Attachment 7

City of Lakewood

Feasibility Study for the Proposed Expansion of the Lakewood Recycled Water System

in

Los Angeles County, California

July 15, 2010

Prepared by Willdan Engineering
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Executive Summary

In November 2009, Senate Bill 7 was signed into law, which added comprehensive water conservation requirements into the State Water Code. These requirements in concert with existing statutes constitute more stringent water management criteria for every water supplier throughout the State. The statutes are directed toward reducing the amount of water used by every consumer and thereby increasing water use efficiency practices in these times of reduced or limited water supplies throughout the State, and the entire southwestern states.

Part of the water conservation criteria involves reducing the current levels of potable water consumption by allowing the exchange of potable water usage for irrigation with recycled water use in its place. This is especially effective in the irrigation of sizeable landscape sites and certain agricultural crops. Therefore in order for the City of Lakewood to further reduce its potable water usage; this feasibility study for the Proposed Expansion of the Lakewood Recycled Water System was undertaken.

The study involved identifying existing irrigation sites where potable water usage is occurring, and their proximity to both the existing recycled water distribution pipelines, and the feasibility of extending additional pipelines to serve the identified irrigation sites. The study identified eight (8) large irrigated sites (parks and schools) and forth-nine (49) metered median and parkway service locations that could contribute to the exchange of potable for recycled water use. To provide service to the identified sites will require the installation of almost 40,700 linear feet (7.7 miles) of distribution pipe (purple) with new service laterals and meters for delivery of recycled water in place of potable water. The projected amount of total potable water offset by recycled water is 159.3 acre-feet per year. The cost to design and construct the pipelines and service connections is estimated at $7,250,668.

Background

On June 19, 1986, the Cities of Cerritos and Lakewood entered into an agreement (Reclaimed Water User Agreement) under which the cities agreed to design, bid and construct reclaimed water distribution facilities in their respective agencies. The agreement also obligated the City of Cerritos to sell up to 130 acre-feet of reclaimed water per year to the City of Lakewood, subject to the provision of receipt of such water supply from the County Sanitation Districts of Los Angeles County and the City of Lakewood's application for and purchase of the available reclaimed water on an as needed basis.

On August 5, 1987 the Cities of Cerritos and Lakewood entered into an amendment modifying section 2 of the initial agreement. The first amendment increased the annual amount of reclaimed water to be sold to the City of Lakewood to 450 acre-feet subject to

the construction of reclaimed water distribution facilities and obtaining reclaimed water from the County Sanitation Districts of Los Angeles County.
During calendar year 1988, Phase 1 of the City of Lakewood Reclaimed Water System was constructed. This initial water system served reclaimed water for irrigation use to many park, school and public building sites, and a few street parkways within the easterly half of the City's water service area. The properties currently served and the system pipelines are shown on exhibit map # 1 following this page.

On June 5, 1991 the Cities of Cerritos and Lakewood entered into a second amendment modifying section 3 of the initial agreement. This amendment changed the method used to calculate the price of reclaimed water sold under the agreement.

On July 28, 2009 the City of Lakewood entered into an agreement with Willdan Engineering to prepare a feasibility study for a proposed expansion of the Lakewood Recycled Water System. The study involves review of available City records on the existing recycled water system and those mapped features of the existing irrigation systems delivering potable water to various parks, schools, medians and parkways in the westerly half and some additional parkways and medians in the easterly half of the City water service area. The City's proposed expansion service areas and pipelines are shown on exhibit map # 2 following this page.

On August 31, 2009 the project kick-off meeting was held in the Department of Water Resources office at 5812 Arbor Road. Some of the pertinent information was provided and requests were noted for other information needed for the study. Meeting notes were produced and distributed within the week. As the requested information was received it was reviewed, and these reviews were followed by an on site meeting with two Recreation and Community Services personnel to discuss pertinent irrigation issues and related site observations were conducted. The gathered information then allowed the evaluation study to begin taking form.

In September, 2009, the City requested some additional irrigation areas be included in the evaluation work for use of recycled water in lieu of potable water. These included the parkways and medians on Lakewood Blvd. and Del Amo Blvd. abutting the Lakewood Center Mall.

Review of Records and Field Inspections

Records and information received from the City included: Lakewood Municipal Code Sections 5600 (Reclaimed Water) and 8600 (Water Conservation); recycled water usage reports for FY's 2000/2001 through 2008/2009; preliminary analysis of additional recycled water usage; as-built drawings of the 1987 recycled water system design plans; City water atlas maps in GIS format which contain the entire system, including feature attributes of the water meter locations; citywide substructure maps; and the water services procedures manual. Each of these records was reviewed and pertinent information was considered in the development of this feasibility study.

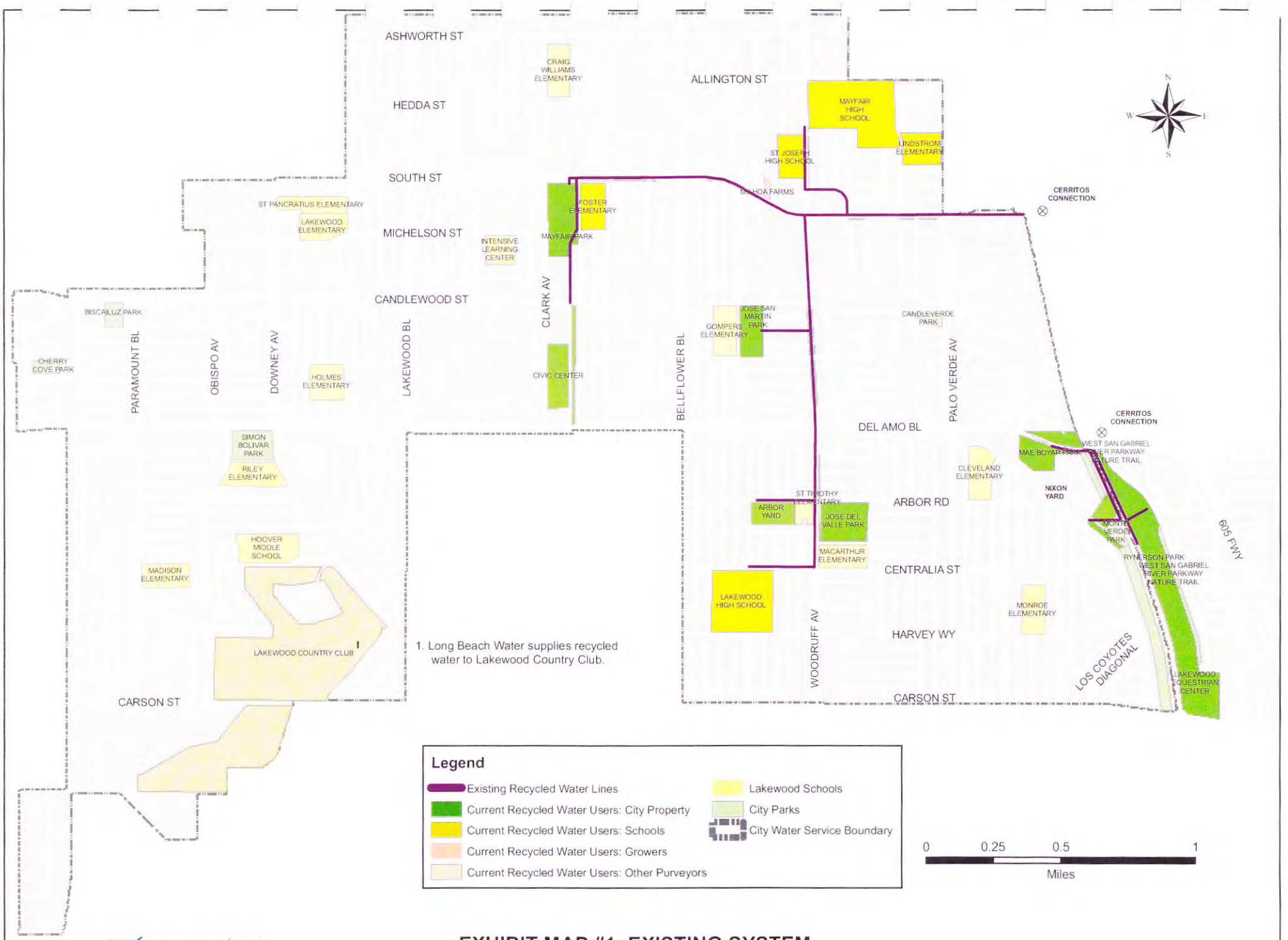

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EXHIBIT MAP #1: EXISTING SYSTEM
LAKEWOOD RECYCLED WATER SYSTEM

May 19, 2010

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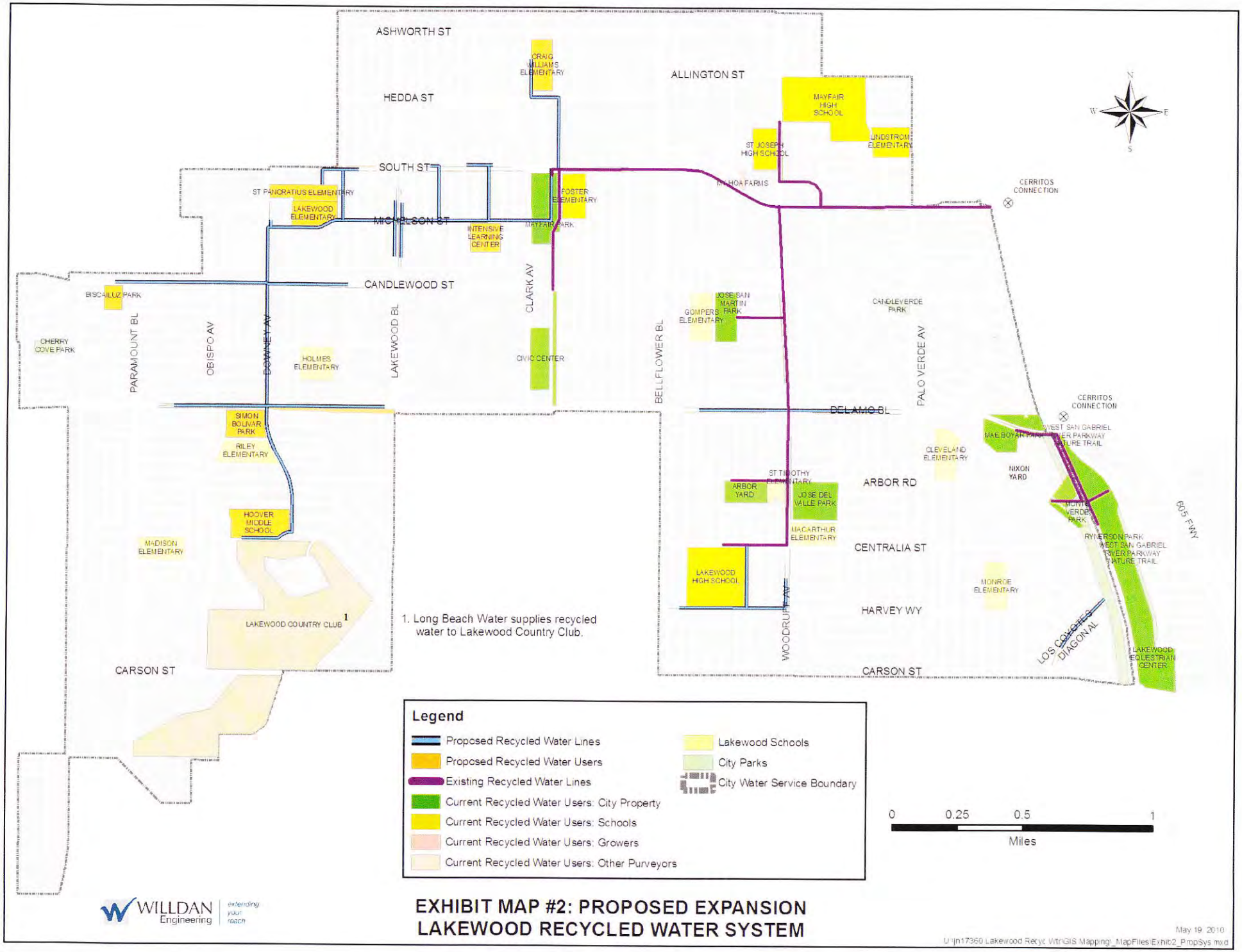

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EXHIBIT MAP #2: PROPOSED EXPANSION LAKEWOOD RECYCLED WATER SYSTEM

May 19, 2010

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A field inspection and discussion with Cam Castello of the Recreation and Community Services Department revealed that current site irrigation systems throughout the city are designed to operate hydraulically or electrically (remote control electric signals utilizing a 24 VAC solenoid). Also, each individual irrigation system is protected by a backflow prevention device consisting of either an atmospheric vacuum breaker (AVB) or reduced pressure (RP) type of device. These systems serve street parkway frontage and/or median islands, and open space areas such as parks and school sites. A majority of the irrigation systems appear to have been in operation 20 years or more, and the operating components and controllers do not have the efficiency features and capabilities that more recently available irrigation components now offer, especially for use with recycled water quality.

Related Water Needs, Service Groupings and Costs

Utilizing recent year's metered water consumption data for the various potential irrigation conversion sites; a spreadsheet table ranked from highest to lowest annual usage was prepared. This helped define phases of grouped service locations for maximum potable water savings as future distribution pipeline expansion is scheduled. The table also reflects the cumulative usage as an indicator used to guide phased groupings. The potential recycled water users spreadsheet tables are included in the appendix to this report.

For irrigated areas which could use recycled water in lieu of using potable water supplies, we have grouped those services areas into phases (each are described below). We started with the largest volume use groupings, based upon user adjacency to minimize costs to install the recycled water delivery system. For each location (phase) we have included all work within public rights-of-way necessary to construct main line facilities, laterals and new service meters to the water users delivery location. Each metered site is projected to have a new meter service and associated meter box for the service site. The engineer's opinion of construction cost, per phase, are included at the end of each phase description, and a map of the pipe alignments and related meter locations is included as exhibit map # 3 in the appendix.

On the customer's side of the meter all necessary and appropriate appurtenances such as pressure regulators, back flow preventers, irrigation controllers, valves, notification tags and markings associated with the use of recycled water are considered the responsibility of the customer/owner and are not included in the total costs to construct delivery pipelines to the related service connection point. Estimated costs per square-foot of irrigated area are included with the irrigation information in Appendix Section 6.

Phase 1 Description and Improvements

Main Line

Phase 1 improvements will provide recycled water service capability to the locations described in Table 1.1. These service sites are The Intensive Learning Center, Lakewood Elementary, St. Pancratius Elementary, the median in Lakewood Blvd., immediately north and south of Michelson Street, and the median in South Street between Hayter Ave. and Lakewood Blvd. Some of the main pipeline capacity size in this phase is necessary to facilitate further service into subsequent Phases 2, 3, 4 and part of 5. All of which are shown on Exhibit Map #3 in the Appendix.

To accomplish service to Phase 1 will involve upsizing the existing 6-inch pipeline that begins at the intersection of Fidler Avenue and South Street[1] and continues south to a tee at the intersection of Fidler Avenue and Bigelow Street and the existing 4-inch pipeline[2] that bears due west of the tee through Mayfair Park, over Los Cerritos Drainage Channel, to Clark Ave. Both pipelines must be upsized to a 10-inch recycled water main. The 10-inch pipeline will then be continued westerly in Michelson Street to its intersection with Hayter Avenue, then north in Hayter Avenue to its inter-section with South Street, then east and west in South Street to existing meter connections points as indicated on Exhibit Map #3. From the pipe cross at Hayter Avenue and Michelson Street, then west in Michelson Street to its intersection with Vedura Avenue, then north in Vedura Avenue to St. Pancratus Pl.

The future extension southerly in Hayter Avenue from the cross at Michelson Street, for phases 2 and 3 service, was selected to avoided Downey Ave. due to a greater number of utilities within the corridor and the higher traffic volume on that arterial.

Service Laterals

Phase 1 service connections include replacing the potable water delivery at each of the irrigation meter points described in Table 1.1, and as shown Exhibit Map #3. Due to the adjacency of six metered usage points near the Phase 1 main line, we have included them (meters 10, 34, 41, 52, 54 and 63) for the long term benefits of reduced potable water usage (7.26 acre-feet). The four median irrigation meters (10, 52, 54 and 63) are located on Lakewood Blvd., between Pepperwood Avenue and Camerino Street, and the two median irrigation meters (34 and 41) are located on South Street, east of Verdura Avenue.

Table 1.1 Phase 1 Service Locations

Potential User Ranking	Meter Location	Estimated R/W Usage (Acre-Feet)
1	Lakewood Elementary	19.68
5	Intensive Learning Center	9.41
9	St. Pancratius Elementary fields	5.03
10	Lakewood Blvd. Median North of Camerino St.	4.49

[1] Lakewood Recycled Water System – Phase 1 Record Drawings design date September 9, 1987.
[2] The existing 4-inch recycled water line bearing north in Clark Ave. shall remain in service

11	St. Pancratius Elementary	3.61
34	South St. Median North side at Castana Ave.	0.88
41	South St. Median South side at Castana Ave.	0.75
52	Lakewood Blvd. Median East side North of Camerino St.	0.52
54	Lakewood Blvd. Median North of Michelson St.	0.47
63	Lakewood Blvd. Median South of Pepperwood Ave.	0.15
	Total Phase 1 R/W Usage (Acre-Feet)	**44.99**
	% of All Considered Users	28%

Estimated Cost for Phase 1 Pipelines

Pipe Size (in)	Pipe Length (ft.)	Unit Cost ($)	Est. Const Cost	Engineering Costs	Contingency (20%)	Total Cost ($)
6" PVC	3,485	130	453050	67,958	90,610	611,618
10" PVC	5,080	135	685,800	102,870	137,160	925,830
						1,537,448

Phase 2 Description and Improvements

Main Line

Phase 2 improvements will provide recycled water service capability to the locations described in Table 2.1. These service sites are Bolivar Park, medians in Candlewood St. between Verdura Avenue and Oliva Avenue, medians in Downey Avenue from Del Amo Blvd to Eckleson Street, and the medians in Del Amo Blvd. from Allred / Silva Streets easterly to Lakewood Blvd. These locations are shown on Exhibit Map #3.

To accomplish service to Phase 2 will involve joining the Phase 1 main at the intersection of Camerino Street and Hayter Avenue, then continuing south in Hayter Avenue to its intersection with Del Amo Blvd., then west in Del Amo Blvd. and its frontage road, crossing over an open drainage channel, to its intersection with Downey Avenue. A second main extension within the north frontage road of Del Amo Blvd. between Downey Avenue and Allred / Silva Streets will be necessary to provide meter lateral services to the four (4) existing median irrigation meters along Del Amo Blvd. These alignments and service points are as identified on Exhibit #3.

Alternatively, an alignment for Phase 2 could have been westerly in Candlewood Avenue to its intersection with Downey Avenue, then southerly in Downey Ave. to Del Amo Blvd. This option would have involved some additional piping in Del Amo Blvd to reach metered locations 12 and 13, encountering a greater number of utilities within Downey

Avenue corridor, and incurred a greater traffic control impact due to construction within the higher volume secondary arterial; therefore, this alternative was not recommended.

Service Laterals

Phase 2 service connections include replacing potable water delivery to each of the irrigation meter points described in Table 2.1, and as shown Exhibit Map #3. All of these have been included for the long term benefits of reduced potable water usage, and collectively makeup the second largest potable irrigation water savings for the costs involved. The three median irrigation meters (37, 43 and 56) located on Downey Avenue, south from Candlewood Street, with a 1.96 acre-foot annual usage would have substantial service laterals cost with a limited benefit and therefore are not recommended as part of Phase 2.

Table 2.1 Phase 2 Service Locations

Potential User Ranking	Meter Location	Estimated R/W Usage (Acre-Feet)
2	Bolivar Park	15.15
12	Del Amo Blvd. Median at Minturn Ave	3.24
13	Del Amo Blvd. Median West of Lakewood Blvd	2.91
15	Del Amo Blvd. Median West of Obispo Ave	1.46
20	Candlewood St. Median West of Minturn Ave	1.14
22	Candlewood St. Median East of Minturn Ave	1.08
23	Del Amo Blvd. Median West of Downey Ave	1.08
25	Del Amo Blvd. Median South side West of Downey Ave	1.07
29	Del Amo Blvd. Median North side East of Silva St.	1.00
30	Candlewood St. Median East of Hayter Ave	0.94
47	Del Amo Blvd. Median South side East of Downey Ave.	0.61
53	Del Amo Blvd. Median North side west of Hayter St	0.51
55	Downey Ave. Median East side North of Del Amo Blvd.	0.47
	Total Phase 2 R/W Usage (Acre-Feet)	**30.66**
	% of All Considered Users	19%

Estimated Cost for Phase 2 Pipelines

Pipe Size	Pipe Length	Unit Cost	Est. Const	Engineering	Contingency	Total Cost

(in)	(ft.)	($)	Cost	Costs	(20%)	($)
6" PVC	1,850	130	240,500	36,075	48,100	324,675
8" PVC	1,000	132	132,000	19,800	26,400	178,200
10" PVC	5,185	135	699,975	104,996	139,995	944,966
						1,447,841

Phase 3 Description and Improvements

Main Line

Phase 3 improvements will provide recycled water service capability to the locations described in Table 3.1. These service sites include Craig Williams Elementary site, and the medians along South Street between Bonfair Avenue and Sunfield Avenue. These locations are shown on Exhibit Map #3.

To accomplish service to Phase 3 will involve joining the Phase 1 main at the intersection of Sunfield Ave. and Michelson Street, then continuing north in Sunfield Ave. to its intersection with Hedda Street, then easterly in Hedda Street to its intersection with Clark Avenue, then northerly in Clark Ave. to the existing irrigation meter service point for Craig Williams Elementary site. A second main pipe extension is within the north frontage road of South Street between Sunfield Ave and Bonfair Avenue, will be necessary to provide meter lateral services to the five (5) existing median irrigation meters along South Street. These alignments and service points are as identified on Exhibit #3.

Alternatively, an alignment for Phase 3 could have been westerly in South Street from its intersection at Fidler Avenue to Sunfield Avenue for extension to the north and west to the ending meter point on South Street near Bonfair Avenue. This alternative would involve slightly less pipeline length, but it would require construction in South Street (a major arterial) and its signalized intersection with Clark Avenue (another arterial street in the community). To avoid the added construction impacts of this alignment it was decided not to recommend this alternative.

Service Laterals

Phase 3 service connections include replacing potable water delivery to each of the irrigation meter points described in Table 3.1, and as shown Exhibit Map #3. All of these have been included for the long term benefits of reduced potable water usage, and collectively makeup the third largest potable irrigation water savings for the costs involved.

Table 3.1 Phase 3 Service Locations

Potential User Ranking	Meter Location	Estimated R/W Usage (Acre-Feet)
6	Craig Williams Elementary	7.83
7	South St. Median in front of 4505 South St	6.87
28	South St. Median next to 5745 Pennswood Ave	1.01
42	South St. Median next to 5744 Blackthorne Ave	0.75
45	South St. Median in front of 4915 South St	0.63
46	South St. Median in front of 4705 South St	0.62
	Total Phase 3 R/W Usage (Acre-Feet)	**17.71**
	% of All Considered Users	11%

Estimated Cost for Phase 3 Pipelines

Pipe Size (in)	Pipe Length (ft.)	Unit Cost ($)	Est. Const Cost	Engineering Costs	Contingency (20%)	Total Cost ($)
6" PVC	3,138	130	407,940	61,191	81,588	550,719
10" PVC	1,100	135	148,500	22,275	29,700	200,475
						751,194

Phase 4 Description and Improvements

Main Line

Phase 4 improvements will provide recycled water service capability to the metered locations described in Table 4.1. The service site is Herbert Hoover Middle School with meter service on Country Club Drive. This location is shown on Exhibit Map #3.

To accomplish service to Phase 4 will involve joining the Phase 2 main at the intersection of Del Amo Boulevard and Downey Avenue, then southerly in Downey Avenue to its intersection with County Club Drive, then westerly in Country Club Drive to the two existing irrigation meter locations.

Service Laterals

Phase 4 service connections include replacing the potable water delivery at each of the irrigation meter points described in Table 4.1. and as shown Exhibit Map #3. These have been included for the long term benefits of reduced potable water usage, and collectively makeup the fourth largest potable irrigation water savings for the costs involved.

Table 4.1 Phase 4 Service Locations

Potential User Ranking	Meter Location	Estimated R/W Usage (Acre-Feet)
3	Herbert Hoover Middle School	12.43
4	Herbert Hoover Middle School	12.13
	Total Phase 4 R/W Usage (Acre-Feet)	**24.56**
	% of All Considered Users	15%

Estimated Cost for Phase 4 Pipelines

Pipe Size (in)	Pipe Length (ft.)	Unit Cost ($)	Est. Const Cost	Engineering Costs	Contingency (20%)	Total Cost ($)
6" PVC	1,000	130	130,000	19,500	26,000	175,500
10" PVC	2,600	135	351,000	52,650	70,200	473,850
						649,350

Phase 5 Description and Improvements

Main Line

Phase 5 improvements will provide recycled water service capability to various locations as described in Table 5.1. The service sites consist of Biscailuz Park and seven separate median/parkway segments located on six different arterial streets within the community.

To accomplish service to all Phase 5 locations will involve joining previously installed recycled water pipelines at three separate locations. For service to the Biscailuz Park site a connection will be required at the intersection of Verdura Avenue and Michelson Street, then westerly in Michelson St., over the open drainage channel facility, to its intersection with Downey Avenue, then south in Downey Avenue to its intersection with Candlewood Street, then westerly in Candlewood St. and its frontage road to the existing irrigation meter service point for Biscailuz Park site. A second point of connection will be required at the intersection of Centralia Street and Woodruff Avenue, then continuing southerly in Woodruff Ave. to its intersection with Harvey Way, then westerly in Harvey Way to the westerly meter location between Briercrest Avenue and Marber Avenue. The third point of connection will be at the intersection of Woodruff Avenue and Del Amo Blvd. for added service in both directions along Del Amo Blvd. Service for the medians to the west will require pipeline extension from Woodruff Ave. to the meters near Coldbrook Avenue. Service for the medians to the east will require pipeline extension from

Woodruff Ave. to the meters near Canehill Avenue. A fourth point of connection will be at the intersection of Del Amo Blvd. and Lakewood Blvd., then branching northerly along Lakewood Blvd. to the meter north of Hardwick St., and easterly along Del Amo Blvd. to Clark Ave.

Alternatively, an alignment within Candlewood Street from its intersection with Hayter Avenue, then westerly to Downey Avenue involves slightly lesser pipe length, but greater impact to traffic flow in a higher traffic volume arterial, and crossing of an open drainage channel facility as well as through the intersection of Downey Avenue are the reasons this alignment was is not recommended.

Possible Future Addition:

Another somewhat isolated set of street medians that could be transitioned from use of potable water supply for irrigation to use of recycled water are those on Los Coyotes Diagonal between Stevely Avenue and Carson Street. According to metered usage from the five (5) meters along this segment, the annual average is 3.56 acre-feet of water demand. Service to this street segment may require extension of the recycled water pipeline serving Monte Verde Park site near Shadeway Road and Turnergrove Drive. If a pipeline extension is necessary from this location, it could require about 2,300 to 2,750 feet of new pipe, depending upon the available routing. However, if there is a recycled water pipeline with sufficient capacity within the adjacent L.A. Department of Water and Power easement abutting the westerly side of the San Gabriel River, the potential for service to the Los Coyotes Diagonal meters can be accomplished at a much lower cost.

Service Laterals

Phase 5 service connections include replacing potable water delivery to each of the irrigation meter points described in Table 5.1, and as shown Exhibit Map #3. All of these have been included for the long term benefits of reduced potable water usage, and collectively makeup the fifth largest potable irrigation water savings for the costs involved.

Table 5.1 Phase 5 Service Locations

Potential User Ranking	Meter Location	Estimated R/W Usage (Acre-Feet)
8	Biscailuz Park	5.15
14	Downey Ave. Median at Camarino St	1.64
16	Woodruff Ave. Median at Gallup St	1.32
17	Del Amo Blvd. Median at Coldbrook Ave	1.21
18	Del Amo Blvd. Median at Eastbrook Ave	1.19
19	Woodruff Ave. Median at Gallup St	1.16

24	Del Amo Blvd. Median East of Faust Ave	1.08
27	Del Amo Blvd. Median at Ocana Ave	1.03
31	Del Amo Blvd. Median East of Snowden Ave	0.94
32	Downey Ave. Median North of Michelson St	0.92
33	Harvey Way Median at Sebren Ave	0.88
36	Candlewood St. Median at Bixler Ave	0.82
38	Candlewood St. Median East of Daneland St	0.81
39	Del Amo Blvd. Median at Coldbrook Ave	0.80
40	Candlewood St. Median West of Downey Ave	0.79
44	Del Amo Blvd. Median at Canehill Ave	0.67
51	Harvey Way Median at Ocana Ave	0.53
57	Candlewood St. Median at Levelside Dr	0.42
58	Del Amo Blvd. Median East of Faust	0.42
59	Harvey Way Median East of Marber Ave	0.42
61	Harvey Way Median West of Woodruff Ave	0.33
64	Lakewood Blvd. Median North of Hardwick St.	6.74
65	Lakewood Blvd. Median at Silva St.	4.47
66	Del Amo Blvd. 95' East of Lakewood Blvd.	2.44
67	Del Amo Blvd. East of Lakewood Blvd.	1.24
68	Del Amo Blvd. East of Lakewood Blvd.	0.43
69	Del Amo Blvd. West of Clark Ave.	0.32
70	Del Amo Blvd. West of Clark Ave.	0.51
71	Del Amo Blvd. West of Clark Ave.	0.78
	Total Phase 5 R/W Usage (Acre-Feet)	**39.46**
	% of All Considered Users	25%

Estimated Cost for Phase 5 Pipelines

Pipe Size (in)	Pipe Length (ft.)	Unit Cost ($)	Est. Const Cost	Engineering Costs	Contingency (20%)	Total Cost ($)
6" PVC	10,100	130	1,313,000	196,950	262,600	1,772,550

8" PVC	4,800	132	633,600	95,040	126,720	855,360
10" PVC	1,300	135	175,500	26,325	35,100	236,925
						2,864,835

Availability of Additional Recycled Water

The City's Director of Water Resources is addressing this subject area with City of Cerritos representatives.

Funding Opportunities

The cost of expanding the recycled water system to reduce the use of potable water in existing irrigation systems within the community can be offset by application to the Metropolitan Water District (MWD) of Southern California under their Local Resources Program (LRP). This program provides annual financial incentives (per acre-foot of water replaced/developed over a 25-year term) as in this case for the direct replacement of potable water with recycled water. Applications for this program are being accepted, and a copy of the LRP application guidelines is included in the appendix or may also be downloaded from MWD's website at www.mwdh2o.com.

Should additional funding be required to accomplish the recycled water system expansion, there are various combinations of grants, loans, debt instruments, rates and fees that could also be considered and assembled for implementing this type of water conservation program.

Summary

Each of the Phase projects as identified herein, are constructible within existing public right-of-ways. The availability of funding for each Phase will need to be identified and evaluated, then scheduling for the design and construction established around the funding availability identified.

Current City rates and charges for potable water ($2.08/hcf) and for recycled water ($1.02/hcf) results in a $1.06/hcf ($461.74/acre-foot) pricing incentive for use of recycled water, where such is feasible under applicable City codes. Since the City has a tiered rate structure applicable to differing water availability conditions (water conservation related) in the region, the resulting cost savings will vary with the total monthly volume of water applied to irrigated areas. With the current cost differential, the use of recycled water will reduce irrigated water use costs while contributing to the necessary reduction in available potable water usage; thereby resulting in compliance with the 2009 statutes added to the Water Code relative to potable water use reductions per capita. Upon completion of all five phases described above, the added reduction in potable water use will total 159 acre-feet per year.

In conclusion, the conversion of potable water use to recycled water use, in existing and future irrigation systems throughout the City, is a positive step toward sustainable efforts to reuse this valuable alternative water source as available. Recycled water use in landscape irrigation effectively contributes to water conservation, and is a credit under the potable water use reduction as required under SB-7 (2009), now codified in State Water Code Section 10608.16.

Appendices Follow

APPENDICIES

1. Exhibit Map # 3 – Full Scale
   [Map shows the proposed Phased pipeline routing and related meter locations to be served]

2. Potential Recycled Water Users
   [Ranked from highest to lowest annual consumption volume]

3. MWD's Local Resources Program Application Guidelines
   [Guidelines for proposing on development of a water recycling project and application]

4. Statutory and Regulatory Factors
   [Past and recent statutes pertaining to recycled water use]

5. Irrigation Technology Improvements
   [Advances in irrigation technology resulting from climate, policy and marketplace]

6. Issues and Requirements pertinent to Irrigation Application
   [Factors for site application and connection using recycled water]

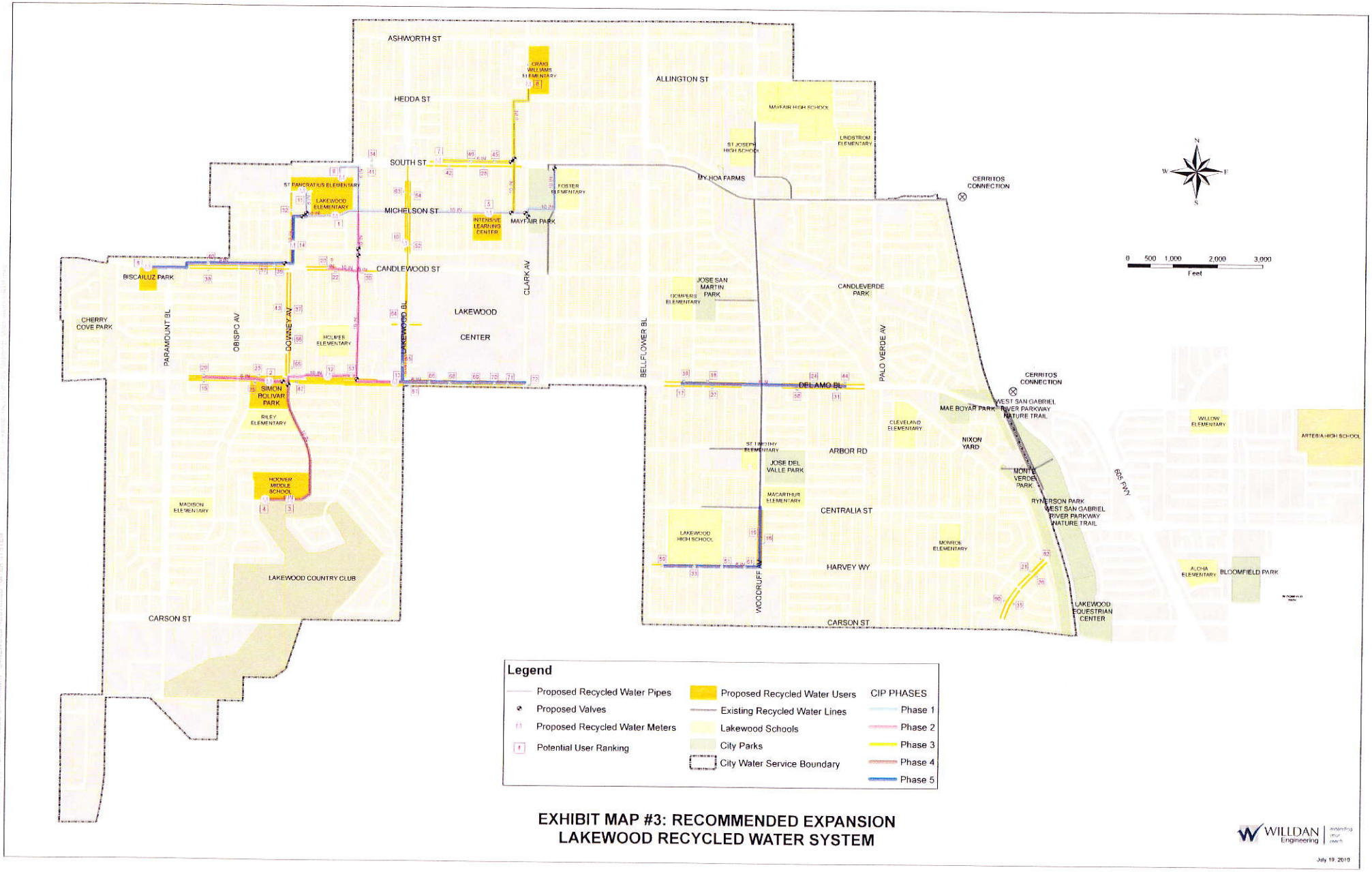

EXHIBIT MAP #3: RECOMMENDED EXPANSION LAKEWOOD RECYCLED WATER SYSTEM

WILLDAN Engineering

July 19, 2010

Potential Recycled Water Use

* Indicates a meter providing both irrigation and domestic water uses. To determine irrigation use we applied the city's assumed 75% factor against total flow. Detailed verification should be conducted before undertaking design.

Indicates Irrigation Meter

Indicates Parkway Meter

Indicates Domestic Meter

Indicates Unknown Amount of Domestic or Irrigation Percentage

Ranking	Service Site	Address	Meter Size	Additional Information	Total Usage (2.33 yrs) Mtr. Rec. (HCF)	Average Annual Usage (HCF/YR)	Estimated Irrigation Use (AF/YR)	Estimated Irrigation Use (HCF/YR)	Cumm Estimated Irrigation Usage (HCF/YR)	Usage Rank	% of Total	Cumm %
1	Lakewood Elementary*	3717 Michelson St.	4"		26630	11429	19.68	8572	8572	1	12%	12%
2	Bolivar Park*	3300 Del Amo Blvd.	3"		20503	8800	15.15	6600	15172	2	10%	22%
3	Hoover Junior H.S.	3501 Country Club Dr.	2"	Irrigation, meter by light pole, west end of school	12615	5414	12.43	5414	20586	3	8%	30%
4	Hoover Junior H.S.	3501 Country Club Dr.	2"	Irrigation, west meter	12313	5285	12.13	5285	25870	4	8%	37%
5	Intensive Learning Center*	4718 Michelson St.	3"		12728	5463	9.41	4097	29967	5	6%	43%
6	Craig Williams Elementary	6144 Clark Ave.	2"	Irrigation, meter by backflow device	7942	3409	7.83	3409	33376	6	5%	48%
7	South St. West of Clark Ave.	4505 South St.	2"	Across From 4505 South St., Irrigation North Side	6973	2993	6.87	2993	36369	7	4%	52%
8	Biscailuz Park*	2601 Dollar St.	3"		6973	2993	5.15	2245	38613	8	3%	56%
9	St. Pancratius Church/School*	5737 Coke Ave.	2"	Serves field	6808	2922	5.03	2191	40805	9	3%	59%
10	Lakewood Blvd. South of Michelson St.	Lakewood Blvd. 460' South of Michelson St.	1-1/2"	Across From 5443 Lakewood Blvd., Irrigation West Side	4560	1957	4.49	1957	42762	10	3%	62%
11	St. Pancratius Church/School*	3601 St. Pancratius Pl.	2"		4889	2098	3.61	1574	44335	11	2%	64%
12	Del Amo Blvd. East of Downey Ave.	Del Amo Blvd. at Minturn Ave., North Side	1-1/2"	North Side	3284	1409	3.24	1409	45745	12	2%	66%
13	Del Amo Blvd. East of Downey Ave.	Del Amo Blvd 103' West of Lakewood Blvd., South Side	1-1/2"	South Side	2952	1267	2.91	1267	47012	13	2%	68%
14	Downey Ave. South of Michelson St.	5426 Downey Ave.	1-1/2"	Across From 5424 Downey Ave.	1667	715	1.64	715	47727	14	1%	69%
15	Del Amo Blvd. West of Downey Ave.	Del Amo Blvd. 560' West of Obispo Ave., South Side	1-1/2"	Across From 2902 Del Amo Blvd. South Side	1484	637	1.46	637	48364	15	1%	70%
16	Woodruff Ave. South of Centralia St.	0 Woodruff Ave. 120' North of Gallup St., East Side	1-1/2"	East Side	1340	575	1.32	575	48939	16	1%	71%

Potential Recycled Water Use

* Indicates a meter providing both irrigation and domestic water uses. To determine irrigation use we applied the city's assumed 75% factor against total flow. Detailed verification should be conducted before undertaking design.

Indicates Irrigation Meter

Indicates Parkway Meter

Indicates Domestic Meter

Indicates Unknown Amount of Domestic or Irrigation Percentage

Ranking	Service Site	Address	Meter Size	Additional Information	Total Usage (2.33 yrs) Mtr. Rec. (HCF)	Average Annual Usage (HCF/YR)	Estimated Irrigation Use (AF/YR)	Estimated Irrigation Use (HCF/YR)	Cumm Estimated Irrigation Usage (HCF/YR)	Usage Rank	% of Total	Cumm %
17	Del Amo Blvd. West of Woodruff Ave.	Del Amo Blvd. at Coldbrook Ave., South Side	1-1/2"	South Side	1228	527	1.21	527	49466	17	1%	71%
18	Del Amo Blvd. West of Woodruff Ave.	0 Del Amo Blvd. 600' West of Silva St.	1-1/2"	North Side	1203	516	1.19	516	49983	18	1%	72%
19	Woodruff Ave. South of Centralia St.	Woodruff Ave. 620' South of Centralia St., West Side	1-1/2"	Irrigation West Side	1180	506	1.16	506	50489	19	1%	73%
20	Candlewood St. East of Downey Ave.	0 Candlewood St. 475' From Minturn, North Side	1-1/2"	Across From 3723 Candlewood St. North Side	1156	496	1.14	496	50985	20	1%	73%
21	Los Coyotes Diag.	Los Coyotes Diag., 425' North of Harvey Way	1-1/2"	Across From 4243 Los Coyotes Diag., Irrigation West Side	1135	487	1.12	487	51472	21	1%	74%
22	Candlewood St. East of Downey Ave.	0 Candlewood St. At Minturn Ave., South Side	1-1/2"	East of Minuturn Ave. South Side	1094	470	1.08	470	51942	22	1%	75%
23	Del Amo Blvd. West of Downey Ave.	0 Del Amo Blvd. 535' West of Downey Ave., North Side	1-1/2"	North Side	1094	470	1.08	470	52411	23	1%	76%
24	Del Amo Blvd. East of Woodruff Ave.	Del Amo Blvd.	1-1/2"	Across From 6037 Del Amo Blvd. North Side	1093	469	1.08	469	52880	24	1%	76%
25	Del Amo Blvd. West of Downey Ave.	0 Del Amo Blvd. 545' West of Downey Ave.	1-1/2"	Middle of Parkway Panel- Bolivar Park South Side	1086	466	1.07	466	53346	25	1%	77%
26	Los Coyotes Diag.	Los Coyotes Diag. 425' North of Harvey Way, East Side	1-1/2"	Across From 4236 Los Coyotes Diag. East Side	1056	453	1.04	453	53800	26	1%	78%
27	Del Amo Blvd. West of Woodruff Ave.	0 Del Amo Blvd. 80' West of Lomina Ave., South Side	1-1/2"	South Side	1041	447	1.03	447	54246	27	1%	78%
28	South St. West of Clark Ave.	5745 Pennswood Ave.	2"	Across From 5745 Pennswood Ave. on south St., Irrigation South Side	1025	440	1.01	440	54686	28	1%	79%
29	Del Amo Blvd. West of Downey Ave.	0 Del Amo Blvd.	1-1/2"	Across From 2903 Del Amo Blvd. North Side	1016	436	1.00	436	55122	29	1%	79%
30	Candlewood St. East of Downey Ave.	0 Candlewood St. at Hayter Ave.	1-1/2"	Next to Speed Limit Sign	956	410	0.94	410	55533	30	1%	80%
31	Del Amo Blvd. East of Woodruff Ave.	0 Del Amo Blvd.120' East of Snowden Ave., South Side	2"	South Side	950	408	0.94	408	55940	31	1%	81%
32	Downey Ave. North of Michelson St.	5630 Downey Ave.	1-1/2"	East Side	931	400	0.92	400	56340	32	1%	81%

Potential Recycled Water Use

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Ranking	Service Site	Address	Meter Size	Additional Information	Total Usage (2.33 yrs) Mtr. Rec. (HCF)	Average Annual Usage (HCF/YR)	Estimated Irrigation Use (AF/YR)	Estimated Irrigation Use (HCF/YR)	Cumm Estimated Irrigation Usage (HCF/YR)	Usage Rank	% of Total	Cumm %
33	Harvey Way West of Woodruff Ave.	999 Harvey Way at Sebren Ave.	1-1/2"	South Side	893	383	0.88	383	56723	33	1%	82%
34	South St. West of Clark Ave.	000 Castana Ave.	1-1/2"	Across from 5802 Castana Ave. North Side	889	382	0.88	382	57105	34	1%	82%
35	Los Coyotes Diag.	Los Coyotes Diag. 100' South of Harvey Way, East Side	1-1/2"	East Side	865	371	0.85	371	57476	35	1%	83%
36	Candlewood St. West of Downey Ave.	Candlewood St. 550' West of Downey Ave.	1-1/2"	North Side	830	356	0.82	356	57832	36	1%	83%
37	Downey Ave. South of Candlewood St.	0 downey Ave. 280' South of Candlewood St., East Side	1-1/2"	Across From 5158 Downey Ave. East Side	824	354	0.81	354	58186	37	1%	84%
38	Candlewood St. West of Downey Ave.	0 Candlewood 560'	1-1/2"	Across From 2852 Candlewood St. South Side	820	352	0.81	352	58538	38	1%	84%
39	Del Amo Blvd. West of Woodruff Ave.	Del Amo Blvd. at Coldbrook Ave., North Side	1-1/2"	North Side	811	348	0.80	348	58886	39	1%	85%
40	Candlewood St. West of Downey Ave.	Candlewood St. 575' West of Obispo Ave, North Side	1-1/2"	Across From 2853 Candlewood St. North Side	797	342	0.79	342	59228	40	0%	85%
41	South St. West of Clark Ave.	0 South St.	1-1/2"	South St. at Castana Ave. South Side	765	328	0.75	328	59556	41	0%	86%
42	South St. West of Clark Ave.	5744 Blackthorne Ave.	2"	Across From 5744 Blackthorne Ave. on South St., Irrigation South Side	761	327	0.75	327	59883	42	0%	86%
43	Downey Ave. South of Candlewood St.	0 Downey Ave.280' South of Candlewood St.	1-1/2"	In Front of 5157 Downey Ave. West Side	728	312	0.72	312	60195	43	0%	87%
44	Del Amo Blvd. East of Woodruff Ave.	Del Amo Blvd. 20' West of Canehil Ave., North Side	1-1/2"	North Side	683	293	0.67	293	60489	44	0%	87%
45	South St. West of Clark Ave.	4915 South St.	2"	Irrigation North Side	639	274	0.63	274	60763	45	0%	88%
46	South St. West of Clark Ave.	4705 South St.	2"	North Side	634	272	0.62	272	61035	46	0%	88%
47	Del Amo Blvd. East of Downey Ave.	0 R/W Del Amo Blvd. at Downey Ave.	1"	25' East of the Curb- Flood Control South Side	620	266	0.61	266	61301	47	0%	88%
48	Hoover Junior H.S.* Middle Meter	3501 Country Club Dr.	2"	Not locateable	792	340	0.00	0	61301	48	0%	88%

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Ranking	Service Site	Address	Meter Size	Additional Information	Total Usage (2.33 yrs) Mtr. Rec. (HCF)	Average Annual Usage (HCF/YR)	Estimated Irrigation Use (AF/YR)	Estimated Irrigation Use (HCF/YR)	Cumm Estimated Irrigation Usage (HCF/YR)	Usage Rank	% of Total	Cumm %
49	Hoover Junior H.S.* South Meter	3501 Country Club Dr.	2"	Not locateable	769	330	0.00	0	61301	49	0%	88%
50	Hoover Junior H.S.* North Meter	3501 Country Club Dr.	2"	Not locateable	757	325	0.00	0	61301	50	0%	88%
51	Harvey Way West of Woodruff Ave.	0 Harvey Way at Ocana Ave.	1-1/2"	South Side	537	230	0.53	230	61531	51	0%	89%
52	Lakewood Blvd. South of Michelson St.	5438 Lakewood Blvd.	2"	East Side	526	226	0.52	226	61757	52	0%	89%
53	Del Amo Blvd. East of Downey Ave.	Del Amo Blvd. at Hayter Ave.	1-1/2"	North Side	522	224	0.51	224	61981	53	0%	89%
54	Lakewood Blvd. North of Michelson St.	5634 Lakewood Blvd.	1-1/2"	Across From 5634 Lakewood Blvd. East Side	478	205	0.47	205	62186	54	0%	90%
55	Downey Ave. South of Candlewood St.	400' North of Del Amo Blvd.	1-1/2"	Across From 4936 Downey Ave. East Side	478	205	0.47	205	62392	55	0%	90%
56	Downey Ave. South of Candlewood St.	Downey Ave. 120' South of Hardwick St.	1-1/2"	Across from 5036 Downey Ave. East Side	440	189	0.43	189	62580	56	0%	90%
57	Candlewood St. West of Downey Ave.	Candlewood St. at Levelside Dr.	1-1/2"	South Side	427	183	0.42	183	62764	57	0%	90%
58	Del Amo Blvd. East of Woodruff Ave.	0 Del Amo Blvd. 170' East of Faust Ave.	1-1/2"	South Side	428	184	0.42	184	62947	58	0%	91%
59	Harvey Way West of Woodruff Ave.	0 Harvey Way 240' East of Marber Ave.	1-1/2"	South Side	424	182	0.42	182	63129	59	0%	91%
60	Los Coyotes Diag.	0 999 4171 Los Coyotes Diag.	1-1/2"	Across From 4171 Los Coyotes Diag. West Side	361	155	0.36	155	63284	60	0%	91%
61	Harvey Way West of Woodruff Ave.	0 Harvey Way	1-1/2"	South Side	335	144	0.33	144	63428	61	0%	91%
62	Los Coyotes Diag.	4273 Los Coyotes Diag.	1-1/2"	Across From 4273 Los Coyotes Diag. In Parkway Panel West Side	197	85	0.19	85	63513	62	0%	92%
63	Lakewood Blvd. North of Michelson St.	Lakewood Blvd. 335' North of Michelson St.	1"	West Side	152	65	0.15	65	63578	63	0%	92%
64*	Lakewood Blvd. North of Del Amo Blvd.	Lakewood and Hardwick in front of 5101 Lakewood Blvd	2"	West Side	7828	3914	6.74	2936	66513	N/A	4%	96%

Potential Recycled Water Use

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65*	Lakewood Blvd. North of Del Amo Blvd.	E FH in Prkwy across from 4949 Lakewood Blvd	2"	West Side	5197	2599	4.47	1949	68463	N/A	3%	99%
66*	Del Amo Blvd East of Lakewood Blvd	95' east of Lakewood Blvd	1-1/2"		2837	1419	2.44	1064	69527	N/A	2%	100%
67*	Del Amo Blvd East of Lakewood Blvd	Next to light pole 2nd FR Clark Del Amo 213' w/ Clark	1-1/2"		1442	721	1.24	541	70068	N/A	1%	101%
68*	Del Amo Blvd East of Lakewood Blvd	By backflow device east of Lakewood w/ corner	1-1/2"		502	251	0.43	188	70256	N/A	0%	101%
69*	Del Amo Blvd East of Lakewood Blvd	By Backflow device W/Cor E of Haz	1"		372	186	0.32	140	70395	N/A	0%	101%
70*	Del Amo Blvd East of Lakewood Blvd	By backflow W/FAC ACR FR Theatre-West of Faculty	1-1/2"		590	295	0.51	221	70617	N/A	0%	102%
71*		By Backflow Device	1-1/2"		679	340	0.78	340	70957	N/A	0%	102%
72*		At the intersection of Clark and Del Amo Blvd	UNK	No information provided on this meter	0	0	0.00	0	70957	N/A	0%	102%

Total Use (HCF) 69405

Total Use (Acre-Ft) 159.33

*INFORMATION FOR THESE METERS RECEIVED MAY 19, 2010 AND IS SUPPLIMENTAL TO THE DATA RANKED 1 THROUGH 63

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Executive Office

Date: July 31, 2007

To: Member Agency Managers

From: Stephen N. Arakawa, Manager, Water Resource Management

Subject: Local Resources Program Application Guidelines

The Metropolitan Water District of Southern California (Metropolitan) is currently seeking proposals for the development of water recycling and groundwater recovery projects under the Local Resources Program (LRP). New projects are needed to bolster our region's water supply reliability. The attached guidelines provide information about the program and application submittal. Funding is available to public and private water agencies for projects that are supported by Metropolitan's member agencies

In April 2007, Metropolitan's Board of Directors adopted updated administrative policy principles for LRP implementation. The new program employs an open process to accept and review project applications on a continuous basis for the development of 174,000 acre-feet per year of local resources. Previously, Metropolitan selected projects through a competitive request for proposal process.

We look forward to working with applicants, for further coordination or questions, contact Mr. Andy Hui at (213) 217-6557 or via email at ahui@mwdh2o.com

Stephen N. Arakawa

BE:tw
o:\a\sm\2007\BDE_LRP Application Package.doc

Attachments

cc: Board of Directors

700 N. Alameda Street, Los Angeles, California 90012 · Mailing Address: Box 54153, Los Angeles, California 90054-0153 · Telephone (213) 217-6000

The Metropolitan Water District of Southern California

Local Resources Program
Application Guidelines

INFORMATION FOR RESPONDENTS

The Metropolitan Water District of Southern California (Metropolitan) invites applications for development of water recycling and groundwater recovery projects under the Local Resources Program (LRP). This application package includes information regarding funding, eligibility and the application review process. Additional copies of the application package may be downloaded from Metropolitan's website at: www.mwdh2o.com. We look forward to working with all applicants to bolster our region's water supply reliability.

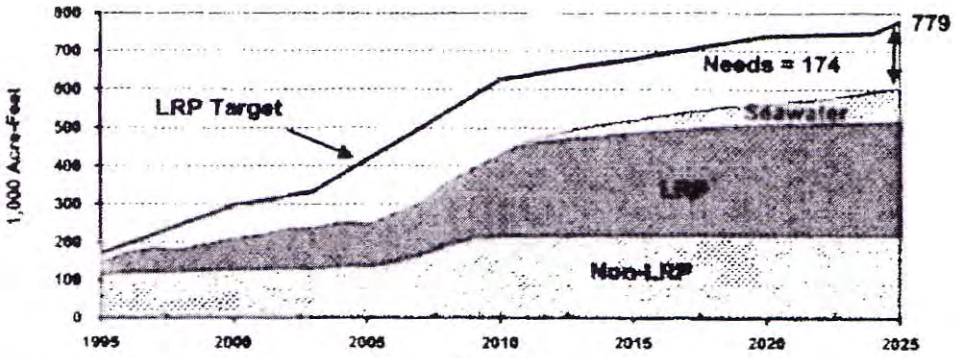
Objective

The LRP provides funding for the development of water recycling and groundwater recovery supplies that replace an existing demand or prevent a new demand on Metropolitan's imported water supplies either through:

- Direct replacement of potable water, or
- Increased regional groundwater production.

Metropolitan seeks development of 174,000 AFY of yield to meet a regional goal of 779,000 AFY by year 2025.

Current LRP Resource Needs *



* To be periodically updated

Application Submittals
Project applications will be accepted on an open and continuous basis until the target yield of 174,000 acre-feet per year is fully subscribed. Mail applications to:

The Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, California 90054-0153

Attention: Andy Hui
LRP Application Submittal

Contact for questions:

Mr. Andy Hui, Manager
Regional Supply Unit
The Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, California 90054-0153
Telephone: (213) 217-6557
Fax: (213) 217-6119
E-mail: ahui@mwdh2o.com

Who Can Apply
The LRP is open to public and private water utilities within Metropolitan's service area. Applications must be made through the applicant's respective Metropolitan member agency. Applicants are strongly encouraged to initiate early coordination with Metropolitan regarding proposed projects. Submittal of a LRP application does not signify or guarantee funding approval by Metropolitan.

Program Funding
Financial incentives between $0 and $250 per acre-foot produced over 25 year terms are recalculated annually based on eligible project costs incurred each year and Metropolitan's applicable water rates. Incentive commitments are contingent upon approval by Metropolitan's Board of Directors.

Prior to each fiscal year of operation, Metropolitan will set an estimated incentive rate payment for deliveries during the year. At the end of each fiscal year, Metropolitan will conduct a reconciliation to determine the actual incentive rate based on actual project costs and production data. At that time, over- or under-payment adjustments are made between Metropolitan and the project sponsor. The calculated incentive rate may diminish in future years as Metropolitan's water rates increase and each project's annual yield increases.

Targeted Projects
New and expansion of existing water recycling and groundwater recovery projects are eligible for funding provided they include construction of new substantive treatment or distribution facilities. Existing projects or those that have commenced construction prior to application submittal are ineligible. Strong consideration will be given to projects that are well positioned for construction and timely production of stated project capacities in the near future. Projects with long ramp-up schedules may be addressed in phased agreements, executed when each phase is poised for timely construction and operation. Agreements may be deferred or cancelled for projects not positioned to produce water in the near future.

Process Overview
Within four weeks after submittal of an application, Metropolitan will contact applicants if additional information is needed. Metropolitan will meet with applicants to ensure a complete understanding of the proposed project's objectives and benefits. After completion of project review and assessment,

agreement terms negotiations, and environmental documentation, the proposed project would be forwarded to Metropolitan's Board of Directors for funding consideration.

Metropolitan, at its sole discretion, may reject any and all applications and revise the terms of the LRP at any time.

Performance Provisions

Performance provisions will be included in all agreements to encourage timely and responsive project development and production. These provisions reduce or withdraw Metropolitan's financial commitment to projects that do not meet development and production milestones outlined in the following table.

Milestone	Timeline (full fiscal year)	Consequence if target is not achieved
Start construction	2 years after agreement execution	Terminate agreement*
Start operation	5 years after agreement execution	Terminate agreement*
50 percent of contract yield	4-7 years after agreement execution	Reduce ultimate yield by shortfall to meet target using the highest annual yield in the 4-year timeline period
75 percent of contract yield**	8-11 years after agreement execution	Same as above
75 percent of contract yield**	12-15 years and every four years thereafter	Same as above

* Applicants may appeal termination to Metropolitan's Board of Directors.

** Ultimate yield or revised ultimate yield specified in the incentive contract due to project's performance in previous years (if applicable)

Application Options

A written application outlined in the following pages must be submitted to Metropolitan to start the process. Metropolitan will accept applications/reports developed by the project sponsor for other purposes (e.g., applications for state funding programs, US Bureau of Reclamation feasibility report submittals, etc.) as long as they provide needed information. All applications must include an executive summary that identifies the location of the needed information. Failure to provide an executive summary may extend the review process. After an initial review, Metropolitan will meet with each applicant to ensure an accurate understanding of project features and LRP terms.

Local Resources Program
Application Guidelines

Applicants are requested to provide an application package with the following information, which will be used to review project eligibility for LRP funding. Each project application is unique and therefore may require more information.

1) **Project Overview**
   - Location
   - Source of supply and yield
   - Participating agencies and contractual commitments
   - Complete Attachment A

2) **Project Features**
   - Treatment process and quality objectives
   - Storage features
   - List and map distinguishing existing from proposed facilities, land acquisition, etc.
   - Interties to existing LRP agreements
   - Interties and points of connection to other non-project facilities
   - Methodology to measure project yield, e.g. metering, basin adjudication or watermaster rules if applicable

   Additional information for groundwater projects:
   - Basin hydrology and setting
   - Existing groundwater production and increase as a result of project
   - Imported water replenishment requirements
   - Previously abandoned production and/or replenishment
   - Basin adjudication or operating rules
   - Ability to sustain project production during 3-year period without receiving Metropolitan's replenishment
   - Compliance with sound basin management

3) **Project Cost**
   - Capital
   - Operation and Maintenance
   - Labor
   - Complete Attachment B

4) **Benefits**
   - Regional and local water supply reliability benefits
   - Peaking and seasonal variability
   - Local water supply benefits
   - Other benefits (environmental, water quality, energy, wastewater, avoided facilities and permits, etc.)

5) **Environmental Documentation and Permitting**
   - California Environmental Quality Act
   - Regulatory approvals and permits secured
   - Schedule for unsecured approvals and permits
   - Water Reclamation Requirements established by Regional Water Quality Control Board
   - Department of Health Services drinking water requirements

6) **User Identification**

Recycled Water Projects:

Existing recycled water user names, demand and type of use
Proposed user names, demand projections and type of usage including groundwater recharge
Location map of existing and proposed users
Deliveries outside of service area or non-project users
Mandatory use ordinances
Commitment letters
Growth expectations

Groundwater Projects:

Describe how implementation of the project will increase historical groundwater production
Describe how and where project water is used

7) **Implementation Schedule and Financing**

Governing board approvals
Status of design
Construction and operation timelines and milestones
Yield development (amount by year), type of use, and completion date for each phase
Implementation obstacles/challenges
Land acquisition
Financing sources and terms
Grants and third-party payments

ATTACHMENT A
LOCAL PROJECTS PROGRAM
PROJECT FACT SHEET

1.	**Project Name:**	
2.	**Project Location (City, County):**	
3.	**Project Owner (Applicant) Contact Information:**	
4.	**Metropolitan Member Agency:**	
5.	**Source of Project Water:**	
6.	**Type of Uses:**	
7.	**Estimated First Year of Operation:**	
8.	**Ultimate Annual Project Yield (AFY):**	

9. Other agencies / Entities participating in the project:

Agency / Entity	Role
a. _____	a. _____
b. _____	b. _____
c.	c.

10. Status of CEQA Documentation:

☐ Exempt Declaration ☐ Negative

☐ Mitigated Negative Declaration ☐ EIR/S

Status:

ATTACHMENT B
PROJECT COST AND YIELD INFORMATION

Total Project Capital Cost:	

Capital Funding Measures			
Source of Funding	Amount ($)	Interest Rate (%)	Term (years)

Assumed annual inflation rate for O&M cost projections: ____%

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
No.	Fiscal Year End	Yield (AF)	Schedule of Capital Expenditures ($)	Amortized Capital Payments ($)	Cost of Acquiring Water ($)	O&M Cost ($)	Total Project Cost ($)
1							
2							
3							
4							
5							
24							
25							

(1) July 1 to June 30
(2) Projected annual production in acre-feet, excluding existing use
(3) Capital expenditure in each year, identify funding source from table above
(4) Total annual capital debt service
(5) Applicable only if the project sponsor will purchase recycled water from another agency to operate the projects, groundwater basin pumping tax, etc.
(6) Projected annual O&M cost, excludes item 5
(7) Sum of (4) + (5) + (6)

4. Statutory and Regulatory Factors

The California Water Code contains numerous provisions relative to the use of reclaimed (recycled) water, and the conservation of water, since water is classed as a public resource. Sections and excerpts from the Water Code that are applicable to the use of recycled water and the conservation of potable water supplies within the City of Lakewood are as follows:

1. The Water Recycling Act of 1991 as contained in Water Code Sections 13575 through 13583.
2. Water Code Section 10608 contains the following language:
   (a) Water is a public resource that the California Constitution protects against waste and unreasonable use.
   (g) The Governor has called for a 20 percent per capita reduction in urban water use statewide by 2020.
3. Water Code Section 10608.4. contains the following language:
   (a) Require all water suppliers to increase the efficiency of use of this essential resource.
   (b) Establish a framework to meet the state targets for urban water conservation identified in this part and called for by the Governor.
4. Water Code Section 10608.16 contains the following language:
   (a) The state shall achieve a 20-percent reduction in urban per capita water use in California on or before December 31, 2020.
   (b) The state shall make incremental progress towards the state target specified in subdivision (a) by reducing urban per capita water use by at least 10 percent on or before December 31, 2015.
5. Water Code Section 13551 states the following language:
   A person or public agency, including a state agency, city, county, city and county, district, or any other political subdivision of the state, shall not use water from any source of quality suitable for potable domestic use for non-potable uses, including cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses if suitable recycled water is available as provided in Section 13550; however, any use of recycled water in lieu of water suitable for potable domestic use shall, to the extent of the recycled water so used, be deemed to constitute a reasonable beneficial use of that water and the use of recycled water shall not cause any loss or diminution of any existing water right.

The Lakewood Municipal Code (LMC) also contains many provisions relative to the use of reclaimed (recycled) water, and the conservation of water, especially relative to use in landscaped areas within the City. Provisions of the LMC that pertain to use of reclaimed water are found in Section 5600, and provisions that pertain to water conservation in landscaping are found in Section 8600.

5. Irrigation Technology Improvements

In the area of technological and irrigation system efficiency, both equipment and methods have advanced due to water allocation restrictions set forth by state, regional and local water purveyors. Because of these water restrictions, the landscape industry responded by developing water-wise irrigation components which effectively reduce the amount of water waste in irrigated landscape. Advancements in irrigation technology include weather-based "smart" irrigation controllers, rain detection and shut-off devices, soil moisture monitors, low-flow drip line distribution, automatic high flow shut-off valves, micro sprays and precise flow adjustment in the sprinkler riser.

Essentially, these advancements provide basic efficiencies such as: placing water directly to the root zone with minimal effort, eliminate overspray, irrigate only when soil moisture falls below acceptable levels for proper plant growth, shut down irrigation systems when natural precipitation occurs, and flow disablers when there is a pipe breakage in the system. Such evolving improvements offer further future opportunities for effective water conservation and irrigation water usage.

6. Issues and Requirements pertinent to Irrigation Application

Based on our field inspection, the following tasks are typical topics that need to be properly addressed when converting landscape irrigation from potable water use to recycled water use. The Lakewood City Code also contains provisions in Section 5600 relative to use of recycled water, and in Section 8600 relative to water conservation in landscape irrigation uses. Additionally, the range of cost associated with converting existing irrigation site facilities is between $0.75 and $1.25 per square-foot of irrigated area, depending upon the density and condition of the existing system.

(A) Current Issues common to the use of Recycled Water in landscape irrigation that must be addressed prior to conversion from Potable Water use.

- Cross Contamination and Clearances – The required distances between water lines (both horizontally and vertically) will need field verification to ensure that safe distances between recycled and potable water lines exist. Additionally, existing underground utilities, other than water lines, could conflict and require additional effort to relocate in order to meet governing agency clearance requirements.

- Public Facilities – Newly designed irrigation systems as well as existing irrigation systems must be evaluated to ensure overspray does not occur on any public site amenity such as a picnic table, bench, playground equipment or other objects where the public has close contact. Further, overspray onto public facilities should be non-existent due to the damaging effects recycled water chemistry can have on said facilities.

- Plant Material – In some incidents, trees, shrubs and groundcover species commonly specified/installed in this geographic region experience negative affects when recycled

water is used for landscape irrigation. Some plantings cannot tolerate recycled water with its higher levels of chlorine and salts commonly resulting from water treatment that produces recycled water. Inspection and evaluation of current and proposed sites receiving irrigation with recycled water should be performed to assure proper selection of plant materials suitable for irrigation with the quality of recycled water.

- Mixed Use Point of Connections – Some sites, specifically schools/institutional facilities have one metered connection point that serves the building facilities as well as the landscape irrigation areas with potable water. For this reason, significant modifications to the aforementioned points of connection will be necessary to provide separated (clearance) between the remaining potable water service and the recycled water service for the irrigated areas.

(B) Irrigation System Components

- Point of Connection – The existing potable water meter for landscape irrigation use will need to be replaced with a reclaimed water meter. Additionally, each new reclaimed water meter shall be accompanied with a pressure regulator and basket strainer. The basket strainer is required for screening foreign matter and solids commonly found in post filtration recycled water processing. Note: A backflow prevention device is not necessary unless required by the water purveyor.

- Remote Control Valves – Existing irrigation control valves will need to be replaced with scrubber type valves which are engineered to operate with recycled water. The operating components within the scrubber type valves are resistant to foreign matter and solids that otherwise would degrade components in the existing potable water valves.

- Irrigation Pipe - Mainline and Lateral – Existing irrigation lines can remain as is. However, all new systems installed shall utilize the appropriate purple colored pipe (for reclaimed water use) throughout the system.

(C) Visual Notification of Recycled Water Use

- Warning Signage – Each specific irrigated site will require warning signs alerting the public of recycled water use on the site. The location of signs is typically at major pedestrian entry points; and along roadways to alert the public that recycled water is being used to irrigate the respective areas.

- Remote Control Valve Box Covers – Existing remote control, shut off and quick coupler valve box covers must be replaced with "purple" colored covers indicating recycled water in use. Additionally, all remote control, shut-off and quick coupler valves must be tagged indicating recycled water in use.

- Irrigation Heads – All irrigation sprinkler heads must have purple colored caps attached to them to indicate recycled water is in use.

- Exposed Irrigation Equipment – Any irrigation equipment that is in direct view of the public must be colored (painted) "purple" to indicate recycled water in use.