.

The South Los Angeles Wetlands Park was completed in February 2012, transforming an existing rail maintenance yard into constructed wetlands with surrounding walking trails, riparian vegetation and other passive recreation elements. The wetland is designed to capture and treat stormwater and urban runoff from a 540-acre drainage area.

Other projects that meet the objectives of Go Policy #22 include:

- Echo Park Lake Rehabilitation (Prop O; in construction)
- Garvanza Park Best Management Practices (in construction)
- Humboldt Stormwater Greenway (in design)

Go Policy #23: (General Plan, Community Plan, Specific Plan Update)

Direct the Department of City Planning to consider opportunities to incorporate IRP policy decisions in the General Plan, Community Plan, and Specific Plan updates or revisions, and in the future, *Los Angeles River Revitalization Master Plan* and Opportunity Areas.

Status: 

The Department of City Planning is currently developing the new Cornfield Arroyo Seco Specific Plan and updating the Warner Center Specific Plan, both of which will include new standards that support IRP policies. The Department's new Supplemental Use District -- the Los Angeles River Improvement Overlay -- which is currently under development includes numerous standards and guidelines that encourage the increase of stormwater infiltration and reduced exterior water use. The Department is also currently updating six of its community plans which will include the following goals and policies:

Goal: An adequate and reliable wastewater collection and treatment system that supports existing and planned development.

Polices: 1) Require that wastewater flows be minimized in existing and future developments through stricter water conservation measures (e.g. xeriscaping landscaping and installation of low-flow toilet requirements), recycling efforts and other features that reduce on-site wastewater output; 2) Promote the use of recycled water in new Industrial developments; and 3) Promote advanced waste reduction and diversion methods for all wastewater and solid waste treatment, including the establishment of methane recovery facilities and the implementation of waste-to-energy projects where characteristics meet criteria for effective energy generation.

Goal: Provision of a storm drainage system that reduces the flow of stormwater to the storm drain system and protects water quality by employing watershed-based approaches that balance environmental, economic and engineering considerations.

Policies: 1) Maximize the capture and reuse of stormwater; 2) Encourage the incorporation of bio-retention facilities and use of permeable materials for the paving of sidewalks, driveways, and parking areas when feasible; and 3) Increase opportunities for stormwater infiltration and groundwater recharge.

Go Policy #24: (Stormwater Management BMPs in Parks)

Direct the Department of Recreation and Parks to coordinate with Public Works on including stormwater management BMPs in all new parks.

Status: 

New park facilities and redevelopment of existing facilities are required to include SUSMP requirements as part of the overall project development. Numerous on-going park projects have incorporated the required SUSMP improvements.

Go Policy #25: (Surplus Properties for Stormwater Management)

Direct General Services in coordination with Planning and Public Works to evaluate feasibility of all City properties identified as surplus for potential development of multiple-benefit projects to improve stormwater management, water quality and groundwater recharge.

Status: 

The goal is to determine if these properties can be used for stormwater retention and/or treatment projects before they are offered for public sale. GSD notifies DPW of these properties before they are released for sale and then DPW investigates to check if a Regional Stormwater Mitigation project could be developed at the site. Conditions such as proximity to a storm drain for stormwater diversion to the site, site slope, etc are evaluated to determine if the site is appropriate or not. The Humboldt Stormwater Greenway Project was identified through this process.

Section 4
Financial Update

4.1 Introduction

This section updates the financial plan by providing a brief overview of budget/funding mechanisms used to fund capital improvement programs for wastewater, water, and stormwater.

4.2 Capital Improvements Program Funding Mechanisms

In the IRP, one of the objectives was to enhance cost efficiency with three sub-objectives: 1) provide services cost-effectively, 2) allocate costs equitably, and 3) maximize external funding opportunities; therefore the IRP included a Financial Plan. The *Financial Plan* presented a cash flow analysis for the pre-IRP condition and the IRP Recommended Alternative and provided utility rate impacts for wastewater and runoff management. Financial impacts associated with recycled water and water conservation were not addressed in the Financial Plan as LADWP develops its own CIP and financial planning, separate from the IRP process.

In the interim period since completion of the IRP in 2006, the various departments responsible for implementing the IRP recommendations, LA Sanitation for wastewater and runoff management and LADWP for water conservation and recycled water, have been incorporating recommendations into their respective capital budget/funding mechanisms. Table 4-1 presents a brief summary of the financial funding mechanisms discussed in the IRP for wastewater and runoff management capital improvements.

Table 4-1: Financial Funding Mechanisms for Wastewater and Runoff Management Capital Improvements Discussed in IRP

Financial Funding Mechanisms	Descriptions
Wastewater	
Sewer Services Fees and Charges	Sewer service charges; sewerage facility charge industrial waste permit application, inspection, and control fees; miscellaneous fees
Revenue Bonds and Long-Term Debt	Commercial paper, revenue bonds backed by sewer service fees and charges, California Clean Water State Revolving Fund, California Infrastructure State Revolving Fund, general obligation bonds, moral obligation bonds, and double barreled bonds
Grant Reimbursements	Variable source of revenue dependent upon grant offerings at the federal and state levels
Appropriations	Funding earmarked at the State or Federal levels for specific projects that do not require repayment (requires lobbying on behalf of City).

Table 4-1: Financial Funding Mechanisms for Wastewater and Runoff Management Capital Improvements Discussed in IRP *(cont.)*

Financial Funding Mechanisms	Descriptions
Runoff Management	
Utility Fees	Stormwater pollution abatement charge
Bonds and Long-Term Debt	General obligation bonds (Proposition O), revenue bonds backed by stormwater utility fees, moral obligation bonds, double barreled bonds, California Clean Water State Revolving Fund, California Infrastructure State Revolving Fund, State bond banks, pooled bond issues
Grant Reimbursement	Variable source of revenue dependent upon grant offerings at the federal and state levels
Appropriations	Funding earmarked at the State or Federal levels for specific projects that do not require repayment (requires lobbying on behalf of City).

4.2.1 Wastewater

The wastewater program has historically relied on multiple financial funding mechanisms, including the majority of the mechanisms presented in Table 4.1. Wastewater operations and capital improvement projects are funded through the Sewer Construction and Maintenance Fund (SCM). The SCM provides funding first for operations and maintenance, then debt service, and the remainder is used for the wastewater capital improvement fund (WCIP). The majority of revenues for the SCM fund are provided from user fees. When the SCM is not adequate to cash finance the WCIP, long term debt is incurred within reason to maintain debt coverage ratios and credit ratings. In the past, the WCIP had received significant federal funding for necessary system upgrades. In the last several years, outside funding sources have become very limited.

In July 2009, LA Sanitation halted its planned customer rate adjustments scheduled for 2009 through 2011 to reduce the economic burden on ratepayers. In response, LA Sanitation deferred planned WCIP projects and increased operational efficiencies. The City has recently adopted a series of rate adjustments for the sewer service charge, quality surcharge fees, industrial waste fees, septage fees, and sewerage facilities charge. The first 4.5 percent rate increase was made effective on April 6, 2012. The second and third 4.5 percent increases will be effective on July 1, 2012 and July 1, 2013. The rates will be increased by 6.5 percent on July 1 of the following seven years.

CIP projects will benefit the most from the newly adopted rate adjustments. CIP projects to be funded include:

- Pumping Plants - $7 million average annual expenditure over next ten years
- Collection System - $160 million
- Hyperion Treatment Plant - $44 million
- Terminal Island Water Reclamation Plant - $14 million
- Donald C. Tillman Water Reclamation Plant - $11 million
- Los Angeles/Glendale Water Reclamation Plant - $4 million
- Systemwide - $12 million.

The rate adjustments will also allow the City to reduce the percentage of the CIP that is funded from debt over time.

4.2.2 Runoff Management

The runoff management program's Stormwater Pollution Abatement Fund (SPAF) has historically relied on the Stormwater Pollution Abatement Charge (SPAC) fee added onto each property tax bill and more recently proceeds from voter approved Proposition O Program. The SPAC, established in 1991, is based on the amount of runoff from each property in the City. This fee is equivalent to $23 per equivalent dwelling unit equating to approximately $28 million per year. Increasing the SPAC requires property owner or voter approval, per restrictions of Proposition 218; therefore fees have remained fixed since 1991. Other than the SPAC, current revenues are limited to grants and proceeds from Proposition O bond sales. To increase available funding, the Financial Strategic Planning Task Force continues to study options available for funding the stormwater program to satisfy regulations.

Proposition O authorizes the City to issue up to $500 million of general obligation bonds for project to protect public health by improving water quality in the City's watercourses, water bodies, and beaches, in response to regulatory requirements of the Federal Clean Water Act.

Proposition O was approved by voters in November 2004. Funds from the program have been used to offset portions of the cost associated with runoff management components of the IRP. These obligation bonds are funded by the City's General Fund from proceeds of *ad valorem* taxes levied on property subject to taxation by the City over a period of approximately 24 years. The City's General Fund will provide funds for servicing the debt. However, operations and maintenance expenses associated with the projects are proposed to be paid by the SPAF. Updates regarding Proposition O are located at: http://www.lapropo.org/.

Under the Federal Clean Water Act, each county and municipality throughout the nation is issued a NPDES Permit. The goal of the permit is to stop polluted discharges from entering the storm drain system, local water sources, and coastal waters. The City of Los Angeles is working with the County of Los Angeles to propose adding a

clean water fee on property taxes through a ballot measure in 2013. The clean water fee will be collected by the County and partially distributed to the cities to develop and maintain projects that would address water quality requirements and particularly the NPDES permit requirements. The ballot measure proposes establishing an annual clean water fee on industrial, commercial, and residential property, resulting in a typical residential fee of $54 per year. Public polling in 2011 suggested that the ballot measure would be viewed favorably by most likely voters and maintains a good chance of passing. The timing of the measure is also important because it would determine when the County would actually start collecting the fee. If the ballot measure is voted on in May 2013, then it would begin to be collected in 2014. If the measure in placed on the September 2013 ballot, it won't be collected until 2015 due to the timing of property tax assessments and collection.

4.2.3 Water Conservation and Recycled Water

Water conservation and recycled water programs are funded by LADWP using its CIP and financial planning process outside of the IRP process.

Revenue for LADWP's water conservation and recycling programs is obtained through the rates paid by water customers. The City Council appointed a Ratepayer Advocate on January 31, 2012 to review future rate proposals effecting LADWP rates. With the Ratepayer Advocate in place, the LADWP will move forward with a proposal for a 3-year water rate increase. The outcome of the Ratepayer Advocate's review of this rate proposal will determine the availability of funding for strategic investments, including recycled water projects and water conservation.

A separate increase to the Water Quality Factor component of water rates was approved by City Council on February 8, 2012. This increase does not fund recycled water or conservation. It provides a mechanism to fund critical water quality improvement projects designed to meet mandated regulations established by the United States Environmental Protection Agency and California Department of Public Health. LADWP must award over $600 million in contracts within the next year and spend over $1.1 billion on water quality related projects over the next ten years to comply with these regulations. Updates are available at LADWP's website at: http://www.ladwp.com.

Many non-water quality capital improvement projects and other strategic investments have been deferred as adequate funding is not available at this time. With the appointment of a Ratepayer Advocate, LADWP can proceed to review adjustments to other water rate components, including a review by the Rate Payer Advocate. The outcome of this review process will determine availability for funding strategic investments, including recycled water projects and restored funding for water conservation.

Section 5
Partnerships and Stakeholder Outreach

5.1 Introduction

This section reviews the partnerships and stakeholder outreach activities that have occurred since the IRP was adopted in 2006.

5.2 Partnerships

Implementing the recommendations of the IRP requires partnerships between departments and divisions within the City. This subsection outlines the on-going coordination within the City that has been occurring to facilitate implementation.

5.2.1 IRP Implementation Strategy Team

To foster communication and facilitate progress on implementing IRP recommendations, an IRP Implementation Strategy Team was created, which included representatives from various divisions within the Bureau of Sanitation, Bureau of Engineering, and LADWP. Other departments were involved in providing information on the progress of recommended projects and policies. These include Department of Building and Safety, Department of Recreation and Parks, General Services and Planning Department. Table 5-1 summarizes the various Departments and Divisions represented on the team.

Table 5-1: IRP Implementation Strategy Team

Bureau of Sanitation • Executive Management (EXEC) • Wastewater Engineering Services Division (WESD) • Watershed Protection Division (WPD) • Regulatory Affairs Division (RAD) • Water Reclamation Division (WRD) • Hyperion Treatment Plant (HTP) • Financial Management Division (FMD) • Industrial Waste Management Division (IWMD)	**Bureau of Engineering** • Executive Management (EXEC) • Wastewater Conveyance Engineering Division (WCED) • Environmental Engineering Division (EED) • Environmental Management Group (EMG)
LADWP • Executive Management (EXEC) • Water Recycling • Conservation • Environmental Services	**Resources** • Department of Building & Safety (DBS) • Department of City Planning • Department of Recreation & Parks • General Services

Between 2005 and 2010, the Implementation Strategy Team met 20 times, discussing such items as:

- Implementation schedule
- Monitoring of project triggers
- Regulatory/permit monitoring
- Ongoing discussion status of Go and Go-If Triggered Projects and Go Policy Directions
    - Water conservation
    - Recycled water
    - Progress of design (NEIS II & DCT Storage)
    - Review of concept reports and planning studies to validate need of projects
- Stakeholders engagement in the implementation process

In parallel to the Implementation Strategy team, there have been specific coordination between City Departments on other IRP-related programs, including recycled water master planning (LADWP, LA Sanitation and BOE), stormwater capture (LA Sanitation and LADWP), LA River revitalization (BOE, LA Sanitation, RAP, and LADWP), Proposition O project implementation (LA Sanitation, BOE, LADWP, and

RAP), and others. In addition, the IRP and RWAG stakeholders were involved in the preparation of this 5-Year Review. They were given the draft of this report to review and also participated in a workshop in March 2012. Appendix A includes a summary of their comments.

5.2.2 Joint Board of Public Works and DWP Board of Commissioners Meetings

The 5-member Mayor-appointed Board of Public Works oversees the various bureaus of the Department of Public Works, including those directly involved in the IRP, the Bureaus of Sanitation and Engineering. Similarly, the 5 member LADWP Board of Commissioners is responsible for LADWP. The Board of Public Works approved the IRP in 2006, and the LADWP Board of Commissioners concurred with its findings. In an effort to continue coordination between the two Boards, several joint meetings were held. These meetings were open to the public and several IRP stakeholders participated and provided public comments.

- October 6, 2007 – Joint Meeting on the Water IRP and Water Recycling
- June 4, 2008 – Joint Meeting on Water IRP and Water Recycling

5.2.3 City Council

As part of its adoption of the IRP in 2006, the City Council requested regular status reports on IRP implementation. Therefore, LA Sanitation staff prepared annual status reports in collaboration with other City Departments, on August 22, 2008; December 18, 2009; and December 3, 2010. In addition, on July 31, 2008, a LA Sanitation, LADWP and MWD Recycled Water Workshop was held for LA City Council staff. On September 30 2011, City Council commended IRP staff and stakeholders for the receipt of the 2011 Clean Water Prize.

September 30, 2011 - City staff, consultants and IRP stakeholders receive commendation from Councilwoman Jan Perry for the 2011 Clean Water Prize.

5.3 Stakeholder Outreach

Stakeholder participation is one of the hallmarks of the City of Los Angeles Integrated Resources Plan. As part of developing the 2006 IRP, community leaders were invited to participate in a series of workshops and meetings. These leaders played a significant roll in the development and implementation or the IRP. Since 2006, the City has continued to involve these stakeholders and the general public through annual meetings, newsletters, and a website. For this 5-Year Review, stakeholders were invited to submit any questions or comments they had about the document, which is presented in Appendix A. This section provides a snapshot summary of stakeholder involvement.

5.3.1 Stakeholder Annual Meetings

The City has conducted annual stakeholder meetings every year since the IRP was finalized in 2006. These meetings serve to provide an update on the status of IRP implementation, and a method for the City to receive feedback on its activities. Facilitated by the LA Sanitation, various City departments would participate as presenters including LADWP, BOE, Planning Department, RAP, and DBS. Table 5-2 presents a summary of the dates/locations of the annual meetings.

Community leaders participate in Annual Meetings

Table 5-2: Summary of Annual Stakeholder Meetings

Date	Location
June 7, 2007	LA Sanitation Media Center Offices, Los Angeles
June 24, 2008	TreePeople Center for Community Forestry, Beverly Hills
April 29, 2009	LA Sanitation Media Center Offices, Los Angeles
June 10, 2010	LA Sanitation Media Center Offices, Los Angeles
April 18, 2011	Sepulveda Garden Center, Encino

5.3.2 Newsletters

The City prepared a series of newsletters regularly to provide progress updates to the IRP Stakeholders on implementation activities. These newsletters were emailed to stakeholders and posted to the IRP website. The following editions were prepared: 12/2007; 3/2008, 6/2008, 9/2008, 12/2008; 3/2009, 6/2009; 6/2010, 12/2010; and 6/2011. In addition, LA Sanitation produces a Year at a Glance document that is available on LA Sanitation's website. Copies are also available at Council District Offices at the time of publication and by request.

LA Sanitation has prepared and distributed ten newsletters since the IRP was finalized in 2006

5.3.3 Website

As part of preparing the IRP, the City developed a web site to provide ongoing information sharing about the IRP. The web site includes reports of technical studies, all issues of the project newsletter, minutes and announcements of public meetings,

the draft and final Environmental Impact Report, and links to a number of related programs and projects. The web site further encourages site visitors to provide their ideas and input on the IRP.

The City has continued to use the website to share information on the IRP and implementation progress.

The website can be accessed at: www.lacity.org/san/irp.

5.3.4 Environmental Learning Center at HTP

The Environmental Learning Center (ELC) was developed to address the need for increased public education about how urban activities affect the environment. The project involved the renovation of a two-story former administration building at HTP, built in 1975. The building will accommodate two floors of exhibit galleries, a 94 seat auditorium and a multi-purpose classroom in approximately 20,000 square feet of floor space. The ELC will increase the community's understanding of the City's commitment to protecting public health and the environment and the individual's essential role for the future of clean water treatment and conservation, watershed protection, and solids resources management. The Center's engaging, interactive features will inspire future generations to help protect the environment through sustainable practices. The ELC is scheduled to open on April 2013.

5.4 Awards

The IRP is an award-winning program. It has been selected for numerous national and local awards including:

- **2011 U.S. Water Prize** – Clean Water America Alliance
- **2007 Excellence in Environmental Engineering, Grand Prize for Planning** - American Academy of Environmental Engineers
- **2007 National Recognition Award** - American Council of Engineering Companies
- **2007 Golden State Award Recipient** - Consulting Engineers and Land Surveyors of California
- **2006 H. David Nahai Water Quality Award for Water Quality Protection** – LA Regional Water Quality Control Board

Mayor Villaraigosa accepting the 2011 U.S. Water Prize in Washington DC

5.5 Next Steps

In the coming years, the IRP Team will continue to engage the IRP Stakeholders with annual meetings as well as through IRP Newsletters. The team will also begin to develop a strategy plan with the stakeholders for the next IRP, as well as continue coordinating with other City organizations.

THIS PAGE IS INTENTIONALLY LEFT BLANK

Section 6
Summary of Status

6.1 Introduction

This section provides a summary of the current statuses for IRP Go Projects, Go-if Triggered Projects and Go Policies, which are described in detail in Sections 1, 2, and 3 of this report. Additionally, this section describes the next general steps in the IRP process.

6.2 Summary of Status for IRP Projects and Policy Directions

As discussed in Sections 1, 2, and 3, significant progress has been made towards the implementation of IRP recommended projects and policy directions. A brief summary of the status of IRP Go Projects, Go-if Triggered Projects, and Go Policy Directions is provided in Tables 6-1, 6-2, and 6-3, respectively.

Table 6-1: Summary of Status for IRP Go Projects

Recommendations	Trigger Status	Status
Go Projects (2006)		
1. Wastewater Storage at DCTWRP	Project under construction	 Will be Completed in 2012
2. Wastewater Storage at LAG	Plant is at capacity and equalization is not necessary	 Reassign to Go-if Triggered
3. Recycled water Storage at LAG	Recycled water needs must exceed 16MGD for project to move forward	 Reassign to Go-if Triggered
4. Solids handling & truck loading facility at HTP	Flow triggers not met	 Deferred to beyond 2020
5. GBIS	Reduced flows have pushed need beyond 2020	 Deferred to beyond 2020
6. NEIS 2	Project is in design phase	 Project design scheduled to be completed mid 2014

Table 6-2: Summary of Status for IRP Go If Triggered Projects

Recommendations	Trigger Status	Status
Go-if Triggered Projects (2006)		
1. Upgrade DCTWRP to advanced treatment	Detailed planning for GWR in progress	IN PROGRESS — CEQA document under development
2. Expand DCTWRP to 100MGD	Flow triggers not met	MONITORING — Remain in Go-if Triggered
3. Upgrade LAGWRP to advanced treatment	Regulation trigger not met	MONITORING — Remain in Go-if Triggered
4. Design & construction of secondary clarifiers at HTP	Flow triggers not met	MONITORING — Remain in Go-if Triggered
5. Design & construction of up to 12 digesters at HTP	Flow (solids loading) trigger not met	MONITORING — Remain in Go-if Triggered
6. VSLIS	Advanced planning efforts completed 2009, Flow reductions push need beyond 2020	DEFERRED — Deferred to beyond 2020

Table 6-3: Summary of Status for IRP Go Policy Directions

Go Policy Directions	Status
1. Maximize use of recycled water for non-potable uses in the TITP, West side, and LAGWRP services areas	IN PROGRESS — 88 existing customers; RWMP has identified new customer & projects
2. Require dual plumbing in the vicinity of recycled water distribution systems in coordination with LARRMP	IN PROGRESS — Developing a method for evaluating potential developments
3. Coordinate design/construction of purple pipe with other major public works projects	IN PROGRESS — Coordinating with external agencies to identify opportunities
4. Explore feasibility of implementing groundwater replenishment with advanced treated recycled water	IN PROGRESS — RWAG assembled to solicit input for RWMP & GWR
5. Continue to provide water from DCTWRP to Lake Balboa, Wildlife Lake, Japanese Garden and L.A. River to meet baseline needs for habitat	IN PROGRESS — Tertiary treated effluent will continue to be provided from DCT

Go Policy Directions	Status
6. Continue conservation efforts, including using smart irrigation devices	 New rebates & incentive programs created
7. Continue conservation efforts, including no-flush urinal technology	 Increased rebates & High Efficiency Plumbing Fixture Ordinance adopted
8. Continue conservation efforts, including requiring individual water meters for new apartment buildings	 DWP working w/MWD, Industry, DBS, DCP, & Sustainable Code Officials to evaluate plumbing codes & determine feasibility
9. Continue conservation efforts, including increasing education on climate-appropriate & CA-friendly plants in coordination with LARRMP	 Drought Resistant Landscape Incentive Program; Increased Public Outreach
10. Consider developing City Directive to require the use of CA-friendly plants in City projects	 CA friendly plants encouraged under several programs; large developments covered under City's Irrigation Guidelines
11. Review SUSMP to require where feasible on-site infiltration and/or treat/reuse, rather than treat and discharge, including in-lieu fees	 11/2008 – SUSMP Revised promoting on-site infiltration
12(a). Modify codes to encourage feasible BMPs for maximizing on-site capture and retention and/or infiltration of stormwater, including porous pavement	 1/2008 - DBS published Information Bulletin regarding Guidelines for Storm Water Infiltration.
12(b). Evaluate requiring porous pavements in all new public facilities in coordination with LARRMP and large developments	 Green Streets Committee evaluates & encourages alternative street surfacing materials
13. Evaluate ordinance changes to reduce the area on private properties that can be paved with non-permeable pavement	 Permeable materials allowed & encouraged; Front yard non-permeable area limited to 50%
14. Evaluate and implement integration of porous pavements into sidewalks and parkways	 Alternative street surfacing materials currently allowed & encouraged
15. Prepare a concept report and determine feasibility of powerline easement demonstration project	 3/2011 - Westside Park Rainwater Irrigation Project completed
16. Work with LAUSD to determine feasibility of projects for new & retrofitted schools, & gov./city-owned facilities with stormwater BMPs	 WPD continues to reach out to LAUSD in search of project opportunities

Go Policy Directions	Status
17. Identify sites that can provide onsite percolation of wet weather runoff in surplus properties, vacant lots, open space, abandoned alleys in & along LA River in East Valley	 3/2010 - Elmer Avenue Neighborhood Retrofit Project completed; searching for more opportunities
18. Maximize unpaved open space in City-owned properties and parking medians through BMPs and removing unnecessary pavements	 Green Streets Committee searching for opportunities
19. Include all feasible BMPs in the construction or reconstruction of highway medians	 Stormwater NPDES requires street projects ≥ 10,000 sq. ft. to incorporate BMPs
20. Coordinate with Million Trees LA to identifying potential locations of tree plantings that would provide stormwater benefit	 Million Trees is progressing but would need more funding to identify stormwater benefits
21. Consider diversion of dry weather runoff from Ballona Creek to constructed wetlands, wastewater system, or urban runoff plant for treatment and/or beneficial use	 Projects identified in TMDL Implementation Plans; Westside Park Rainwater Irrigation Project completed
22. Consider diversion of dry weather runoff from inland creeks and storm drains tributary to wastewater system or constructed wetlands or treatment/retention/infiltration basins	 Diversion not required but Downtown Low Flow diversion & South L.A. Wetlands will contribute towards compliance w/bacteria TMDL
23. Consider incorporating IRP policy decisions in the General Plan, Community Plan, and Specific Plan updates or revisions, and in LARRMP and Opportunity Areas	 IRP policies supported/considered in these plans
24. Include stormwater management BMPs in all new parks	 New & redeveloped parks are required to comply with SUSMP
25. Evaluate feasibility of all City properties identified as surplus for potential development of multiple-benefit projects to improve stormwater management, water quality and groundwater recharge	 Properties are evaluated for stormwater benefits as they become available

6.3 Next Steps

The IRP 5-Year Review **reviewed progress** on IRP recommendations, **reviewed benchmarks** for measuring progress until 2020, and **documented ideas and suggestions for potential policy directions** to consider from now through 2020. While the City has made remarkable progress on implementing the IRP recommendations, there still are activities that are needed from now until 2020.

Next steps include:

- BOS, BOE and DWP to continue to collaborate on water, recycled water, stormwater and wastewater planning and implementation.
- BOS and DWP to continue to partner on the use of recycled water for non-potable and indirect potable uses, including seeking program funding to allow implementation of RWMP recommendations
- BOS and DWP to continue to partner on stormwater capture/use projects, including the development of a Stormwater Capture Master Plan (led by LADWP)
- BOS to work with LA County to support the county-wide funding initiative for stormwater
- BOS and BOE to complete NEIS II design and proceed with construction
- BOS and BOE to continue to monitor triggers for wastewater Go-if-triggered projects (e.g., wastewater storage at LAG, recycled water storage at LAG, expansion of DCT, upgrade LAG, new secondary clarifiers at HTP, new digesters at HTP)
- DWP and BOS to develop environmental documentation (EIR/EIS) for the proposed Groundwater Replenishment (GWR) project
- City departments to continue to make progress on the water/recycled water Go Policy Directions
- City departments to continue to make progress on the stormwater Go Policy Directions
- Continue to hold annual meetings with the IRP stakeholders to review progress
- Prepare annual IRP progress reports for the Board of Public Works and City Council

In addition, water management strategies, identified in the IRP, IRP reviews, and the next IRP, must include provisions to accommodate the evolving nature of shorter term water resource management plans such as:

- *The Greater Los Angeles County Integrated Regional Water Management Plan* (Multiple Agencies within LA County)
- *Los Angeles River Revitalization Master Plan* (DPW)
- *City of Los Angeles Water Quality Compliance Master Plan for Urban Runoff* (BOS)
- *Water Quality Compliance Master Plan for Urban Runoff* (DPW)
- Water Augmentation Study (Council for Watershed Health)

- Santa Monica Bay, Ballona Creek and LA River Bacteria TMDL Implementation Plan (BOS)
- Los Angeles River Reach Two Sub-Watershed Metals TMDL Implementation Plan (BOS)
- *Urban Water Management Plan* (LADWP)

The City will embark on a larger-scale effort to develop the next Integrated Resources Plan, which will cover water resources planning beyond the year 2020. In the next few years, the intent is to continue and strengthen the close partnerships built through the 2006 IRP and to begin the development of a new IRP that will allow the City to effectively manage its water resources beyond 2020 by utilizing the best and most feasible practices and technologies available. To have a new IRP in place by 2020, the City will initiate the planning process in 2015.

References

California Regional Water Quality Board, Los Angeles Region. May 2010. Attachment A to Resolution No. R10-003, *Amendment to the* Water Quality Control Plan for the Los Angeles Region *to Revise the Los Angeles River and Tributaries Metals TMDL.*

CDM. October 2009. *Los Angeles River Metals TMDL Implementation Plan, Second Draft.* Los Angeles, California: Report Prepared for the City of Los Angeles , Department of Public Works, Bureau of Sanitation, Watershed Protection Division.

City of Beverly Hills, Caltrans, City of Culver City, City of Los Angeles, City of Inglewood, City of Santa Monica, City of West Hollywood. November 2009. *Total Maximum Daily Load for Bacteria Indicator Densities in Ballona Creek, Ballona Estuary, and Sepulveda Channel, Implementation Plan, Draft.*

City of Beverly Hills, Caltrans, City of Culver City, City of Los Angeles, City of Inglewood, City of Santa Monica, City of West Hollywood. January 2010. *Total Maximum Daily Load for Metals in Ballona Creek, Implementation Plan, Draft.*

City of Beverly Hills, Caltrans, City of Culver City, City of Los Angeles, City of Inglewood, City of Santa Monica, City of West Hollywood. January 2011. *Total Maximum Daily Load for Toxic Pollutants in Ballona Creek Estuary, Implementation Plan, Draft.*

City of Los Angeles, City of Culver City and Caltrans. March 2011. *Marina Del Rey Harbor Toxic Pollutants TMDL Implementation Plan, Draft.*

City of Los Angeles, Monitoring Plan Subcommittee. May 2009. *Ballona Creek Estuary Toxic Pollutants TMDL.*

CH:CDM. July 2004. *Integrated Resources Plan, Facilities Plan.* Los Angeles, California: Report prepared for the City of Los Angeles, Department of Public Works, Bureau of Sanitation and Department of Water and Power.

CH:CDM. January 2005. *Integrated Resources Plan for the Wastewater Program, Los Angeles River Recycled Water Evaluation Study, Phase 1 Baseline Study.* Los Angeles, California: Report prepared for the City of Los Angeles, Department of Public Works, Bureau of Sanitation and Department of Water and Power.

CH:CDM, City of Los Angeles, City of Santa Monica, City of El Segundo, County of Los Angeles, California Department of Transportation. June 2006. *Santa Monica Bay Beaches, Bacteria Total Maximum Daily Load, Implementation Plan for Jurisdictional Groups 2 and 3.*

CH:CDM. September 2006. *Integrated Resources Plan, Environmental Impact Report.* Los Angeles, California: Report prepared for the City of Los Angeles, Department of Public Works, Bureau of Sanitation and Department of Water and Power.

CH:CDM. September 2006. *Integrated Resources Plan, Implementation Strategy.* Los Angeles, California: Report prepared for the City of Los Angeles, Department of Public Works, Bureau of Sanitation and Department of Water and Power.

CH:CDM. 2003. *Regulatory Forecast Technical Memorandum.*

City of Los Angeles, Board of Public Works, Inter-Departmental Correspondence. October 2008. *CF 05-0752 Alternative Street Surfacing Materials, Green Streets, and CF 08-0102 Green Alleys.*

City of Los Angeles, Department of Building and Safety. December 2009. Ordinance 180822, *Water Efficiency Requirements Ordinance.*

City of Los Angeles, Department of Public Works, Bureau of Sanitation, Watershed Protection Division. 2008. *City of Los Angeles Standard Urban Stormwater Mitigation Plan Infiltration Requirements & Guidelines.*

City of Los Angeles, Department of Public Works, Bureau of Sanitation, Watershed Protection Division. May 2009. *Water Quality Compliance Master Plan for Urban Runoff, Clean Stormwater/Urban Runoff Master Plan.*

City of Los Angeles, Department of Public Works, Bureau of Sanitation, Watershed Protection Division. June 2011. *Development Best Management Practices Handbook, LID Manual, Part B, Planning Activities, Fourth Edition.*

City of Los Angeles, Department of Water and Power. May 2008. *City of Los Angeles Water Supply Action Plan.*

City of Los Angeles, Department of Water and Power. 1995. *Urban Water Management Plan.*

HDR. January 2008. *Flow Equalization and Tertiary Filtration Concept Report.* Los Angeles, California: Report prepared for the City of Los Angeles, Donald C. Tillman Water Reclamation Plant.

July 2004. *Integrated Resources Plan, Facilities Plan, Volume 2: Water Management.*

July 2004. *Integrated Resources Plan, Facilities Plan, Volume 3: Runoff Management.*

Leadership Committee of the Greater Los Angeles County Integrated Regional Water Management Plan. December 2006. *The Greater Los Angeles County Integrated Regional Water Management Plan.*

Los Angeles Ad Hoc Committee. 2007. *Los Angeles River Revitalization Master Plan.*

Los Angeles Department of Building and Safety. 2010. *Information Bulletin P/PC 2008-012.*

Los Angeles Department of Building and Safety. 2008. *Information Bulletin P/BC 2008-118.*

November 2005. *Integrated Resources Plan, Facilities Plan, Volume 1: Wastewater Management.*

November 2005. *Integrated Resources Plan, Facilities Plan, Volume 4: Alternatives Development and Analysis.*

RMC and CDM Smith. *2012. Recycled Water Master Planning.*

State of California, Department of Water Resources. September 2009. *California Code of Regulations, Title 23. Waters, Division 2. Department of Water Resources, Chapter 2.7. Model Water Efficient Landscape Ordinance.*

THIS PAGE IS INTENTIONALLY LEFT BLANK

Appendix A
Stakeholder Comments on IRP 5-Year Review

A.1 Introduction

This appendix includes a compilation of the comments received from the stakeholder community in regards to the IRP 5-Year Review. Stakeholders were given from January 31, 2012 to March 19, 2012 to submit any questions or comments they had about the document. In addition, questions were taken and noted during the IRP 5-Year Review Stakeholder Workshop held on March 5, 2012. Copious input was provided, carefully reviewed and addressed as documented in the tables included in this section.

The questions and comments are presented in the following four categories:

- Table A-1: Wastewater Management Questions and Comments
- Table A-2: Water Management Questions and Comments
- Table A-3: Runoff Management Questions and Comments
- Table A-4: General Questions and Comments

Table A-1: Wastewater Management Questions and Comments

Comment		Response
Comment regarding Terminal Island Permit		
A.1.1	The City needs to implement a project and process for the brine from TIWRP rather than just appeal for an abeyance petition.	Regarding the discharge of brine from the AWTF at TIWRP, per Order NO. R4-2010-0071, Section II.B.2, Page 9, the discharge of brine is allowed.

Comment	Response
(Comment A.1.1 continued)	Regarding the abeyance, the City is working with both the State Water Board and Regional Water Board to resolve this issue.
Comment regarding Hyperion FOG program	
A.1.2 Provide more details on the quantifiable success of the program.	Currently the project is still in the pilot phase. More quantifiable results will become available once the decision to expand beyond the pilot status has occurred.
Comment regarding the Food Waste Pilot Program	
A.1.3 Why isn't the program working with restaurants within Los Angeles?	Currently this project is in the planning phase, and not in operation. Once the pilot project is shown to be successful, the City will consider accepting food waste from restaurants.
Comments regarding Sanitary Sewer Overflows	
A.1.4 How much has the City saved in regulatory charges due to the reduction in spillage in 2011?	Unfortunately, it is not possible to compare the fines administered from the baseline year of 2000/01 to the fines from 2010/11 as the fine for each Sanitary Sewer Overflow is determined on a case-by-case basis. In general, the program is not thought of as a means to save the City money. It is a program that is meant to promote public safety, protect the environment and comply with regulatory standards.
A.1.5 How much of the savings from reduction in wastewater transmission is attributed to water conservation versus other drivers?	From 2007-2009, there was a 17.2% (104.7 MGD) decrease in wastewater flow, coinciding with the decreasing trend in water consumption. The reduction in flow can be assumed to be largely attributed to water conservation but establishing an exact amount remains difficult to estimate since population has stabilized.
Comment regarding savings from Go Projects	
A.1.6 Please accurately portray that you're	Certain projects like the Solids Handling

Comment		Response
	just deferring cost and not necessarily saving costs (in regards to deferred projects).	Facility at HTP were initially thought to be necessary, but analysis of the project showed that the project was not needed at this time and may potentially be combined with other necessary projects at a later date. Other projects, such as the In-Plant Storage at DCT changed in location and directly saved on cost. Other projects like GBIS were deferred.
Comment regarding next steps for wastewater management		
A.1.7	SCAG produces unrealistic projections and we need to stand up to these numbers and evaluations.	Comment noted. SCAG data is utilized by the City because it is readily available. In the near future, the City will reconvene with stakeholders for the next IRP development and potential alternate methods or approaches for obtaining wastewater flow/population projections can be discussed.

Table A-2: Water Management Questions and Comments

Comment		Response
Comments regarding water recycling		
A.2.1	The City's efforts on water recycling are lacking.	The City supports maximizing the use of recycled water and is encouraged by the community support for local water supply projects. However, given LADWP's current rate structure and budget situation, funding a more aggressive recycled water implementation schedule is beyond the control of the LADWP at this time. The water recycling goals in the Recycled Water Master Planning documents (RWMP) are based on the 2010 Urban Water Management Plan. The Draft RWMP Documents call for investing approximately $900 million to reach 59,000 AFY of recycled water use by 2035. To achieve these recycled water

Comment		Response
(Comment A.2.1 continued)		projections, water rate increases will be required. Community support for local water supply projects and the funding mechanisms required for their implementation will continue to play a critical role in ensuring the reliability of the City's water supply.
A.2.2	Increase LADWP's recycling goal to 100,000 AFY by 2019 and cease backtracking on important goals.	See response to A.2.1
Comments regarding water conservation		
A.2.3	What is the baseline year being used for the Water Conservation Act of 2009 requirement of 20% reduction by 2020?	For consistent application of the Act, the California Department of Water Resources produced Methodologies for Calculating Baseline and Compliance Urban Water Per Capita use in October 2010. LADWP followed the requirements in this document and calculated LADWP's baseline per capita water use and the interim and final urban water use targets for 2015 and 2020, respectively. The details of the LADWP calculations can be found in our 2010 Urban Water Management Plan on pages 51, 52, and in Appendix G (use this link to the UWMP: www.ladwp.com/ladwp/cms/ladwp001354.jsp).
A.2.4	Need to break the habit of using the distinctions 'strategic' versus 'basic' and redefine the approach for rate increases.	The City supports maximizing the use of recycled water and is encouraged by the community support for local water supply projects. Community support for local water supply projects and the funding mechanisms required for their implementation will continue to play a critical role in ensuring the reliability of the City's water supply.
A.2.5	Include the rain garden incentive programs and the stormwater capture master plan.	LADWP started a pilot project in 2011 that offers technical and financial assistance to property owners in high-infiltration areas within the City of Los Angeles who

Comment	Response
(Comment A.2.5 continued)	install rain gardens on their property. Homeowners will receive a rebate of up to $500 in labor and materials to create a rain garden sized to capture and infiltrate a minimum of 500 square feet of roof area. The maximum rebate per property would be at a cost of $1,000 per household. There are two options: a. Direct Installation by Generation Water b. Do-It-Yourself (DIY) option. Please see Section 2.4.3 for information on the Stormwater Capture Master Plan.
Comment regarding water conservation programs	
A.2.6 It is recommended to have additional analysis beyond a summary to estimate the water saving impacts of the listed programs.	The LADWP 2010 Urban Water Management Plan (UWMP) provides additional information on water conservation savings; specifically, page 49 shows the total water savings per year for hardware installed and page 64 defines the actual water savings per the specific commercial conservation program or device. To see the UWMP please visit: www.ladwp.com/water
Comment regarding Go Policy #2 (dual plumbing)	
A.2.7 What is the status of these ordinances and their timeframe for getting developed?	The development of ordinances to require the installation of dual plumbing in commercial buildings to allow toilet flushing with recycled water was put on hold pending the completion of the Recycled Water Master Planning Documents. The framework for an implementation strategy to expand the recycled water system is laid out in the RWMP documents. However, funding mechanisms will dictate the timing and sequence for the construction of additional non-potable reuse projects (purple pipes) in different areas of the City. The timeframe for developing any

Comment	Response
(Comment A.2.7 continued)	potential dual plumbing ordinance will be determined once the implementation strategy and funding mechanism for the purple pipe expansion is better known. Refer to the section of the 5-Year Review Document on Go-Policy #2 for additional discussion.
Comments regarding Go Policy #3 (purple pipe)	
A.2.8 What is the project status on purple pipe installation and what are the plans for continuing coordination between agencies for the continued installation of purple pipes?	LADWP's purple pipe installation has slowed down due to our current budget situation. However, where we have opportunities to partner with RAP, other city agencies, and other neighboring utilities, LADWP has pursued those opportunities in the past and will continue to do so in the future. LADWP has partnered with other City agencies on many occasions to include purple pipe in the construction of City infrastructure where it was feasible. In particular, three bridge projects have included purple pipe in their construction. 1) Glenoaks Bridge widening project – purple pipe was included in the bridge for service to Hansen Dam Golf Course 2) Spring St. Bridge widening project – purple pipe was included in the construction of the bridge to cross the LA River for service to the downtown area 3) Taylor Yard Bikeway/Pedestrian Bridge project – purple pipe was included in the construction of the bridge to cross the LA River for service to Elysian Park

Comment	Response
(Comment A.2.8 continued)	In the future, LADWP plans to continue coordination with other agencies to integrate purple pipe in the construction of City infrastructure where it is feasible.
A.2.9 The focus of this policy should be expanded to more ecosystem services such as stormwater, landscaping, lighting, etc.	Recommendation noted. This will be addressed in the next IRP update.
Comment regarding Go Policy #4 (water reuse planning study)	
A.2.10 Is the Recycled Water Master Plan the "water reuse planning study" referred to in the policy? If so, please state this.	No. Go-Policy #4 describes a "*stakeholder participatory water reuse planning study to explore the feasibility of implementing groundwater replenishment with advanced treated recycled water*". This Go-Policy became the foundation for the City's stakeholder engagement efforts to provide input into the Recycled Water Master Planning process, which includes strategies both for GWR and for non-potable reuse. Stakeholder engagement activities related to this Go-Policy include the Recycled Water Advisory Group launched in 2009, Recycled Water Forums for the general public, briefings for elected officials, and presentations to neighborhood councils and other community groups.
Comment regarding Go Policy #5 (Tillman water to meet habitat baseline needs)	
A.2.11 Where does the City's estimate for baseline needs for habitat in the Los Angeles River stem from?	The City does not currently have such an estimate. Flows from the City's Water Reclamation Plants that ultimately reach the LA River today are based on flows required to maintain water quality in the flow-through features in the Sepulveda Flood Control Basin, namely Lake Balboa and the Wildlife Lake. Effects of flows on the habitat of the LA River will be evaluated during the environmental (CEQA) process for the City's

Comment	Response
(Comment A.2.11 continued)	Groundwater Replenishment Project.
Comments regarding Go Policy #6 (programs reducing outdoor water usage)	
A.2.12 What is the status of including smart irrigation devices on City properties, schools and large developments? Have anything other than parks been retrofitted with smart irrigation?	To date, the City Park Irrigation Efficiency Program has funded the retrofit of 10 parks with smart irrigation controllers, weather stations, and other irrigation improvements. Additionally, LADWP offers rebates on the installation of smart controllers to all customers.
A.2.13 What is the estimate of dry weather flow accomplished through this effort?	In regards to water conservation and the amount of water used to irrigate landscape, customers of the City have significantly reduced their overall water consumption in response to the implementation of the Emergency Water Conservation Ordinance. In addition, outdoor irrigation equipment rebates and landscape incentive programs have also assisted customers with reducing their outdoor water use. However, a correlation between landscape irrigation water efficiency improvements and the reduction in the amount of dry-weather runoff has not been analyzed by the City. It is a very good question, and may potentially be addressed in the next round of the IRP.
Comments regarding Go Policy #7 (new water conservation technologies)	
A.2.14 Do no-flush urinals create another waste disposal by-product in their filters?	The cartridges used on these urinals require as-needed maintenance; however, the cartridge fluid or containers can either be disposed in the toilet, trash, or recycled.
A.2.15 Please address the current status of evaluating and considering no-flush urinals.	No flush urinals (zero water urinals) are International Association of Plumbing and Mechanical Officials (IAPMO) approved and currently permitted for use by the Department of Building and Safety. Additionally, LADWP customers can receive a rebate for installation of

Comment	Response
(Comment A.2.15 continued)	both zero and ultra-low water urinals. In recent years many venues have upgraded to no-flush urinals including the L.A. Convention Center and the Hollywood Bowl.
Comments regarding Go Policy #8 (individual water meters for water conservation)	
A.2.16 What feasibility issues are preventing the installation of water meters at new apartment buildings?	The following feasibility issues prevent the installation of water meters at new apartment buildings: 1. Installment of Individual Water Meters (IWM) for multi-family buildings is allowed but not required 2. LADWP installs IWM no farther than the property line for reasons of liability 3. LADWP and LAHD will not force owners to install IWM. 4. LADWP does not have jurisdiction to work on the private property and that due to liability reasons won't install a water meter on their property.
A.2.17 DWP needs to certify individual water meters for homes and apartments so we are assured they work properly and correctly.	See response to comment A.2.16
Comments regarding Go Policy #10 (California friendly plants)	
A.2.18 What is being done to require California friendly plants outside of the Los Angeles River Improvement Overlay (LA RIO) area?	Please refer to Go Policy #10 in Section 2.3.3 of the revised report.
A.2.19 Please consider changing "California friendly plants" to "non-invasive	LADWP is a partner with the Metropolitan Water District of Southern

Comment		Response
	indigenous California-Los Angeles plants" to alleviate costs of foreign plants.	California (MWD) on several regional rebate and incentive programs. The 'California-Friendly' terminology has been used for years in the MWD water conservation programs, public outreach, and customer training workshops to educate Southern California residents on the use of climate-appropriate plantings. Therefore, we are using the same term to be consistent.
A.2.20	Please clarify what "California-friendly plants" means.	Simply stated, California Friendly plants are both native and other plants that are perfectly suited for our local conditions of mild winters and warm, dry summers. These plants would require limited water for proper health and beauty.
A.2.21	Please identify additional steps that can be taken to meet policy objectives beyond implantation of the LA RIO.	See response to A.2.18
Comments regarding next steps for water management		
A.2.22	Is the Implementation Strategy Team still meeting? It is encouraged that the group continues to meet on a regular basis.	Yes, the team is still meeting.
A.2.23	Need to hold workshops for both industrial and equestrian users about dust abatement and reclaimed water.	LADWP is currently working with equestrian users on utilizing recycled water for dust control on horse ranch properties most notably in the northeast San Fernando Valley. LADWP continues discussions with large industrial customers on conversion to recycled water in the Harbor area.
A.2.24	The City must prioritize water recycling, water conservation and stormwater capture projects and their funding.	The City supports maximizing the use of recycled water, as well as increasing stormwater capture and water conservation. Community support for local water supply projects and the funding mechanisms required for their implementation will continue to play a critical role in ensuring the reliability of

Comment	Response
(Comment A.2.24 continued)	the City's water supply.

Table A-3: Runoff Management Questions and Comments

Comment		Response
Comments regarding LID Ordinances		
A.3.1	Provide some quantification of the LID benefits and how they impact the IRP going forward.	Revised Tables 3-5 and 3-6 now describe the revised runoff goals in terms of tributary acres treated. The number of tributary acres that will be retrofitted includes LID BMPs that contribute to the revised acres treated goals. The LID requirements went into effect as of May 2012 so the City will be able to quantify the benefits at a later date once some projects have been implemented.
A.3.2	Add information on the stormwater website referencing the existence of the LID workshops and provide an advanced notification these workshops to neighborhood councils in addition to the IRP list.	In the process of informing the public of the LID Ordinance workshops, the following notifications took place: - Created a workshop flier that was posted at the LA Stormwater public counter. - Posted an article about the two public workshops (April 11 at D.C. Tillman and April 17 at Media Technical Center) on the LAStormwater blog in mid-March 2012. The article held the featured article position until mid-April. - Sent out a workshop e-notice and reminder to 200 LID stakeholders (people who had signed up to receive LID e-notifications) and IRP stakeholders in late March and early April. - Posted information about the LID workshops on LAStormwater.org. - Posted information about the LID workshops on LA Stormwater's Facebook

Comment	Response
(Comment A.3.2 continued)	page. - A presentation about the LID Ordinance was given to Neighborhood Council Planning representatives at their monthly meeting on April 14. The website and blog were available at all times for more information. Both sites also included a downloadable informational flier that included workshop information. The LID Ordinance became effective on May 12, 2012. No future workshops are planned at this time. A blog post and FB post on May 14 includes information on how interested constituents could receive assistance with their development project to ensure that it complies with the LID Ordinance. This article also was included in the LA Stormwater spring e-newsletter, which was distributed on May 17 to more than 7,000 stakeholders.
Comments regarding dry and wet weather runoff capture	
A.3.3 What percentage of the 42% and 47% capture has been achieved?	This comment refers to the percentage of total City runoff for dry weather and wet weather runoff, respectively, that the IRP listed as the goal (slide 13 of I5R workshop presentation (found at www.lacitysan.org/irp) and Tables 3-1 and 3-2 (now Tables 3-5 and 3-6). It should be noted that the presentation should be used for reference only, as it was created prior to the final publication of this document). These goals have changed with development of the TMDL implementation plans and are reflected in the revised document (Section 3.5) and illustrated in Tables 3-5 and 3-6. The revised goals are listed in terms of

Comment	Response
(Comment A.3.3 continued)	tributary acres treated. Tables 3-7 through 3-11 list the projects that are proposed, in design, under construction, or completed and summarize the progress toward reaching the revised goals.
A.3.4 Please explain how the 42% and 47% were measured.	Please see response to comment A.3.3.
A.3.5 Make numbers more relative - a way to measure and compare. How much out of how many? Maybe we need to reconsider how we measure success.	Please see response to comment A.3.3.
Comment regarding diversion of dry weather runoff	
A.3.6 Please provide a summary of progress on this item.	The revised Tables 3-7 through 3-11 list progress to date.
Comment regarding Ballona Creek TMDLs	
A.3.7 Please add an addendum identifying the locations of the 27 Phase 1 distributed projects and the 10 regional projects.	These projects were identified in the Ballona Creek TMDL Implementation Plans (Metals, Bacteria and Toxic Pollutants). As they are subject to engineering feasibility analysis, conceptual design, and analysis prior to being implemented, inclusion in the IRP is preliminary at this point. See revised Section 3.5, which includes a list of completed projects.
Comments regarding runoff management projects	
A.3.8 Some projects have stalled but the report does not explain the reasoning in some cases.	Projects may appear to be stalled, but they are actually still in the planning phase or the City is seeking funding for implementation.
A.3.9 Please provide a status update on the WQCMP.	The Water Quality Compliance Master Plan for Urban Runoff (WQCMPUR) is currently being implemented through the development of various specific TMDL Implementation Plans including the LAR Metals and Ballona Creek Bacteria, Metals and Toxic Pollutants TMDL Implementation Plans which use the concepts and strategies developed in the

Comment	Response
(Comment A.3.9 continued)	WQCMPUR as a basis. The WQCMPUR can be found on the City's website at: www.lacitysan.org/wpd/Siteorg/program/masterplan.htm
A.3.10 If the original IRP alternative is not going to be pursued, the Draft Report should explain why and how the alternative will achieve a similar goal.	As is described in the revised report and in the response to comment A.4.3, the way the goals are being measured has been revised from mgd to tributary acres treated. Further, some of the goals in the IRP alternative are being modified, as described in the revised report, due to : 1) current planning includes institutional BMPs that eliminate or reduce pollution before it reaches the waterways; 2) planning now involves modeling to target BMP implementation at priority areas (hot spots) that can reduce the overall amount of runoff that will need to be treated; and 3) current planning efforts focus on green infrastructure as opposed to end-of-pipe treatment plants. With these changes the intent of the original IRP goals will be maintained.
Comment regarding runoff management funding	
A.3.11 What is the Financial Strategic Planning Task Force recommending for funding sources to ensure critical projects are implemented?	The City is working closely with the County of Los Angeles on the Water Quality funding initiative, which will seek voter approval in March 2013. Funding from this initiative will ensure that critical projects are implemented.
Comment regarding the Rainwater Harvest Program	
A.3.12 Are there plans to expand this program to other areas of the City?	At the regional level, the majority of all new projects include rainwater harvesting. At the homeowner level, programs such as the downspout disconnection program will be expanded dependent on the availability of funding.
Comment regarding runoff goals	
A.3.13 A 10,000 gallon rooftop runoff recommendation is too specific –	See revised report and the response to comments A.3.3 and A.3.10.

Comment	Response
size should be based on collection area.	
Comment regarding Table 3-1	
A.3.14 Include the Stormwater Capture Master Plan as a future resource.	A reference to the plan was added to Table 3-1.
Comment regarding Tables 3-5 and 3-6	
A.3.15 The tables should include interim milestone dates and estimated completion dates.	The tables have been revised and the section has been updated. See revised report and the response to comments A.3.3 and A.3.10.
Comment regarding Go Projects	
A.3.16 Why are there no Go Projects or Go-if-Triggered Projects and how can some be created for the final report?	Due to the nature of runoff management, the runoff management service function was not as finely developed as the wastewater service function in the original IRP. As a result, the implementation strategy for runoff management incorporated options and projects into "go policy actions" to encourage further development of the recommendations. Since the IRP was adopted in 2006, the City has been advancing runoff management recommendations through new City regulations and capital improvement projects. Many of these projects are in progress or have been successfully completed, though they were not identified as Go Projects or Go-if-Triggered projects. During the development of the next IRP the City will determine if it will be appropriate to develop Go Projects and Go-if-Triggered projects for runoff management.

Comment	Response
Comments regarding Go Policy #12(b) (porous pavement and LA River Revitalization)	
A.3.17 Please provide a more complete description of the project's status and progress along with a timeline for completion.	As noted in the revised document, the LID ordinance, which came into effect in May 2012, requires that any new developments and redevelopments of 500 square feet or more manage 100% of the runoff onsite from a 3/4-inch storm, using BMPs in priority order of infiltration, capture and reuse, biofiltration, and mechanical. This ordinance serves to meet the intent of Go Policy 12(b).
A.3.18 Modify the language in the policy - a requirement for "all" is unlikely to be successful.	Recommendation noted. This will be addressed in the next IRP update.
Comments regarding Go Policy #13 (reduce private areas able to be paved without porous pavement)	
A.3.19 The policy's complete status in the report does not address reducing area on private properties that can be paved with non-permeable pavement. Please explain this or change the status to incomplete.	The LID ordinance indirectly addresses this issue by requiring any new developments and redevelopments of 500 square feet or more to manage 100% of the runoff onsite from a 3/4-inch storm. See Section 3.4.8 for more details.
Comment regarding Go Policy #14 (porous pavement)	
A.3.20 The status update does not discuss larger scale implementation of porous pavements.	As noted in the revised document, it is the City's intention to implement porous pavement into sidewalks and parkways on a widespread basis and the City is continuously evaluating opportunities to do so. The projects listed are examples of the projects the City is in the process of implementing has completed.
Comment regarding Go Policy #15 (powerline easement project)	
A.3.21 What is the plan to take the pilot project to the next level of larger scale implementation?	The demonstration projects satisfied Go Policy 15, but nonetheless, the City will continue to evaluate additional opportunities based on the success of the demonstration projects depending on the

Comment	Response
(Comment A.3.21 continued)	availability of funding. This is reflected in the revised document.
Comments regarding Go Policy #16 (stormwater management BMPs at LAUSD)	
A.3.22 Not continuing to work with LAUSD on feasibility of developments due to "environmental and health standards" seems unsubstantiated given the rainwater harvesting guidelines issued by the County Department of Public Health.	While LAUSD has decided not to move forward with the project at this time, the City and LAUSD will evaluate the project feasibility again in the future.
A.3.23 Modify the language about the feasibility of working with LAUSD so it does not sound like there is no possibility in cooperating.	The response has been modified. Please see response to comment A.3.22
A.3.24 Why not try treating on-site water infiltration instead of off-site water?	Please see response to comment A.3.22
A.3.25 Please provide more information on the progress of this project.	Please see response to comment A.3.22
Comment regarding Go Policies #17 & #18 (identify and maximize use of vacant lots/open space)	
A.3.26 Are there plans to expand these efforts beyond the East Valley?	The City is expanding this effort beyond the East Valley to other parts of the City. An example of a completed project is the Riverdale Avenue green street.
Comment regarding Go Policy #17 (onsite percolation at surplus properties)	
A.3.27 There should be more parkway water capture in conjunction with the conversion of turf to native/drought tolerant plants	Comment noted.
Comments regarding Go Policy #19 (highway medians)	
A.3.28 The City should move forward with this Policy, regardless of the upcoming MS4 permit.	See revised text for Go Policy #19. The City is currently moving forward regardless of the status of the NPDES permit. Examples of projects include the Imperial Highway Sunken Median Stormwater BMP (complete) and a concept report for Vermont Avenue (in development).

Comment	Response
Comment regarding Go Policy #21 (Ballona Creek TMDLs)	
A.3.29 Please identify the three implementation plans and the respective eight potential projects.	As stated, the three implementation plans are the Ballona Creek TMDLs for bacteria, metals and estuary toxics. The eight projects are identified, described and mapped in each of the Implementation Plans. As they are subject to engineering feasibility analysis, conceptual design, and analysis prior to being implemented, inclusion in the IRP is preliminary at this point. See revised Section 3.4. Also see the response to comment A.3.7.
Comment regarding Go Policy #25 (develop multi-benefit projects from surplus properties)	
A.3.30 Please make it more clear what progress, if any, has been made on project identification	See revised text. WPD is notified as these spaces become available and if the property is appropriate, then it is investigated further for BMP implementation. Conditions such as proximity to storm drains (for stormwater diversion to the site), site slope, etc. are evaluated to determine if the property is appropriate. Some properties in the Mt. Washington area were considered, but were determined not to be feasible. The Humboldt Stormwater Greenway Project was identified through this process, was determined to be feasible, and is in progress.
Comment regarding next steps for runoff management	
A.3.31 Need appropriate BMPs to meet the intent of policy goals.	Regarding Go Policy #12, the City's LID program meets the intent of this go policy.
A.3.32 Would like to see Go Policy #18 move beyond the demonstration phase to an on-going program with an identified yearly budget.	While this project is still in the demonstration phase, it will be considered for becoming ongoing based on the success of this phase.
A.3.33 There is not enough discussion on new recommendations, outside of	During the development of the next IRP new recommendations will be developed.

Comment		Response
	the TMDL implementation plans.	These will be determined through the development of the IRP and will involve stakeholder input on new recommendations on policy direction.
A.3.34	The City should be moving beyond pilot projects for future implementation of concepts and specifics of the IRP.	Any pilot project that is being developed is being done so in order to learn more about how to successfully implement this type of project prior to widespread implementation. Many lessons can be learned through a pilot project, which saves money and reduces ineffective project implementation. Funding will need to be secured before projects can be implemented on a widespread basis.
A.3.35	Include more emphasis on stormwater and stormwater capture.	Comment noted.
A.3.36	Green streets should be included in all major street projects.	This comment referred to Go Policy #19. Changing the Go Policy to include green streets at all major streets projects will be considered during the development of the next IRP.

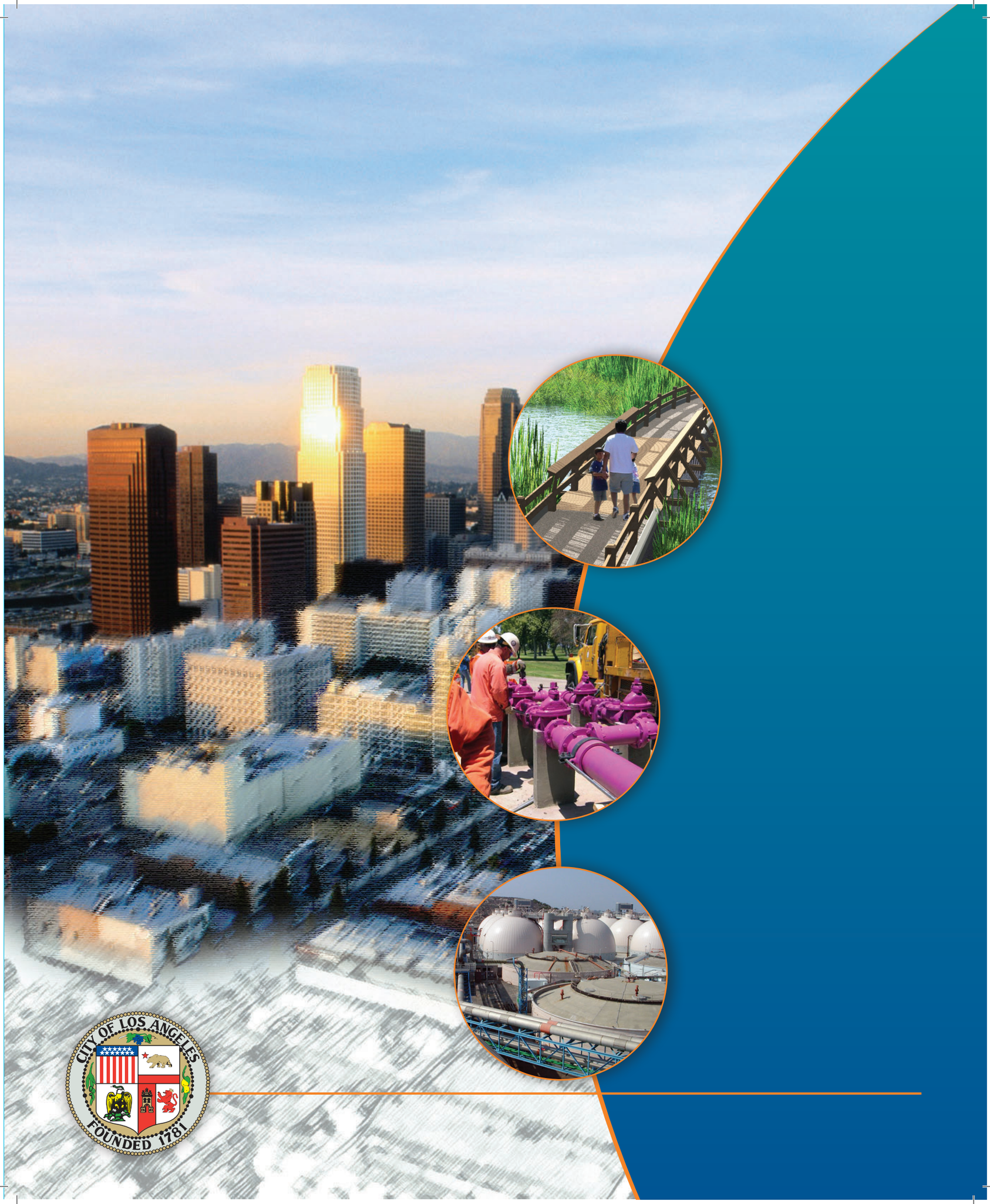
Table A-4: General Questions and Comments

Comment		Response
A.4.1	The draft report lacks sufficient detail on benchmarks and potential new or revised policy directions.	Benchmarks against other City agencies doing similar policy directions are not available. The City will consider including benchmarks and other potential policy directions in the next IRP development.
A.4.2	Interim milestones for completing the original or revised recommendations are absent.	Sections 1, 2 and 3 contain milestones or estimated completion of projects and information on projects being deferred.
A.4.3	Please include more timelines and milestones for IRP project completion.	Sections 1, 2 and 3 contain milestones or estimated completion of project s and information on projects being deferred
A.4.4	The City should be moving beyond pilot projects for future implementation of concepts and	Comment noted.

Comment		Response
	specifics of the IRP.	
A.4.5	Please identify the persons in the City who can and will lobby for the appropriations from the State and Federal governments regarding capital improvement funding mechanisms.	There is a group within the City that addresses lobbying for CIP. Please contact an IRP Team member, as members within lobbying groups as well as the groups themselves may change over time. Please go to www.lacitysan.org/irp for information on how to contact a member of the IRP Team.
A.4.6	What is the Financial Strategic Planning Task Force recommending for funding sources to ensure critical projects are implemented?	As listed in Table 4.1, the City plans to use utility fees, bonds and long-term debt, grant reimbursement and appropriations to fund the IRP projects.
A.4.7	Provide more honest and detailed evaluation of the in-progress Go Policies and include stakeholders during this evaluation.	The Annual Stakeholders meeting provides a forum for stakeholder feedbacks and continuous dialogue on how to improve our communication.
A.4.8	Create a central hub for homeowners to see all compliance or implementation requirements instead of needing to deal with multiple forums.	This comment will be forwarded to other Departments, Bureaus and Divisions that deal with permit and compliance requirements.
A.4.9	The cost element should play a bigger role in future IRP development.	During the development of the IRP, one of the primary objectives was "Enhance Cost Efficiency". Using defined benefits and estimated costs, staff and stakeholders evaluated each alternative for each service function, and then considered them as an integrated system.
A.4.10	There is a desire for more regular meetings between stakeholders and IRP staff.	Comment noted.
A.4.11	Please identify the next steps to continue to build the relationship with stakeholders in the Public Outreach Section.	Please see Section 5.
A.4.12	Please emphasize and highlight the significant role of the stakeholders' commitment and participation.	The IRP Stakeholders have played a significant roll in the implementation of the IRP. The IRP Team looks forward to continuing this participation in the form of Annual Stakeholders Meetings.

Comment		Response
A.4.13	Can you please provide us with additional information on the Los Angeles River ecosystem restoration project and opportunities for stakeholder feedback?	The Army Corps is currently preparing the Los Angeles River Ecosystem Restoration Feasibility Study, and is anticipates to complete it by the end of 2013/beginning of 2014. Stakeholders will have the chance for public comment during NEPA process after this study has been released. Full public review will be in compliance with NEPA.
A.4.14	Wasn't this study on low flow water needs of the existing Los Angeles River habitat already completed? If so, please update the language to express this.	A current and comprehensive study on the effects of flows from the City's Water Reclamation Plants on the habitat of the Los Angeles River has not been completed. There is an ongoing USACE Study which will evaluate some aspects of this. Potential effects will be evaluated during the environmental process for the City's Groundwater Replenishment Project. Stakeholders will have the chance for public comment during NEPA process after this study has been released. Full public review will be in compliance with NEPA.

THIS PAGE IS INTENTIONALLY LEFT BLANK


CITY OF LOS ANGELES
FOUNDED 1781