# *City of Sierra Madre*

*232 W. Sierra Madre Boulevard, Sierra Madre, CA 91024*
*phone 626.355.7135 fax 626.355.2251*
*www.cityofsierramadre.com*


**DATE:** March 6, 2013

**TO:** Water Sub-committee

**FROM:** Mayor Josh Moran
Councilmember John Cappocia

**SUBJECT:** March 9th Water Sub-committee Meeting

---

Thank you for your interest in participating in our Water Sub-Committee study group!

The first study session on Saturday, March 9, 2013 at 10:00 am in the Sierra Madre Room at the Community Recreation Center, 611 E. Sierra Madre, will be a discussion of our water rates, and the upcoming water rate study that the City Council will be commissioning. Attached, please find the Report presented to the City Council on February 12, 2013. We are also including this year's State of the Infrastructure report for your perusal; which has a large section devoted to water, as well as streets sewers and public facilities.

For this meeting, we will focus on the following question:

How do we structure water rates so that we:

- Keep our water utility financially viable,
- Promote conservation so that we minimize or delay our need for an alternate water supply,
- Give a higher priority to health and hygiene needs of our citizens vs. discretionary uses (long hot showers, lush landscaping),
- Be sensitive to those that are least able to pay, and
- Build reserves to replace and repair aging infrastructure.

Once again, thank you for your interest in our City's water supply. We look forward to the discussion on Saturday.

Attachments:

1. Agenda Report: September 25, 2012 Sierra Madre State of the Infrastructure
2. Agenda Report: February 12, 2013 Discussion of a Potential City Utility (Water, Sewer, Strom Drain) Rate Study

# City of Sierra Madre Agenda Report

TO: Honorable Mayor Moran and Members of the City Council

FROM: Elaine I. Aguilar, City Manager
Bruce Inman, Director of Public Works

DATE: September 25, 2012

**SUBJECT: SIERRA MADRE STATE OF THE INFRASTRUCTURE**

---

**SUMMARY**
The City Council has requested a report from staff on the state of the City's infrastructure. This report identifies all of the current infrastructure deficiencies and the foreseeable infrastructure needs. The report includes and expands upon the listing of capital projects included in the FY 2011-2013 Budget document. Staff recommends that the City Council provide staff with direction regarding the setting of priorities for dealing with the City's infrastructure needs.

**ANALYSIS**
The American Society of Civil Engineers (ASCE) has recently published its California Infrastructure Report Card: A Citizen's Guide 2012 (The Guide). The following infrastructure system types, of which Sierra Madre operates its own systems, were rated by the Guide as follows:

| | |
|---|---|
| Wastewater (Sewer) C+ | Transportation (Streets) C- |
| Urban Runoff (NPDES) D+ | Water C |

Although the Guide made no findings specific to Sierra Madre, staff will show in this report that although the costs to improve the City's infrastructure are staggering, the City compares reasonably well in some areas with other agencies statewide. In short, Sierra Madre is not alone in its infrastructure needs.

Much of Sierra Madre's infrastructure is old, and regular infrastructure maintenance has often been deferred due to a lack of adequate funding. The situation that Sierra Madre finds itself in is not new; infrastructure maintenance funding shortages are chronic in Sierra Madre as they are elsewhere in the state.

**Sewer System**

The City owns and operates a sewer system comprised of 31.7 miles of 8 inch diameter pipeline and 745 manholes. In addition to the City-owned system, the City is also home to 4 miles of County Sanitation District trunk sewers in East Orange Grove, Sierra Madre Boulevard and Baldwin Avenue.

The Majority of the City's sewer system was constructed either as tract improvements with new development, or under assessment district processes. There are multiple neighborhoods in Sierra Madre in which sewer was not constructed when the homes were built, and which have opted-out of participation in the assessment district process. These neighborhoods are not served by public sewer:

*Mount Wilson Trail (Private Section) from trailhead to northeasterly end. (9 homes)*
*Auburn Avenue Extension from 746 Auburn Avenue to northeasterly end. (5 homes)*
*Auburn Avenue (Private Section) (5 homes)*
*Sunrise Hill (Private Street) (4 Homes)*
*East Alegria from Baldwin Avenue to 550 feet east of Baldwin Avenue. (6 homes)*

In September 2009, the City Council approved a Sewer Master Plan in the form of the 2009 Sewer Management Plan (SMP). Preparation of the SMP included a video inspection of the entire sewer system, flow measurements to determine sewer main capacity, and recommendations for specific sections of sewer in need of repair. The SMP also provided the recommendation for adoption of new sewer and FOG Ordinances as required by the state.

Public Works staff utilizes two major pieces of equipment in sewer maintenance. One is a sewer jetter truck, which utilizes a hose and high pressure (2600 psi or more) jet of water to cut root intrusions and dislodge partial/complete blockages in sewer mains. The second major piece of equipment utilized for sewer maintenance is our state of the art combination truck (aka Vactor). This is an all-CNG powered vehicle, the first of its kind from the manufacturer. It operates as a jetter and as a vacuum truck (hence "combination") and can be used for collecting debris from the system, collecting sewage spills, cleaning storm drain catch basins, hydraulic excavations, and other tasks. It is equipped with limited video equipment which allows staff to inspect known trouble areas to ensure they are working properly. Using the two sewer trucks, the entire sewer system is cleaned at least annually.

Table A below identifies the list of sewer hot spots within the overall system. These hot spots are cleaned and/or video-inspected on a greater frequency than the overall system. Field staff maintains a database on a laptop carried in the field for scheduling and recording maintenance activities. Table B provides a list of 3 improvement projects designed to alleviate the structural hotspots in the sewer system. Those 3 projects are listed in the 2011-2013 budget but have not yet been initiated. Project costs are currently estimated at a total of $683,130.

**Table A**

| HOT SPOTS | | | | |
|---|---|---|---|---|
| **(Increased Maintenance Frequency)** | | | | |
| Location / Street | From | To | Upstream of Manhole # | Cause |
| Santa Anita Dr. | Elkins | Via Granate | | Roots |
| Stonehouse | Grandview | Deadend | | Roots |
| Location / Street | From | To | Upstream of Manhole # | Cause |
| Oakwood Ln. | Grandview | Santa Anita | | Roots |
| Sycamore Pl. | Grandview | Los Rocas | | Roots |
| Canon Dr. | Theresa | Sturtevant | | Roots |
| Woodland Dr. | Sturtevant | Alta Vista Dr. | | Roots |
| Brookside Dr. | Woodland | Sunnyside Ln. | | Roots |
| Madre Ln. | Old Ranch Rd. | Deadend | | Roots |
| Mountain Tr. | Orange Grove | Lowell | | |
| East Highland Ave. | Mountain Tr. | Deadend | | Roots |
| West Highland Ave. | Baldwin | Lima | | Roots |
| West Highland Ave. | Lima | Michillinda | | Roots |
| Olive Tree Ln. | Grandview Ave. | 830 Ft North | 199 | Roots (3) |
| Windsor Ave. | Sierra Madre Blvd. | Montecito Ct. | C7 | Grease |
| Montecito Ct. | Windsor Ave. | Deadend | 115 | Grease |
| Manzanita Ave. | Hermosa | Michillinda | | Roots |
| Mariposa Ave. | Lima St. | Ross Pl. | 275 | Roots (2) |
| Mariposa Ave. | Hermosa Ave. | Lima St. | 280 | Roots (1) |
| Hermosa Ave. | Esperanza Ave. | Mariposa Ave. | 1 | Roots (5) |
| Suffolk Ave. | Sierra Pl. | Baldwin Ave. | 355 | Roots (1) |
| Sierra Pl. | Lowell Ave. | Suffolk Ave. | 350 | Roots (4) |
| Lowell Ave. | Mountain Trail Ave. | Sierra Pl. | 351 | Roots (4) |
| San Gabriel Ct. | Holdman Ave. | Mountain Trail Ave. | 284 | Roots (1) |
| Highland Ave. | Coburn Ave. | Canon Ave. | 147 | Roots (1) |
| Toyon Rd. | Grandview Ave. | Cul-de-sac | 200 | Roots (9) |
| Oak Crest Dr. | Carter Ave. | Cul-de-sac | 298 | Roots (11) |
| Grandview Ave. | at Acacia St. | | 315 | Roots (1) |
| Foothill Ave | Acacia St. | Camillo St. | 320 | Roots (8) |
| Camillo St. | Foothill Ave. | Lotus Ln | 335 | Roots (13) |
| Camillo St. | Lotus Ln. | Dead end | 341 | Roots (5) |
| Acacia St. | Foothill Ave. | Valle Vista Dr. | 321 | Roots (4) |
| Valle Vista Dr. | Acacia St. | Acacia St. | 322 | Roots (8) |
| Lotus Ln. | Camillo St. | Dead end | 34?A | Roots (1) |
| Grandview Ave. | Stonehouse Rd. | Lilano Pl. | 18 | Roots (9) |
| Lilano Pl. | Grandview Ave. | Cul-de-sac | 16 | Roots (1) |
| Santa Anita Ave. | Via Granate | Arno Dr. | 304 | Roots (10) |
| Arno Dr. | Sanata Anita Ave. | Kaia Ln. | 307 | Roots (11) |
| **(Structural defect)** | | | | |
| Location / Street | From | To | Upstream of Manhole # | Cause |

| HOT SPOTS | | | | |
|---|---|---|---|---|
| **(Increased Maintenance Frequency)** | | | | |
| Michillinda Ave. | Orange Grove Ave. | Manzanita Ave. | ? | Broken Pipe |
| Orange Grove Ave. | Michillinda Ave. | Sunnyside Ave. | 530 | Broken Pipe |
| Orange Grove Ave. | Park Ave. | Lima St. | 537 | |
| Orange Grove Ave. | Lima St. | Hermosa Ave. | 538 | |
| Lima St. | Orange Grove Ave. | Manzanita Ave. | 537 | |
| **(Structural Defect)** | | | | |
| Location / Street | From | To | Upstream of Manhole # | Cause |
| Orange Grove Ave. | Old Oak Ln. | Baldwin Ave. | C21 | |
| Mariposa Ave. | Hermosa Ave. | Lima St. | 278 | Deformed |
| San Gabriel Ct. | Mountain Trail Ave. | Sierra Pl. | 545 | |
| Mountain Trail Ave. | Bonita Ave. | Lowell Ave. | 9 | Deformed |
| Canon Ave. | Orange Grove Ave. | Cul-de-sac | 15 | Broken |
| Auburn Ave. | Sierra Madre Blvd. | Montecito Ct. | C 6 | |
| Canon Ave. | At Montecito Ave. | | 165 | |
| Laurel Ave. | Baldwin Ave. | Mountain Trail Ave. | 427 | |
| Grand View Ave. | Lima St. | Adams St. | 204 | |
| Baldwin Ave. | at Grand View Ave | | ?4 | |
| Grand View Ave | Baldwin Ave | Mountain Trail Ave. | 19 | |
| Grand View Ave. | Sycamore Pl. | Camillo St. | 506 | |
| Grand View Ave. | Acacia St. | Foothill Ave. | 314 | |
| Easement | Grand View Ave | to the south | | |
| Liliano Pl. | Grand View Ave | Cul-de-sac | ?6 | |
| Liliano Dr. | Stone House Rd. | Cul-de-sac | 24 | |
| Kaia Ln. | Arno Dr. | Cul-de-sac | 309 | |
| Arno Dr. | Kaia Ln. | Santa Anita Ave. | 307 | Broken |
| Arno Dr. | Santa Anita Ave. | Cul-de-sac | 308 | |
| Santa Anita Ave. | Via Granate | Arno Dr. | 304 | |
| Santa Anita Ave. | at Elkins Ave. | | 34 | Broken |
| Crestvale Dr. | Fairview Ave. | Cul-de-sac | 249 | |
| Sierra Meadow Dr. | Carter Ave. | Wistaria Way | 388 | |
| Acacia St. | Grand View Ave. | Foothill Ave. | 317 | |
| Sturtevant Dr. | E/O Pleasant Hill Ln. | | 404 | |
| Easement | N/O Sturtevant Dr. | | 404 | |
| Churchill Rd. | Old Ranch Rd. | Churchill Glen | 415 | |
| Woodland Dr. | Sturtevant Dr. | Brookside Ln. | 9431 / 9432 | |
| Brookside Ln. | Sunnyslope Ln. | Woodland Dr. | 9479 | |
| Sunnyslope Ln. | Brookside Ln. | Cul-de-sac | 9479 | |
| Woodland Dr. | Brookside Ln. | Holly Trail | 9435 | |
| Woodland Dr. | Holly Trail | Alta Vista Dr. | 9437 | |
| Woodland Dr. | Yucca Tr. | Brookside Ln. | 9442 | |
| Location / Street | From | To | Upstream of Manhole # | Cause |

| HOT SPOTS | | | | |
|---|---|---|---|---|
| (Increased Maintenance Frequency) | | | | |
| Yucca Tr. | Woodland Dr. | End | 9441 | |
| Canon Dr. | Theresa Ln. | Las Rocas Dr. | 9410 | |
| Sturtevant Dr. | Audubon Wy. | Oakdale Dr. | 9501 | |
| Oakdale Dr. | Vista Circle Dr.. | Alta Vista Dr. | 9516 | |
| Alta Vista Dr. | Sturtevant Dr. | Oakdale Dr. | 9503 | |
| Michillinda Ave. | Orange Grove Ave. | Manzanita Ave. | ? | Broken Pipe |
| Orange Grove Ave. | Michillinda Ave. | Sunnyside Ave. | 530 | Broken Pipe |
| Orange Grove Ave. | Park Ave. | Lima St. | 537 | |
| Orange Grove Ave. | Lima St. | Hermosa Ave. | 538 | |
| Lima St. | Orange Grove Ave. | Manzanita Ave. | 537 | |
| Orange Grove | Old Oak Ln. | Baldwin Ave. | C21 | |
| Mariposa Ave. | Hermosa Ave. | Lima St. | 278 | Deformed |
| San Gabriel Ct. | Mountain Trail Ave. | Sierra Pl. | 545 | |
| Mountain Trail Ave. | Bonita Ave. | Lowell Ave. | 9 | Deformed |
| Canon Ave. | Orange Grove Ave. | Cul-de-sac | 15 | Broken |
| Auburn Ave. | Sierra Madre Blvd. | Montecito Ct. | C 6 | |
| Canon Ave. | At Montecito Ave. | | 165 | |
| Laurel Ave. | Baldwin Ave. | Mountain Trail Ave. | 427 | |
| Grand View Ave. | Lima St. | Adams St. | 204 | |
| Baldwin Ave. | at Grand View Ave | | ?4 | |
| Grand View Ave | Baldwin Ave | Mountain Trail Ave. | 19 | |
| Grand View Ave. | Sycamore Pl. | Camillo St. | 506 | |
| Grand View Ave. | Acacia St. | Foothill Ave. | 314 | |
| Easement | Grand View Ave | to the south | | |
| Liliano Pl. | Grand View Ave | Cul-de-sac | ?6 | |
| Liliano Dr. | Stone House Rd. | Cul-de-sac | 24 | |
| Kaia Ln. | Arno Dr. | Cul-de-sac | 309 | |
| Arno Dr. | Kaia Ln. | Santa Anita Ave. | 307 | Broken |
| Arno Dr. | Santa Anita Ave. | Cul-de-sac | 308 | |
| Santa Anita Ave. | Via Granate | Arno Dr. | 304 | |
| Santa Anita Ave. | at Elkins Ave. | | 34 | Broken |
| Crestvale Dr. | Fairview Ave. | Cul-de-sac | 249 | |
| Sierra Meadow Dr. | Carter Ave. | Wistaria Way | 388 | |
| Acacia St. | Grand View Ave. | Foothill Ave. | 317 | |
| Sturtevant Dr. | E/O Pleasant Hill Ln. | | 404 | |
| Easement | N/O Sturtevant Dr. | | 404 | |
| Churchhill Rd. | Old Ranch Rd. | Churchill Glen | 415 | |
| Woodland Dr. | Sturtevant Dr. | Brookside Ln. | 9431 / 9432 | |
| Brookside Ln. | sunnyslope Ln. | Woodland Dr. | 9479 | |
| Sunnyslope Ln. | Brookside Ln. | Cul-de-sac | 9479 | |
| Woodland Dr. | Brookside Ln. | Holly Trail | 9435 | |
| Woodland Dr. | Holly Trail | Alta Vista Dr. | 9437 | |
| Woodland Dr. | Yucca Tr. | Brookside Ln. | 9442 | |

| HOT SPOTS | | | | |
|---|---|---|---|---|
| (Increased Maintenance Frequency) | | | | |
| Yucca Tr. | Woodland Dr. | End | 9441 | |
| Canon Dr. | Theresa Ln. | Las Rocas Dr. | 9410 | |
| Sturtevant Dr. | Audubon Wy. | Oakdale Dr. | 9501 | |
| Oakdale Dr. | Vista Circle Dr.. | Alta Vista Dr. | 9516 | |
| Alta Vista Dr. | Sturtevant Dr. | Oakdale Dr. | 9503 | |

## Recommended Sewer System Improvements

Presented in Table B is a summary of the measures recommended to correct the structural defects identified by video inspection. Criteria for recommending and prioritizing relief facilities are as follows:

1. Sewers with critical structural defects (Category 5) are recommended for correction measures as soon as possible. Sewers meeting these criteria are ranked highest priority.

2. Sewers with structural defects of category 4 are recommended for correction measures as funding is scheduled over the next 5-10 years.

3. Sewers with structural defects of category 3 are recommended for correction measures as change in conditions warrant. Sewers meeting these criteria should be monitored for changing conditions in future maintenance cycles.

Please note that recommended sewer system improvements as presented here are general in nature and should not be considered as absolutes for final design. Rather, they should be considered more as a guide.

**Table B**

| Priority Ranking & Summary of Structural Defect Correction Measures | | | | | | |
|---|---|---|---|---|---|---|
| **Priority Ranking** | **Defect Category** | **Tributary Area (Ac)** | **Depth of Pipe (Ft)** | **Pipe ID** | **Description of Measures To Correction Structural Defects** | **Cost** |
| 1 | 5 | 12 | 4-5 | 10000096 | Line 119 feet of 8-inch pipe | $6,796 |
| 2 | 5 | 24 | 17-24 | 10000369 | Line 267 feet of 8-inch pipe | $15,270 |
| 3 | 5 | 13 | 6 | 10000305 | Line 190 feet of 8-inch pipe | $10,923 |
| 4 | 5 | 27 | 6-10 | 10000817 | Line 323 feet of 8-inch pipe | $17,582 |
| 5 | 5 | 13 | 4 | 10000254 | Line 118 feet of 8-inch pipe | $6,731 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 | 5 | 13 | 3 | 10000264 | Line 135 feet of 8-inch pipe | $7,738 |
| 7 | 5 | 24 | 5-13 | 10000362 | Point repair lateral connection & line 187 feet of 8-inch pipe | $19,270 |
| 8 | 5 | 13 | 4 | 10000203 | Point repair 3 feet of existing 8-inch line. | $3,431 |
| 9 | 5 | 12 | 6-8 | 10000041 | Line 293 feet of 8-inch pipe | $16,757 |
| **Priority Ranking** | **Defect Category** | **Tributary Area (Ac)** | **Depth of Pipe (Ft)** | **Pipe ID** | **Description of Measures To Correction Structural Defects** | **Cost** |
| 10 | 5 | 13 | 4 | 10000291 | Line 170 feet of 8-inch pipe | $9,722 |
| 11 | 5 | 13 | 3-4 | 10000221 | Line 297 feet of 8-inch pipe | $16,986 |
| 12 | 5 | 16 | 8-12 | 10000625 | Line 367 feet of 8-inch pipe | $20,966 |
| 13 | 5 | 6 | 9 | 10000108 | Point repair 5 feet of existing 8-inch line | $7,149 |
| 14 | 5 | 16 | 16 | 10000525 | Line 272 feet of 8-inch pipe | $15,527 |
| 15 | 5 | 13 | 4 | 10000392 | Line 127 feet of 8-inch pipe | $7,263 |
| 16 | 5 | 16 | 9 | 10000456 | Point repair 3 feet of existing 8-inch line. | $4,289 |
| 17 | 5 | 13 | 9 | MH 9444 | Replace manhole. | $14,298 |
| 18 | 5 | 16 | 9 | 10000640 | Point repair 10 feet of existing 8-inch line. | $14,298 |
| 19 | 5 | 13 | 3-4 | 10000266 | Line 121 feet of 8-inch pipe | $6,920 |
| 20 | 5 | 24 | 7 | 10000216 | Line 130 feet of 8-inch pipe | $7,428 |
| 21 | 5 | 20 | 13 | 10000589 | Line 264 feet of 8-inch pipe | $15,104 |
| 22 | 5 | 12 | 4-7 | 10000036 | Line 175 feet of 8-inch pipe | $10,016 |
| 23 | 5 | 6 | 8 | 10000186 | Point repair 6 feet of existing 8-inch line. | $8,579 |
| 24 | 5 | 13 | 5 | 10000269 | Point repair 7 feet of existing 8-inch line. | $8,007 |
| 25 | 5 | 14 | 8-11 | 10000739 | Point repair 10 feet of existing 8-inch line. | $17,157 |
| | | | | | **Priority 5 subtotal** | **$289,467** |
| 26 | 4 | 10 | 17-18 | 10000079 | Line 332 feet of 8-inch pipe | $18,970 |
| 27 | 4 | 25 | 10-14 | 10000811 | Line 327 feet of 8-inch pipe | $18,644 |
| 28 | 4 | 13 | 4-6 | 10000282 | Line 269 feet of 8-inch pipe | $15,411 |
| 29 | 4 | 26 | UNK | 10000767 | Line 184 feet of 8-inch pipe | $10,502 |
| 30 | 4 | 25 | 7-8 | 10000806 | Line 158 feet of 8-inch pipe | $9,035 |
| 31 | 4 | 13 | 4 | 10000392 | Line 127 feet of 8-inch pipe | $7,259 |
| 32 | 4 | 13 | 5-6 | 10000226 | Line 209 feet of 8-inch pipe | $11,960 |
| 33 | 4 | 12 | 3-6 | 10000043 | Line 310 feet of 8-inch pipe | $14,298 |
| | | | | | **Priority 4 subtotal** | **$106,129** |
| 34 | 3 | 14 | 6-8 | 10000688 | Line 348 feet of 8-inch pipe | $19,902 |
| 35 | 3 | 13 | 5 | 10000413 | Line 49 feet of 8-inch pipe | $2,802 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 36 | 3 | 13 | 2-5 | 10000227 | Line 108 feet of 8-inch pipe | $6,200 |
| 37 | 3 | 25 | 8 | 10000809 | Line 202 feet of 8-inch pipe | $11,535 |
| 38 | 3 | 27 | 8 | 10000805 | Line 75 feet of 8-inch pipe | $4,264 |
| 39 | 3 | 12 | 7 | 10000048 | Line 297 feet of 8-inch pipe | $16,971 |
| 40 | 3 | 12 | UNK | 10000199 | Line 65 feet of 8-inch pipe | $3,706 |
| 41 | 3 | 24 | VAR | 10000425 | Line 88 feet of 8-inch pipe | $5,041 |
| 42 | 3 | 15 | 8 | 10000681 | Point repair 3.5 feet of existing | $5,004 |
| 43 | 3 | 12 | 4 | 10000035 | Line 62 feet of 8-inch pipe | $3,546 |
| 44 | 3 | 13 | 5 | 10000283 | Point repair 3.5 feet of existing 8-inch line. | $4,003 |
| | | | | | **Priority 3 subtotal** | **$82,974** |
| | | | | | **TOTAL (1997 Costs)** | **$478,570** |

## Recommended Sewer System Improvement Projects

Presented in Table C is a brief summary of the recommended sewer system improvement projects to repair the structural defects. The first project is all of the category 5 structural defects. These repairs are recommended for immediate replacement as these pipes contain failures. The remaining projects are the category 4 and 3 structural defects and can be completed separately or together based on the funding available. It is recommended that these improvement projects be constructed as complete projects as the cost to perform the repairs individually will notably increase the cost.

**Table C**

| **Recommended Sewer System Improvement Projects** | | | | | |
|---|---|---|---|---|---|
| **Project No.** | **Priority Ranking from Table 1** | **Defect Category** | **Tributary Area** | **Description of Measures To Correction Structural Defects** | **Costs (1997)** |
| 1 | 1-25 | 5 | Varies see Table 1 | Point repair 52 feet of existing 8-inch pipe, and line 3,318 feet of existing 8-inch pipe, and replace a manhole. | $82,180<br>$192,989<br>$14,298 |
| 2 | 26-33 | 4 | Varies see Table 1 | Line 1,916 feet of existing 8-inch pipe. | $106,129 |
| 3 | 34-44 | 3 | Varies see Table 1 | Point repair 7 feet of existing 8-inch pipe, and line 1,294 feet of existing 8-inch pipe. | $9,700<br>$73,274 |
| | | | | | |
| | | | | **Total, all projects (1997 Costs)** | **$478,570** |

The Infrastructure Report Card rating of wastewater/sewer systems at C+ focuses primarily on wastewater treatment capacity and trends in regulatory requirements that effect wastewater treatment. Sierra Madre's sewer system does not provide treatment, thus we could rate our local sewer (collection only) system higher due to its relatively good condition and relative lack of regulatory requirements. However, since the City's wastewater is actually treated in one of the County Sanitation Districts' we are a part of that system and its C+ rating.

**Storm Drain System**

In Sierra Madre, rainwater runoff is collected in a system that is completely separate from the sewer system. This system is known as the storm drain system or alternately by regulatory agencies as the MS4 (Municipal Separate Stormdrain System.)

The City's storm drain system is comprised of a mix of county owned and city-owned infrastructure. Each agency is responsible for pipelines, manholes, curb-opening catch basins, open channels, and debris basins. Of the entire system, the County owns and maintains the great majority of the drainage system with funding from the Flood Control District assessment on local property tax bills.

There are four identified storm drain system deficiencies in Sierra Madre, as described below:

Lannan Debris Basin The Lannan Debris Basin is located adjacent to Santa Anita Canyon(Chantry) Road above Sierra Madre's Kaia Lane. The Basin is owned and operated by Los Angeles County Department of Public Works. The Basin was built by the Corps of Engineers with two outlets, a 24 inch corrugated metal pipe comprising the regular outlet and a spillway discharging directly into a County storm drain.

The 24 inch outlet drain is in need of replacement at an estimated cost of $704,000.

Floral Debris Basin The Floral Debris Basin is one of eight debris basins in the foothills above Sierra Madre. The basins' function is to protect downstream properties from post-fire debris and mud flows. The Floral Basin is the only such facility owned by the City. The debris basin is in need of expansion to increase its capacity at a cost of $3.1 to $5.4 million.

In addition to debris basin-related drainage issues, there are two public streets that drain downhill into cul-de-sacs, with no drainage outlet provisions. Thus, public streets are draining across private property without benefit of drainage easements or drainage improvements.

Theresa Lane drains away from its connection with Canon Drive, taking drainage from that street as well as its own runoff down to a break in the curb of the cul-de-sac. From there the water runs across multiple private properties before discharging onto East Grandview. Staff worked with the most-impacted homeowner for a period of time

helping them to grade their property to route the drainage away from their home, but before staff could develop a plan and build underground drainage improvements the property owner constructed landscaping improvements and dropped complaints about the drainage across their property. The estimated cost to correct this drainage system deficiency is at minimum $20,000. Accurate cost estimates for correcting this drainage issue are not possible due to constraints on the subject properties.

Monterey Lane drains away from its intersection with East Sierra Madre Boulevard. Drainage from Monterey Lane collects in a drywell adjacent to the cul-de-sac. When the drywell reaches its capacity, drainage is discharged from the cul-de-sac across private properties on Monterey Lane and on private street Olivera Lane. Stormwater then flows down Olivera Lane to East Orange Grove Avenue. Homes on Olivera Lane have experienced flooding damage during major storms.

The City attempted to resolve the Monterey Lane drainage problem in 1998, hiring a civil engineer to design a drainage system. However, one property owner on Olivera Lane refused to allow the surveyor access to the private street to do the design surveying. Without the base mapping that the survey would have provided, the project could not continue and was abandoned. The estimated cost to correct this drainage system deficiency is $70,000.

There are also deficiencies in the County's drainage system within Sierra Madre. L.A. County Flood Control District owns and operates Sierra Madre Dam and Sierra Madre Wash. These are listed herein for reference. The County has indicated that the dam has been identified by the State Department of Water Resources/Division of Safety of Dams as seismically deficient. Because of that deficiency, the dam is no longer operated as a water reservoir, but rather as a debris basin. Frequency of debris removal from behind the dam is increased due to the seismic limitations.

Following the Santa Anita Fire the County notified the City that Sierra Madre Dam does not have adequate capacity to contain the amount of debris that could be generated within its tributary area. The County does not have any current plans to address either of those issues. At one time in the nineties the County approached the City with a proposal to modify the dam. The City opted not to proceed with the dam modifications.

The Corps of Engineers and the County have also determined that the Sierra Madre Wash does not have adequate capacity and that during the "design event" the channel could over flow. In 1976 the City Council adopted Resolution 76-28 disapproving County implementation of channel improvements.

NPDES The new National Pollution Discharge Elimination System (NPDES) permit that will be issued in the fall of 2012 by the Los Angeles Regional Water Quality Control Board provides the County and cities with a great deal of regulation to comply with. The permit also allows for permit enforcement by the private sector, in the form of third-party civil lawsuits. The nature of the permit is such that as of the date of permit adoption by

the Regional Board, the City is immediately out of compliance with the permit and subject to enforcement action.

Compliance with the new permit will have impacts on the storm drain infrastructure. The permit will invariably increase the City's operational costs, which will in turn reduce funding available for capital costs. However, capital costs will also rise with this permit. For example, the Trash Total Maximum Daily Load (TMDL) has been included in the permit, and it includes not just anthropomorphic trash but leaf litter as well. The TMDL requires that the City of Sierra Madre discharge zero trash by September of 2016. Onne of the operational practices associated with the Trash TMDL is increased frequency street sweeping. Another aspect of the compliance with the Trash TMDL will be the requirement to place full-capture trash devices in every storm drain catch basin in Sierra Madre, at an estimated total cost of $ 160,000 over the next five fiscal years. This is just for the trash TMDL alone. There are 15 additional TMDL's included in this permit that Sierra Madre must comply with:

L.A. River Nitrogen Compounds and related effects TMDL.
L.A. River and Tributaries Metals TMDL
L.A. River Watershed bacteria TMDL
L.A. Area Lake TMDL's for Peck Road Lake Park
- Total Phosphorus
- Total Nitrogen
- Total PCB's in suspended sediment
- Total PCB's in water column
- Total Chlordane in suspended sediment
- Total Chlordane in water column
- Total DDT in suspended sediment
- Total DDT in water column
- Total Dieldrin in suspended sediment
- Total Dieldrin in water column
- Peck Road Park Lake Trash

Addressing TMDL's will require a mix of operational costs and capital expenditures, most as yet unidentified.

Staff would rate the City's Urban Runoff system with a grade of D+. While the Infrastructure Report Card says little about storm drain infrastructure itself, it says a great deal about the statewide impacts of ever-expanding stormwater quality regulations. To the degree that Sierra Madre is similar to all other agencies in its current inability to fund stormwater programs, staff would give the City the same rating that the Report Card gave the state as a whole.

**Water**

Along with the street resurfacing program, repairs and replacement of water system components has been an area of significant progress over the last 15 years. During that

time period multiple water mains have been replaced, three major reservoirs have been replaced, one reservoir rehabilitated, a booster pump station has been replaced, a water treatment facility has been constructed, a working interconnection with Arcadia's water system has been constructed, multiple wells have been reconditioned, and system redundancy has been improved. Even with all the progress that has been made however, there remains much to be done.

## Water Supply

The City draws its water supply from the Eastern, or Santa Anita Subarea of the Raymond Groundwater Basin (Basin). That source of supply is shared with the City of Arcadia. Water levels in the Basin have been decreasing for several years. In recent months, the water level at the city's four wells has dropped approximately 4 feet per month. This is a significant trend and one that must be reversed in the near future.

### Proposed Joint Projects

Recognizing the need for stabilizing the water supply in the Basin, the City has worked with LA County Public Works and the City of Arcadia for a number of years to develop a series of projects that would increase the capture of stormwater runoff and better utilize it for groundwater recharge. The federally-funded East Raymond Basin Water Resources Plan (WRP) of March 15, 2006 was a product of the joint effort of the three agencies. The WRP identified eight projects which would collectively enhance stormwater capture. These are listed in the FY 2011-13 Budget document as future projects:

1 Santa Anita Creek Diversion Structure and Headworks
2 Santa Anita Creek Spreading Grounds Rehabilitation
3 Santa Anita Dam Rehabilitation
4 Santa Anita Debris Dam Rehabilitation
5 Santa Anita Creek Spreading Grounds Booster Pump Station
6 Sierra Madre Spreading Grounds Rehabilitation
7 Santa Anita Creek Diversion Pipeline Inspection and Rehabilitation
8 Sierra Madre Creek Diversion Rehabilitation

On August 6, 2012, LA County Public Works submitted to the cities of Arcadia and Sierra Madre draft copies of a four-agency cooperative agreement under which projects 1-4 above would be funded and built at a total cost of $40 million. Under this proposed agreement Arcadia would pay $864,126 as its share of the total cost, the Raymond Basin Management Board (watermaster) would pay $234,936, the County would pay $18 million, Proposition 1E proceeds would fund $20 million, and the City of Sierra Madre would fund $900,938. The four projects planned under the proposed cooperative agreement are expected to result in the capture and recharge of 518 acre feet per year. LACDPW, as lead agency under the Prop 1E grant has an early November 2012 deadline to submit its final project outline to the State or risk the loss of the 1E funds that would have benefitted all 4 agencies. It is imperative for these projects to proceed that the City make a commitment to fund its share of the work by approving the cooperative agreement.

Spread water bypassing wells

Public Works has received a memorandum from Dr. Dennis Williams of GeoScience Support Services, Inc. dated July of 2007 in which it is stated that some of the water percolated into the East Raymond Basin at Sierra Madre bypasses the wells of both Sierra Madre and Arcadia and overflows into the Main San Gabriel Groundwater Basin. Public Works staff is currently researching the City's ability to capitalize on the overflow to obtain pumping rights in the Main Basin, something that the City does not currently have.

The most critical issue facing the city's water system is that of reliable water supply. While replacement of pipelines and other water transmission and delivery system appurtenances is vital, those improvements will do the City little good if there is no water to put into the system. Some of the potential projects that are designed to improve the city's groundwater recharge ability were listed earlier in this report and re-iterated below. However, those projects will be years in coming to completion. Staff has been working with the Raymond Basin watermaster and the City of Arcadia to develop short term means of reducing the production from the East Raymond Basin.

The City of Sierra Madre draws 85-90 % of its water from the Eastern Unit of the Raymond Basin (aka Santa Anita Subarea or East Raymond Basin, ERB). The ERB is shared between the Cities of Sierra Madre and Arcadia under the historic Raymond Basin Adjudication. Water levels in the ERB at the City's four wells have been declining for years, most noticeably since 1998. Presently, water levels are receding at a rate of four feet per month.

The four wells that supply Sierra Madre are drilled to bedrock. The submerged pumps cannot be extended any deeper. They are at a depth of 400-480 feet. With water levels now at 358 feet, if water levels continue to recede at the present rate, they will cease to function properly in twelve and a half months. The wells may begin to break suction, as those of nearby Sunnyslope Water Company did in 2007.

It is therefore critical that every effort be made to ensure an adequate water supply for Sierra Madre, to either stabilize and rebuild the ERB aquifer or to realize a dependable source of imported water for the City. In order to stabilize and rebuild the ERB it will be necessary to reduce pumping from the Basin, increase groundwater recharge in the Basin, or to do both, increasing the effectiveness of the effort. (A brief review of the ERB by the Watermaster indicates that if historical average local water replenishment activities can be resumed, it will require about 9,000 A/F of new water supply, or groundwater left in place, to restore about 50 feet to the Santa Anita Sub-basin water levels. In order to realize a dependable source of imported water, the City must improve its connectivity with the SGVMWD source of water.

Note: Per the 2010 Urban Water Management Plan, the average metered deliveries (period 2005-2010) for the Sierra Madre system are 2800 acre feet annually.

## Potential Sierra Madre Water Supply Solutions:

**Pump SGVMWD water from Main Basin via Arcadia:**

Under the current state of Sierra Madre's outside water supply, the City has no direct connection with our imported water supplier, San Gabriel Valley Municipal Water District (SGVMWD). Water is imported by SGVMWD via the State Water Project and spread in the Main San Gabriel Valley Basin (Main Basin) on behalf of its four member agencies, Azusa, Monterey Park, Alhambra and Sierra Madre. When Sierra Madre needs an outside source of water, it obtains that water by first purchasing it from SGVMWD. The City pays various administrative fees to the San Gabriel Valley Main Basin Watermaster, contacts the City of Arcadia to open the system interconnection at Sierra Vista Park, and pays the City of Arcadia for producing the water from its Main Basin wells and pumping the water to Sierra Madre.
The cost of this process per acre/foot (A/F) is:

| | |
|---|---|
| SGVMWD Water Purchase Cost: …… | $130.00 |
| Watermaster Fees: …… | $15.05 |
| Arcadia Production and Pumping Costs: …… | $178.02 |
| Total per A/F: …… | $323.07 |

This process has been utilized in the past and has worked well. However, the City of Arcadia has notified the City of Sierra Madre that during certain weather and climate conditions, it may not have the system capacity to guaranty Sierra Madre an adequate source of water. Arcadia has indicated that it will give first priority to serving its own residents. This is a matter of concern because the conditions under which Arcadia would most need the water are exactly the same as those for Sierra Madre; that is, our community's need for water would be the same as Arcadia's. This process adds a cost of about $0.74 per billing unit for Sierra Madre customers.

***It should be noted at the outset of this discussion that in December of 2007, the City purchased 4,000 acre-feet of water at highly reduced rates ($100/acre foot) from SGVMWD for placement into cyclic storage in the Main Basin on the City's behalf. That water remains in place, and may be utilized in fulfilling Sierra Madre water demands as outlined above or "in trade" with other agencies in the following alternatives. Since this water is already paid for, the initial 4,000 acre feet of water that Sierra Madre utilizes from this source would cost less than the normal amount; the City would incur only the Arcadia and Watermaster charges, totaling $193.07 per acre foot or $0.44 per billing unit.***

**Arcadia Water rights swap Alternate 1:**

Arcadia currently produces about 3,300 A/F annually from the ERB and about 11,400 A/F a year from the Main Basin. In this alternative, Arcadia would reduce/eliminate pumping from the ERB and equally increase pumping from the Main Basin. Sierra Madre would provide Arcadia with the funds/water rights to cover the additional "Replacement Water" required for increased Main Basin productions. Arcadia's reduced ERB production (up to about 3,300 A/F) would help the Santa Anita

Sub-basin water levels recover. It is estimated that it will require about 9,000 A/F to add 50 feet of water level in the Santa Anita Sub-basin. At 3,300 AFY this will require about three years. This also assumes historical levels of local water replenishment resume. Arcadia has indicated that its cost to operate under this scenario would be $122.84 per acre foot and that it would absorb those costs.

The cost of the replacement water is fully born by Sierra Madre. For the initial 4,000 acre feet of replacement water, Sierra Madre has already paid $100 per acre foot, or $400,000. Arcadia's cost would be $491,360. Once Sierra Madre's cyclic storage water is exhausted, the cost share reverses, with Sierra Madre paying $130 per acre-foot and Arcadia $122.84.

**Arcadia Water rights swap Alternate 2:**
Sierra Madre currently produces 1764 A/F a year from the ERB (and an average of 1,036 A/F of surface diversions). Sierra Madre would reduce/eliminate pumping from the Santa Anita Sub-basin and utilize Arcadia well(s) and pipelines to produce Main Basin water supply. This reduced ERB basin production would allow up to about 1764 A/F a year (or approximately 2,800 A/F with surface diversions) to stay in the ERB and "return flow" from the new Main Basin water supply would also help replenish the ERB. This would help the Basin water levels to recover. This alternative assumes historical local water replenishment activity resumes. The cost to Sierra Madre to undertake this option would be $540,596 annually for the first two years, then $904,596 annually thereafter. There is no cost to Arcadia under this alternative.

**Arcadia Water rights swap Alternate 3:**
Sierra Madre and Arcadia can cooperatively manage the ERB to help ensure the long-term reliable water supply. Since the "extractions" from the ERB are limited by the Raymond Basin adjudication, the ERB water supply management may include coordinated replenishment using both local and supplemental (Main Basin) water, and reduced/in-lieu pumping. This cooperative management of the Santa Anita Sub-basin may include the use of existing wells and distribution pipelines and the addition of new well(s), pipelines, interconnections, and other facilities. The existing spreading grounds would be used for replenishment.

For the cooperative ERB management, the Sierra Madre/SGVMWD cyclic storage water rights would be used to move Main Basin water supply to the ERB. The Main Basin water supply would be: (1) used directly by Sierra Madre; (2) used "in-lieu" by Arcadia; and/or (3) used to replenish the Santa Anita Sub- basin for both Sierra Madre and Arcadia. If Main Basin water supply is to be used for Santa Anita Sub-basin replenishment, then Sierra Madre and Arcadia may cooperatively participate in ERB replenishment activities.

**Arcadia Water rights swap Alternate 4:**
A fourth alternative would be for each of the cities to reduce their pumping from the ERB by 1,500 acre-feet. Under this scenario, Arcadia would reduce its ERB by 1,500

acre feet and in lieu of that produce for its own use 1500 acre feet of Sierra Madre's Main Basin cyclic storage water. Arcadia would also produce and pump 1,500 acre feet of the cyclic storage water to Sierra Madre, to replace our 1,500 acre foot reduction in ERB production.

This alternative would be onerous to Sierra Madre should Arcadia be unwilling to pay any amount for the replacement water. In that instance Arcadia would limit its responsibility only to production costs and it would be Sierra Madre's cost to pay for all of the replacement water. The costs shown do not include the use of the water Sierra Madre currently has in cyclic storage.

| | |
|---|---|
| Arcadia's cost 1,500 x $122.84 = | $184,260/year. |
| Sierra Madre's cost 3,000 x $130 = | $390,000 |
| 1,500 x 178.02 = | $289,605 |
| | $679,605/year |

**Alhambra Water Rights Swap:**
Fellow SGVMWD member The City of Alhambra owns pumping rights in the Pasadena Subarea of the Raymond Basin. Historically, Alhambra has not utilized those rights. Sierra Madre does not have pumping rights in the Pasadena Subarea, but does have storage rights. Sierra Madre may not extract water from the Pasadena Subarea without first having placed water there for storage, or alternatively, acquired pumping rights.

Under this alternative Sierra Madre would swap Alhambra's unused adjudicated pumping rights in the Pasadena subarea for an equal amount of water purchased by Sierra Madre from SGVMWD.

Sierra Madre overlies the Pasadena Subarea, between Lima Street and Michillinda Avenue, but due to the city's lack of pumping rights in the Subarea, does not currently have a well in that subarea. This alternative would require construction of well in Pasadena subarea within Sierra Madre. Potential sites would be at Grove Reservoir or at Goldberg Park. It would also require long-term participation from the City of Alhambra, in the form of an exchange agreement between the cities, as well as a long-term commitment from the City of Sierra Madre to utilize SGVMWD water on an annual basis in order to cover the sunk costs of well construction.

**Sierra Madre Partnership with Arcadia on Existing Camino Well:**
The City of Arcadia has indicated a willingness to sell Sierra Madre one half the production capacity of its Camino Well in exchange for Sierra Madre paying one half of the construction cost of that well. Sierra Madre's cost would be $887,307. However, Arcadia has not indicated what it would charge Sierra Madre to produce the water on our behalf nor have they quantified for us the production capacity of the well.

**Sierra Madre Main Basin Well and pipeline in Arcadia:**
Another alternative for accessing SGVMWD imported water directly would be the creation of a new Sierra Madre well in the Main San Gabriel Basin. This option would

operate in a manner similar to the existing arrangement with SGVMWD and Arcadia, but would eliminate the potential for Arcadia to shut off flow to Sierra Madre during extreme weather conditions.

Because the City of Sierra Madre is not a "Producer" in the Main Basin, the City does not own or operate a well in the Main Basin. Therefore in order to exercise this option, it would require the purchase of a well site in Arcadia. For example, there is a parcel of land currently vacant at the southeast corner of First Street and St. Joseph Street in Arcadia. Under this scenario, the city would have to purchase the site, or a portion thereof, and construct a well along with a pipeline to connect the well to Sierra Madre's existing system at Sierra Vista Park.

**Cost Estimate – Sierra Madre First Street & St. Joseph Well**

| | |
|---|---|
| Soft Costs | |
| Well siting study (per Geoscience) | $18,000 |
| Well and pipeline design at 15% of construction cost | $445,725 |
| Environmental review | $200,000 |
| Permitting (Arcadia, Watermaster, Caltrans, etc.) | $150,000 |
| **Soft Cost Total** | **$813,725** |
| | |
| **Land Purchase** | **$2,000,000** |
| Well Construction (per Arcadia Cost to construct Camino Well) | $1,800,000 |
| Pipeline from First St. & St. Joseph to Sierra Madre POC | |
| 9928 LF 12" DIP @ $118/lf (per East Sierra Madre Bl. project bid) | $1,171,504 |
| Construction subtotal | $2,971,504 |
| Const. Contingency @ 15% | $445,725 |
| **Construction Total** | **$3,417,229** |
| | |
| **Soft Costs** | **$813,725** |
| **Land Purchase** | **$2,000,000** |
| **Construction Cost** | **$3,417,229** |
| **Well Construction Total** | **$6,230,954** |

**Extend SGVMWD Pipeline to Sierra Madre:**
A final alternative, and one that has been discussed off and on for years, is the extension of the SGVMWD pipeline from its current terminus in Azusa to Sierra Madre's Spreading Basins. In the 2006 ERB Water Resources Plan this project was discussed briefly and dismissed from further study. The estimated construction cost at the time was $17.35 million to $19.25 million ($19.75-$21.91 million in 2012 dollars).

**Activate MWD Emergency Connection in East Grandview:**
The Metropolitan Water District is set to begin construction in the spring of 2013 of the City's emergency connection with the MWD Foothill Feeder in East Grandview, adjacent to the city's spreading grounds. When completed this will provide a source of water for Sierra Madre. ***However, according to the agreement between our District and MWD which authorizes the connection, the water is to be used for short-term***

***emergencies only, not as a long term source of supply***. Water from this source will come at a cost of $130/acre foot plus MWD treatment and "wheeling" charges, whatever they may be at the time of use.

**Sierra Madre Extraction Rights in San Gabriel Main Basin:**
There is evidence (GeoScience Support Services, Inc. Memo of July 17, 2007; "Impacts of Waiver of 500 Foot Groundwater Elevation in the Eastern Unit of the Raymond Basin") that water spread by Sierra Madre may bypass the wells of both Sierra Madre and Arcadia and spill into the San Gabriel Main Basin. To the extent that Sierra Madre is thus recharging both the ERB and the Main Basin, Sierra Madre should receive salvage credits in the Main Basin.

## Status of Water Production and Distribution System

The City has made significant progress on water system infrastructure in the last 15 years. With the help of significant outside funding from federal grants and from the San Gabriel Valley Municipal Water District, the City has completed a number of major water infrastructure projects. An Arcadia/Sierra Madre water system seismic reliability study (SRS) completed by the US Army Corps of Engineers in August of 1997 identified a number of significant seismic deficiencies in the Cities water systems. From that list of deficiencies, four projects were prioritized and completed, including:

Completed 2002 Construction of Arcadia/Sierra Madre Interconnection ($333,000)
Completed 2002 Construction of Sturtevant/Zone III Transmission Main ($533,000)
Completed 2004 Replacement of Grove Reservoir ($4,669,000)
Completed 2009 Replacement of Mira Monte Reservoirs and Booster Station ($8,300,000)

Additional major water system projects that have been completed since 1997 include:
Completed 2007 Construction of the GAC filtration/treatment facility ($3,300,000)
Completed 2006 Construction of the Bricker Well (groundwater monitoring) ($125,000)
Completed 2012 Replacement of the water main in East Sierra Madre Boulevard. ($1,012,000)

However, even with the projects that have already been completed, the water production and distribution system remains in need of additional repairs. Those repairs include water main replacements, reservoir replacements or improvements, well replacements or reconstruction, the replacement of Main Plant, the meter replacement program, and rehabilitation of the tunnels.

### Water Main Replacements

Because of the fact that water mains can be replaced in incremental sections, rather than all-at-once such as reservoirs, pump stations or treatment facilities, water main replacements have largely been deferred. Thus there is a very large backlog of water mains that are in need of replacement due to age-related deterioration. Table D lists costs to replace all segments of the water main system.

The highest priority mains for replacement are the transmission mains which are utilized primarily for moving water between reservoirs. Although they are dual purpose mains which also provide for distribution to individual customers, their importance lies in the fact that if the transmission mains go out of service, water service over widespread areas of the city could result.

The second priority mains for replacement are "the leakers." These are the mains that due to age and/or to the material they are made of are repeatedly repaired. These are mains under some of the city's worst pavement sections; until the mains are replaced, it will not be appropriate to replace the pavement, as it will have to be torn up repeatedly for water repairs.

The third grouping of water mains includes the remainder of the water system, listed according to age/date of construction. While these are not on the priority list, some of the older mains on this list could reach the threshold and become leakers within the next few years.

**Table D**

| Name | From | To | Year | Size | L | Type | New Main Size | Unit Cost/ LF | Total |
|---|---|---|---|---|---|---|---|---|---|
| ***Trans. Lines*** | | | | | | | | | |
| Mountain Trail Ave | Top End | Sierra Madre Blvd | 1920 / 57 | 10 | 2,560 | CL/RS | 12" DI | $294 | $752,640 |
| CY Pump line | Grandview Ave | Pumphouse | 1930 | 12 | 1,500 | CL/RS | 16"DI | $233 | $349,500 |
| Grandview Ave | Sycamore Pl | Canon Ave N | 1930 | 12 | 1,200 | CL/RS | 12" DI | $278 | $333,600 |
| Canon Ave | Alegria Ave | Grandview Ave | 1930 | 12 | 400 | CL/RS | 12" DI | $277 | $110,800 |
| Alegria Ave | Canon Dr | Mountain Trail Ave | 1930 | 12 | 900 | CL/RS | 12" DI | $268 | $241,200 |
| Mountain Trail Ave | Top End | Alegria Ave. | 1930 | 12 | 475 | CL/RS | 12" DI | $242 | $114,950 |
| Auburn Realignment | East End | Auburn Ave | 1930 | 12 | 1,158 | WS | 12" DI | $270 | $312,660 |
| Churchill Road | Easement | Mountain Trail Ave | 1930 | 12 | 1,200 | WS | 12" DI | $229 | $274,800 |
| Brookside Lane | Easement | Sunnyside lane | 1930 | 12 | 200 | WS | 12" DI | $310 | $62,000 |
| Sunnyside Lane | Woodland Dr | Brookside Lane | 1930 | 12 | 277 | WS | 12" DI | $283 | $78,391 |
| Woodland Drive | Yucca Trail | Alta Vista Dr | 1930 | 12 | 200 | WS | 12" DI | $380 | $76,000 |
| Alta Vista Drive | Vista Cir | Woodland Dr | 1930 | 12 | 537 | WS | 12" DI | $242 | $129,954 |
| | | | | | | | | | $2,836,495 |
| ***Leakers*** | | | | | | | | | |
| Manzanita Ave | Hermosa | Lima St | 1924 | 6 | 970 | WS | 8" | $125 | $121,250 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Ave | | | | | | | | |
| Sierra Pl. | Sierra Madre Blvd | Suffolk Ave | 1930 | 5" | 450 | WS | 6" | $135 | $60,750 |
| Sierra Pl. | Suffolk Ave | Lowell Ave | 1930 | 5" | 470 | WS | 6" | $120 | $56,400 |
| Santa Anita Ct. | Mountain Trail Ave | Sierra Pl | 1930 | 5" | 480 | WS | 6" | $155 | $74,400 |
| San Gabriel Ct. | Mountain Trail Ave | Sierra Pl | 1930 | 5" | 410 | WS | 6" | $165 | $67,650 |
| San Gabriel Ct. | Holdman Ave | Mountain Trail Ave | 1929 | 5" | 1,100 | WS | 6" | $140 | $154,000 |
| Santa Anita Ct. | Holdman Ave | Mountain Trail Ave | 1930 | 5" | 1,100 | WS | 6" | $150 | $165,000 |
| Sunnyside Ave | Retreat Center Gate | Fairview Ave | 1966 | 6 | 720 | WS | 6" | $153 | $110,160 |
| Sunnyside Ave | Fairview Ave | Alegria Ave | 1966 | 6 | 370 | WS | 6" | $142 | $52,540 |
| Sunnyside Ave | Alegria Ave | Grandview Ave | 1966 | 6 | 365 | WS | 6" | $145 | $52,925 |
| Idle Hour Lane | Skyland Dr | Orange Dr | 1930 | 5" | 375 | WS | 6" | $165 | $61,875 |
| Skyland Drive | Orange Dr | Fern Dr | 1930 | 5" | 310 | WS | 6" | $150 | $46,500 |
| Skyland Drive | Fern Ln | Idlehour | 1930 | 5" | 400 | WS | 6" | $140 | $56,000 |
| Skyland Drive | Idlehour Dr | Idlehour Dr | 1930 | 5" | 900 | WS | 6" | $152 | $136,800 |
| Old Ranch Road | CHURCHIL L RD | OLD RANCH | 1930 | 2" | 737 | GALV | 6" | $174 | $128,238 |
| Madre Ln | Old Ranch Road N | Old Ranch Road S | 1930 | 2" | 220 | GALV | 6" | $175 | $38,500 |
| Fairview Ave | Grove St | Sunnyside Ave | 1960 | 6 | 1,100 | WS | 6" | $150 | $165,000 |
| Fairview Ave | Michillinda Ave | Sunnyside Ave | 1953 | 6 | 1,000 | WS | 6" | $150 | $150,000 |
| Fairview Terrace | Cul-de-sac | Fairview Ave | 1963 | 4 | 225 | WS | 6" | $182 | $40,950 |
| Alegria Ave | Cul-de-sac | Sunnyside Ave | 1960 | 6 | 180 | WS | 6" | $185 | $33,300 |
| Alegria Ave | Sunnyside Ave | Michillinda Ave | 1960 | 6 | 980 | WS | 6" | $153 | $149,940 |
| Sierra Keys Drive | Fairview Ave | Cul-de-sac | 1963 | 6 | 800 | WS | 6" | $140 | $112,000 |
| Key Vista Drive | Sierra Keys Dr | Cul-de-sac | 1963 | 6 | 200 | WS | 6" | $170 | $34,000 |
| E. Highland Ave. | Baldwin Ave. | Canon Dr. | 1948 | 6 | 2,340 | WS | 6" | $159 | $372,060 |
| Adams St. | Grandview Ave. | Carter | 1960 | 6 | 1,520 | WS | 6" | $115 | $174,800 |
| Brookside Lane | Sunnyside lane | Top of Street | 1930 | 2 | 700 | GALV | 6" | $139 | $97,300 |
| Valle Vista | Acacia St. | Acacia St. | 1963 | 6 | 1,200 | WS | 6" | $128 | $153,600 |
| N. Lima St. | Grandview Ave. | W. SM Blvd. | 1951 | 6 | 1,761 | WS | 8" | $163 | $287,043 |
| W. SM Blvd. | Auburn Ave. | Lima St. | 1954 | 8 | 1,500 | WS | 8" | $160 | $240,000 |
| Sierra Madre Blvd. | Baldwin Ave | Auburn Ave | 1950 | 8 | 675 | CWP | 8" | $154 | $103,950 |
| | | | | | | | | | $3,496,931 |
| **Prioritized by age** | | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Grandview Ave | Santa Anita Ave | Liliano Pl | 1920 | 8 | 530 | WS | 10" | $275 | $145,750 |
| Grandview Ave | Liliano Pl | Stonehouse Rd N | 1920 | 8 | 350 | WS | 10" | $275 | $96,250 |
| Grandview Ave | Oakwood Ave | Santa Anita Ave | 1920 | 6 | 360 | WS | 10" | $275 | $99,000 |
| Grove Street | Grandview Ave | Highland Ave | 1920 | 6 | 800 | WS | 10" | $175 | $140,000 |
| Grove Street | Fairview Ave | Grandview Ave | 1920 | 8 | 690 | WS | 8" | $200 | $138,000 |
| Grove Street | Carter Ave W | Fairview Ave | 1920 | 8 | 750 | WS | 8" | $200 | $150,000 |
| Windsor Lane | Montecito Ave | Sierra Madre Blvd | 1923 | 2 | 460 | GALV | 6" | $175 | $80,500 |
| Montecito Ave | Auburn Ave | Baldwin Ave | 1923 | 6 | 732 | WS | 6" | $175 | $128,100 |
| Wilson Street | Grandview Ave | Highland Ave | 1924 | 4 | 875 | WS | 6" | $175 | $153,125 |
| Lowell Ave | Sierra Pl | Baldwin Ave | 1924 | 6 | 928 | WS | 6" | $175 | $162,400 |
| Baldwin Ave | Lowell Ave | Bonita Ave | 1924 | 8 | 480 | WS | 6" | $175 | $84,000 |
| Bonita Ave | Baldwin Ave | Hermosa Ave | 1924 | 4 | 1,126 | WS | 6" | $175 | $197,050 |
| Carter Ave | Miramonte Ave | Baldwin Ave | 1924 | 10 | 800 | RS | 10" | $275 | $220,000 |
| Lowell Ave | Mountain Trail Ave | Sierra Pl | 1924 | 6 | 900 | WS | 6" | $175 | $157,500 |
| Montecito Ct. | Auburn Ave | Montecito Ave | 1924 | 4 | 570 | WS | 6" | $175 | $99,750 |
| Mountain Trail Ave | Sierra Madre Blvd | Santa Anita Ct | 1924 | 8 | 240 | WS | 8" | $200 | $48,000 |
| Mountain Trail Ave | Santa Anita Ct | San Gabriel Ct | 1924 | 8 | 300 | WS | 8" | $200 | $60,000 |
| Mountain Trail Ave | San Gabriel Ct | Lowell Ave | 1924 | 8 | 230 | WS | 6" | $175 | $40,250 |
| Auburn Ave | Hermosa Ave | Elm Ave | 1925 | 10 | 800 | RS | 6" | $175 | $140,000 |
| Auburn Ave | Elm Ave | Carter Ave | 1925 | 10 | 310 | RS | 12" | $300 | $93,000 |
| Carter Ave | Grove St | West End | 1925 | 8 | 383 | WS | 8" | $175 | $67,025 |
| Carter Ave | Baldwin Ave | Elm Ave | 1925 | 10 | 387 | RS | 10" | $275 | $106,425 |
| Carter Ave | Elm Ave | Auburn Ave | 1925 | 10 | 470 | RS | 10" | $275 | $129,250 |
| Elm Ave | Carter Ave | Auburn Ave | 1925 | 4 | 660 | RS | 6" | $175 | $115,500 |
| Esperanza Ave | Baldwin Ave | Hermosa Ave | 1925 | 8 | 1,050 | WS | 8" | $200 | $210,000 |
| Hermosa Ave | Auburn Ave | Carter Ave | 1925 | 4 | 680 | RS | 6" | $175 | $119,000 |
| Sturtevant Drive | Pleasant Hill Ln | Mountain Trail Ave | 1927 | 6 | 470 | WS | 8" | $200 | $94,000 |
| Sturtevant Drive | Bend | Pleasant Hill Ln | 1927 | 6 | 430 | WS | 8" | $200 | $86,000 |
| Grove st | Highland | Grand View | 1928 | 6 | 890 | WS | 6" | $175 | $155,750 |
| Grandview Ave | Auburn | Grove | 1930 | 12 | 2,278 | CWP | 12" | $350 | $797,300 |
| Laurel Ave | Cul-de-sac | Sunnyside Ave | 1930 | 5 | 580 | WS | 6" | $200 | $116,000 |
| Sierra Madre Blvd. | Sunnyside Ave | Michillinda Ave | 1930 | 6 | 1000 | WS | 6" | $175 | $175,000 |
| Alegria Ave | Baldwin Ave | Auburn Ave | 1930 | 12 | 829 | RS | 6" | $175 | $145,075 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Arno Drive | East End | Santa Anita Ave | 1930 | 6 | 369 | WS | 6" | $175 | $64,575 |
| Audobon Way | Sturtevant Drive | End | 1930 | 2 | 370 | GALV | 6" | $175 | $64,750 |
| Brookside Lane | Middle | Middle | 1930 | 2 | 559 | GALV | 6" | $200 | $111,800 |
| Brookside Lane | Upper | Upper | 1930 | 2 | 440 | GALV | 6" | $200 | $88,000 |
| Canon Ave | Sturtevant Dr | Las Rocas Dr | 1930 | 8 | 268 | WS | 6" | $175 | $46,900 |
| Canon Ave | Las Rocas Dr | Theresa Ln | 1930 | 5 | 500 | WS | 6" | $175 | $87,500 |
| Canon Ave | Theresa Ln | Alegria Ave | 1930 | 5 | 632 | WS | 6" | $175 | $110,600 |
| Canyon Crest Drive | Idlehour Ln | Orange Dr (One-way Section) | 1930 | 6 | 420 | WS | 6" | $175 | $73,500 |
| Casey Street | Old Ranch Rd | Old Ranch Rd | 1930 | 2 | 202 | GP | 6" | $175 | $35,350 |
| Chaparral Road | Carter Ave | North End | 1930 | 2 | 838 | GP | 6" | $175 | $146,650 |
| Churchill Glen | Cul-de-sac | Churchill Road | 1930 | 2 | 100 | GP | 6" | $175 | $17,500 |
| Forrest Lane | Sturtevant Dr | Old Ranch Rd | 1930 | 2 | 397 | GP | 6" | $175 | $69,475 |
| Grandview Ave | Camillo St N | Sycamore Pl | 1930 | 12 | 380 | RS | 10" | $275 | $104,500 |
| Grandview Ave | Stonehouse Rd N | Foothill Ave | 1930 | 8 | 950 | WS | 10" | $275 | $261,250 |
| Las Rocas Drive | Sycamore Pl | Canon Dr | 1930 | 8 | 470 | WS | 6" | $175 | $82,250 |
| Madre Lane | Old Ranch Rd | Old Ranch Rd | 1930 | 2 | 160 | GP | 6" | $175 | $28,000 |
| Manzanita Ave | Sunnyside Ave | Michillinda Ave | 1930 | 5 | 960 | WS | 6" | $175 | $168,000 |
| Manzanita Ave | Lima St | Park Ave | 1930 | 5 | 915 | WS | 6" | $175 | $160,125 |
| Merrill Ave | Highland Ave | Laurel Ave | 1930 | 2 | 350 | GP | 6" | $175 | $61,250 |
| Mira monte Ave | Carter | Baldwin Ave | 1930 | 12 | 580 | RS | 6" | $175 | $101,500 |
| Mira monte Ave | Mountain Trail | Carter | 1930 | 12 | 550 | RS | 12" | $300 | $165,000 |
| Old Ranch Road | Madre Lane | Madre Lane (e'ly end) | 1930 | 2 | 393 | GS | 6" | $300 | $117,900 |
| Santa Anita Ave | Arcadia City Limits | Arno Dr | 1930 | 6 | 480 | WS | 6" | $175 | $84,000 |
| Santa Anita Ave | Arno Dr | Via Granate | 1930 | 6 | 280 | WS | 6" | $175 | $49,000 |
| Santa Anita Ave | Via Granate | Elkins Dr | 1930 | 6 | 600 | WS | 6" | $175 | $105,000 |
| Santa Anita Ave | Elkins Ave | Oakwood Ave | 1930 | 6 | 300 | WS | 6" | $175 | $52,500 |
| Santa Anita Ave | Oakwood Ave | Grandview Ave | 1930 | 6 | 520 | WS | 6" | $175 | $91,000 |
| Suffolk Ave | Sierra Pl | Baldwin Ave | 1930 | 5 | 820 | WS | 6" | $175 | $143,500 |
| Sycamore Pl. | Las Rocas Dr | Grandview Ave | 1930 | 8 | 950 | WS | 8" | $175 | $166,250 |
| Woodland Drive | North End | Yucca Trail | 1930 | 8 | 670 | WS | 8" | $200 | $134,000 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Woodland Drive | Alta Vista Dr | Holly Path Trail | 1930 | 14 | 570 | WS | 14" | $375 | $213,750 |
| Woodland Drive | Holly Path Trail | Brookside Ln | 1930 | 14 | 550 | WS | 14" | $375 | $206,250 |
| Woodland Drive | Brookside Ln | Sturtevant Dr | 1930 | 14 | 320 | WS | 14" | $375 | $120,000 |
| Yucca Trail | East End | Woodland Dr | 1930 | 2 | 650 | GALV | 6" | $175 | $113,750 |
| Fern Lane | Canyon Crest | Skyland Dr | 1932 | 2 | 350 | GP | 6" | $175 | $61,250 |
| Woodland Drive | North End | Yucca Trail | 1932 | 16 | 670 | WS | 16" | $375 | $251,250 |
| Sierra Meadow Dr | Wisteria Wy | Carter Ave | 1933 | 6 | 680 | WS | 6" | $175 | $119,000 |
| Manzanita Ave | Park Ave | Sunnyside Ave | 1935 | 5 | 560 | WS | 6" | $175 | $98,000 |
| Monterey Lane | Sierra Madre Blvd | South End | 1935 | 5 | 750 | WS | 6" | $175 | $131,250 |
| Olivera Lane | Orange Grove Ave | North End | 1935 | 5 | 664 | WS | 6" | $175 | $116,200 |
| Sierra Madre Blvd. | Park Ave | Sunnyside Ave | 1936 | 6 | 557 | WS | 6" | $175 | $97,475 |
| Sierra Madre Blvd. | Lima St | Park Ave | 1936 | 6 | 920 | WS | 6" | $175 | $161,000 |
| Grandview Ave | Acacia St | Camillo St N | 1936 | 8 | 240 | WS | 10" | $275 | $66,000 |
| Grandview Ave | Foothill Ave | Acacia St | 1936 | 8 | 650 | WS | 10" | $275 | $178,750 |
| Theresa Lane | Canon Dr N | Cul-de-sac | 1938 | 4 | 440 | WS | 6" | $175 | $77,000 |
| Rancho Road | Santa Anita Ct | San Gabriel Ct | 1944 | 5 | 320 | WS | 8" | $200 | $64,000 |
| Hermosa Ave | Highland Ave | Montecito Ave | 1946 | 5 | 450 | WS | 6" | $175 | $78,750 |
| Montecito Ave | Auburn Ave | Lima St | 1946 | 6 | 1480 | WS | 6" | $175 | $259,000 |
| Highland Ave | Baldwin Ave | Lima St | 1947 | 6 | 2238 | WS | 6" | $175 | $391,650 |
| Bonita Ave | Cul-de-sac | Baldwin Ave | 1947 | 6 | 479 | WS | 6" | $175 | $83,825 |
| Oak Meadow Road | North End | Orange Grove Ave | 1947 | 6 | 760 | WS | 6" | $175 | $133,000 |
| Santa Anita Ct. | Rancho Rd | Holdman Ave | 1948 | 6 | 1,029 | WS | 6" | $175 | $180,075 |
| Highland Ave | Mountain Trail Ave | Merrill Ave | 1948 | 6 | 280 | WS | 6" | $175 | $49,000 |
| Highland Ave | Merrill Ave | Baldwin Ave | 1948 | 6 | 940 | WS | 6" | $175 | $164,500 |
| Highland Ave | Canon Ave | Mountain Trail Ave | 1948 | 6 | 875 | WS | 6" | $175 | $153,125 |
| Mountain Trail Ave | Lowell Ave | Bonita Ave | 1949 | 6 | 425 | WS | 6" | $175 | $74,375 |
| Mountain Trail Ave | Bonita Ave | Orange Grove Ave | 1949 | 6 | 380 | WS | 6" | $175 | $66,500 |
| Edgeview Drive | Cul-de-sac | Bend | 1950 | 6 | 390 | WS | 6" | $175 | $68,250 |
| Edgeview Drive | Bend | Michillinda Ave | 1950 | 6 | 490 | WS | 6" | $175 | $85,750 |
| Grandview Ave | East City Limits | Oakwood Ave | 1950 | 6 | 330 | WS | 10" | $275 | $90,750 |
| Oakwood Ave | Grandview Ave | Santa Anita Ave | 1950 | 6 | 570 | WS | 6" | $175 | $99,750 |
| Vista Ave | Grandview | Elkins Ave | 1950 | 6 | 885 | WS | 6" | $175 | $154,875 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Ave | | | | | | | | |
| Lima Street | Sierra Madre Blvd | Grandview Ave | 1951 | 6 | 1,816 | WS | 6" | $175 | $317,800 |
| Lima Street | Laurel Ave | Highland Ave | 1951 | 6 | 475 | WS | 6" | $175 | $83,125 |
| Michillinda Ave | North City Limits | Grandview Ave W | 1952 | 6 | 2277 | WS | 6" | $175 | $398,475 |
| Laurel Ave | Sycamore Pl | Canon Ave | 1952 | 6 | 900 | WS | 6" | $175 | $157,500 |
| Hermosa Ave | Grandview Ave | Laurel Ave | 1953 | 4 | 375 | WS | 6" | $175 | $65,625 |
| Hermosa Ave | Laurel Ave | Highland Ave | 1953 | 4 | 520 | WS | 6" | $175 | $91,000 |
| Grove Lane | Highland Ave | Montecito Ave | 1953 | 2 | 375 | GALV | | $151 | $56,625 |
| Michillinda Ave | Sierra Madre Blvd | Orange Grove Ave | 1953 | 6 | 1810 | DIP | 6" | $175 | $316,750 |
| Baldwin Ave | Orange Grove Ave | Bonita Ave | 1953 | 8 | 400 | WS | 6" | $175 | $70,000 |
| Carter Ave | Lima St | Grove St | 1953 | 8 | 369 | WS | 8" | $200 | $73,800 |
| Gatewood Lane | Cul-de-sac | Michillinda Ave | 1953 | 6 | 700 | WS | 6" | $175 | $122,500 |
| Grove Street | Fairview Ave | Grandview Ave | 1953 | 6 | 690 | WS | 6" | $175 | $120,750 |
| Grove Street | Carter Ave W | Fairview Ave | 1953 | 6 | 750 | WS | 6" | $175 | $131,250 |
| Colony Drive | Fane St | Santa Anita Ct | 1954 | 6 | 680 | WS | 6" | $175 | $119,000 |
| Holdman Ave | Sierra Madre Blvd | Fane St | 1954 | 6 | 1028 | WS | 6" | $175 | $179,900 |
| Fane Street | Colony Dr | Holdman Ave | 1954 | 6 | 350 | WS | 6" | $175 | $61,250 |
| Auburn Ave | North End | Hermosa Ave | 1954 | 12 | 560 | RS | 12" | $350 | $196,000 |
| Grove Street | Fairview Ave | Grandview Ave | 1954 | 12 | 690 | WS | 12" | $300 | $207,000 |
| Grove Street | Carter Ave W | Fairview Ave | 1954 | 12 | 750 | WS | 12" | $300 | $225,000 |
| Liliano Pl. | Cul-de-sac | Grandview Ave | 1954 | 6 | 250 | WS | 6" | $175 | $43,750 |
| Lima Street | Carter Ave | Grandview Ave | 1954 | 6 | 1,340 | WS | 6" | $175 | $234,500 |
| Montecito Ave | Cul-de-sac | Mountain Trail Ave | 1954 | 6 | 440 | WS | 6" | $175 | $77,000 |
| Orange Grove Ave | Rancho Rd | Windwood Ln | 1954 | 6 | 700 | WS | 6" | $175 | $122,500 |
| Pleasant Hill Lane | Old Ranch Rd | Sturtevant Dr | 1956 | 6 | 328 | WS | 6" | $175 | $57,400 |
| Pleasant Hill Lane | Old Ranch Rd | Old Ranch Rd | 1956 | 6 | 188 | WS | 6" | $175 | $32,900 |
| Laurel Ave | Baldwin Ave | Auburn | 1957 | 6 | 760 | WS | 6" | $175 | $133,000 |
| Montecito Ave | Sunnyside Ave | Michillinda Ave | 1958 | 6 | 1009 | WS | 6" | $175 | $176,575 |
| Canon Ave | Montecito Ave | Sierra Madre Blvd | 1958 | 6 | 290 | WS | 6" | $175 | $50,750 |
| Canon Ave | Highland Ave | Montecito Ave | 1958 | 6 | 275 | WS | 6" | $175 | $48,125 |
| Canon Ave | Grandview Ave | Laurel Ave | 1958 | 6 | 365 | WS | 6" | $175 | $63,875 |
| Coburn Ave | North End | Sierra Madre Blvd | 1958 | 6 | 670 | WS | 6" | $175 | $117,250 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Highland Ave | Coburn Ave | Canon Ave | 1958 | 6 | 870 | WS | 6" | $175 | $152,250 |
| Montecito Ave | Coburn Ave | Canon Ave | 1958 | 6 | 860 | WS | 6" | $175 | $150,500 |
| Montecito Ave | Canon Ave | End | 1958 | 6 | 270 | WS | 6" | $175 | $47,250 |
| Michillinda Ave | Grandview Ave | Sierra Madre Blvd | 1959 | 6 | 1800 | DIP | 6" | $175 | $315,000 |
| Sunnyside Ave | Mariposa Ave | Ramona Ave | 1959 | 6 | 440 | WS | 6" | $175 | $77,000 |
| Canon Ave | Laurel Ave | Highland Ave | 1959 | 6 | 800 | WS | 6" | $175 | $140,000 |
| Canon Ave | North End | Orange Grove Ave | 1959 | 6 | 775 | WS | 8" | $200 | $155,000 |
| Foothill Ave | Camillo Dr | Cul-de-sac | 1959 | 4 | 400 | WS | 6" | $175 | $70,000 |
| Hermosa Ave | Montecito Ave | Sierra Madre Blvd | 1959 | 8 | 390 | WS | 6" | $175 | $68,250 |
| Lilano Drive | 775' S/O Arno Dr | Stonehouse Rd | 1959 | 6 | 775 | WS | 6" | $175 | $135,625 |
| Oakwood Pl. | Santa Anita Ave | Cul-de-sac | 1959 | 6 | 260 | WS | 6" | $175 | $45,500 |
| Ramona Ave | Lima St | Park Ave | 1959 | 8 | 880 | CWP | 8" | $200 | $176,000 |
| Ramona Ave | Hemosa Ave | Lima St | 1959 | 8 | 880 | CWP | 8" | $200 | $176,000 |
| San Gabriel Ct. | Rancho Rd | Colony Dr | 1959 | 6 | 340 | DIP | 6" | $175 | $59,500 |
| Sierra Meadow Dr | Cul-de-sac | Wisteria Wy | 1959 | 6 | 650 | WS | 6" | $175 | $113,750 |
| Sunnyside Ave | Ramona Ave | Manzanita Ave | 1959 | 6 | 370 | WS | 6" | $175 | $64,750 |
| Sunnyside Ave | Manzanita Ave | Orange Grove Ave | 1959 | 6 | 360 | WS | 6" | $175 | $63,000 |
| Sunnyside Ave | Sierra Madre Blvd | Mariposa Ave | 1959 | 6 | 390 | WS | 6" | $175 | $68,250 |
| Windwood Lane | Orange Grove Ave | End | 1959 | 6 | 920 | WS | 6" | $175 | $161,000 |
| Wisteria Way | Sierra Meadow Dr | Cul-de-sac | 1959 | 6 | 270 | WS | 6" | $175 | $47,250 |
| Adams Street | North End | Grandview Ave | 1960 | 6 | 1,080 | WS | 6" | $175 | $189,000 |
| Sunnyside Ave | Sierra Madre Blvd | GV | 1960 | 6 | 1,800 | WS | 6" | $175 | $315,000 |
| Bonita Ave | Mountain Trail Ave | End | 1960 | 6 | 830 | WS | 6" | $175 | $145,250 |
| Gatewood Terrace | Cul-de-sac | Gatewood Lane | 1960 | 2 | 300 | GP | 6" | $175 | $52,500 |
| Oak Crest Drive | Deodar Cir | Carter Ave | 1960 | 6 | 920 | WS | 6" | $175 | $161,000 |
| Via Granate | Cul-de-sac | Santa Anita Ave | 1960 | 4 | 200 | WS | 6" | $175 | $35,000 |
| Victoria Lane | Baldwin Ave | Auburn Ave | 1960 | 6 | 670 | WS | 6" | $175 | $117,250 |
| Baldwin Ave | Miramonte Ave | Alegria Ave | 1961 | 8 | 475 | RS | 12" | $300 | $142,500 |
| Baldwin Ave | Carter Ave | Miramonte Ave | 1961 | 8 | 440 | WS | 8" | $200 | $88,000 |
| Montecito Ave | Mountain Trail Ave | Baldwin Ave | 1961 | 8 | 1,265 | WS | 8" | $200 | $253,000 |
| Arno Drive | Kaia Ln | Liliano Dr | 1962 | 6 | 275 | WS | 6" | $175 | $48,125 |
| Arno Drive | Santa Anita | Kaia Ln | 1962 | 6 | 275 | WS | 6" | $175 | $48,125 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Ave | | | | | | | | |
| Kaia Lane | Cul-de-sac | Arno Dr | 1962 | 6 | 210 | WS | 6" | $175 | $36,750 |
| Lilano Drive | Arno Dr | 775' S/O Arno Dr | 1962 | 6 | 775 | WS | 6" | $175 | $135,625 |
| Lilano Drive | Cul-de-sac | Arno Dr | 1962 | 6 | 440 | WS | 6" | $175 | $77,000 |
| Sierra Woods Drive | Cul-de-sac | Grandview Ave | 1962 | 6 | 470 | WS | 6" | $175 | $82,250 |
| Sierra Woods Drive | Grandview Ave | Cul-de-sac | 1962 | 6 | 200 | WS | 6" | $175 | $35,000 |
| Toyon Road | Cul-de-sac | Grandview Ave | 1962 | 6 | 880 | WS | 6" | $175 | $154,000 |
| Acacia Street | East End | Grandview Ave | 1963 | 6 | 2,000 | WS | 6" | $175 | $350,000 |
| Valle Vista Drive | Acacia St | Acacia St | 1963 | 6 | 800 | WS | 6" | $175 | $140,000 |
| Camillo Street | East End | Grandview Ave | 1963 | | 2,860 | WS | 6" | $175 | $500,500 |
| Canon Pl. | Cul-de-sac | Santa Anita Ct | 1963 | 6 | 160 | WS | 6" | $175 | $28,000 |
| Crestvale Drive | Cul-de-sac | Fairview Ave | 1963 | 6 | 710 | WS | 6" | $175 | $124,250 |
| Foothill Ave | Acacia St | Camillo Dr | 1963 | 6 | 400 | WS | 6" | $175 | $70,000 |
| Lotus Lane | Camillo St | Sturtevant Dr | 1963 | 6 | 350 | WS | 6" | $175 | $61,250 |
| Oak Meadow Pl. | Santa Anita Ct | Cul-de-sac | 1963 | 6 | 110 | WS | 6" | $175 | $19,250 |
| Oak Crest Drive | Cul-de-sac | Deodar Cir | 1964 | 6 | 970 | WS | 6" | $175 | $169,750 |
| Sierra Madre Blvd. | East City Limits | Monterey Ln | 1965 | 6 | 380 | WS | 6" | $175 | $66,500 |
| Deodar Circle | Cul-de-sac | Oakcrest Dr | 1966 | 6 | 140 | WS | 6" | $175 | $24,500 |
| Monterey Pl. | Monterey Ln | End | 1966 | 4 | 150 | WS | 6" | $175 | $26,250 |
| Old Oak Lane | North End | Orange Grove Ave | 1966 | 4 | 270 | WS | 6" | $175 | $47,250 |
| Highland Ave | Lima St | Michillinda Ave | 1967 | 6 | 2,500 | WS | 6" | $175 | $437,500 |
| Highland Ave | Sunnyside Ave | Wilson St | 1967 | 6 | 355 | WS | 6" | $175 | $62,125 |
| Stonehouse Road | North End | Grandview Ave | 1967 | 8 | 400 | WS | 8" | $200 | $80,000 |
| Adams Street | Grandview Ave | Highland Ave | 1969 | 6 | 892 | WS | 6" | $175 | $156,100 |
| Laurel Ave | Hermosa Ave | Lima St | 1969 | 6 | 984 | WS | 6" | $175 | $172,200 |
| Laurel Ave | Hermosa | Lima St | 1969 | 6 | 985 | WS | 6" | $175 | $172,375 |
| Auburn Ave | Carter Ave | Miramonte Ave | 1969 | 8 | 440 | RS | 8" | $200 | $88,000 |
| Auburn Ave | Miramonte Ave | Olive Ave | 1969 | 8 | 410 | RS | 8" | $200 | $82,000 |
| Auburn Lane | Auburn Ave | Auburn Ave | 1969 | 6 | 595 | AC | 6" | $175 | $104,125 |
| Webster Way | North End | Bonita Ave | 1969 | 6 | 160 | WS | 6" | $175 | $28,000 |
| Montecito Ave | Lima St | Sunnyside Ave | 1970 | 6 | 1,460 | WS | 6" | $175 | $255,500 |
| Montecito Ave | Lima St | Grove Ln | 1970 | 6 | 478 | WS | 6" | $175 | $83,650 |
| Auburn Ave | Alegria Ave | Grandview Ave | 1970 | 14 | 364 | AC | 14" | $350 | $127,400 |
| Auburn Ave | Grandview Ave | Laurel Ave | 1970 | 8 | 369 | AC | 8" | $200 | $73,800 |
| Auburn Ave | Laurel Ave | Highland Ave | 1970 | 8 | 520 | AC | 8" | $200 | $104,000 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Auburn Ave | Olive Ave | Alegria Ave | 1970 | 12 | 206 | WS | 12" | $300 | $61,800 |
| Auburn Ave | Highland Ave | Montecito Ave | 1970 | 8 | 360 | AC | 8" | $200 | $72,000 |
| Auburn Ave | Montecito Ave | Sierra Madre Blvd | 1970 | 8 | 567 | AC | 8" | $200 | $113,400 |
| Monte Vista Lane | Orange Grove Ave | North End | 1970 | 6 | 591 | WS | 6" | $175 | $103,425 |
| Orange Grove Ave | Easy City Limits | Rancho Rd | 1972 | 6 | 550 | CWP | 6" | $175 | $96,250 |
| Rancho Road | San Gabriel Ct | Orange Grove Ave | 1972 | 8 | 990 | CWP | 8" | $200 | $198,000 |
| Baldwin Ave | Sierra Madre Blvd | Suffolk Ave | 1973 | 8 | 464 | CWP | 6" | $175 | $81,200 |
| Baldwin Ave | Suffolk Ave | Lowell Ave | 1973 | 8 | 437 | CWP | 6" | $175 | $76,475 |
| Baldwin Ave | Laurel Ave | Highland Ave | 1973 | 8 | 458 | CWP | 6" | $175 | $80,150 |
| Baldwin Ave | Grandview Ave | Laurel Ave | 1973 | 10 | 472 | CWP | 12" | $350 | $165,200 |
| Baldwin Ave | Highland Ave | Montecito Ave | 1973 | 10 | 450 | CWP | 12" | $300 | $135,000 |
| Baldwin Ave | Alegria Ave | Grandview Ave | 1973 | 8 | 485 | CWP | 8" | $200 | $97,000 |
| Grandview Ave | Canon Ave N | Mountain Trail Ave | 1973 | 16 | 960 | CWP | 16" | $350 | $336,000 |
| Ramona Ave | Sunnyside Ave | Michillinda Ave | 1973 | 8 | 960 | CWP | 8" | $200 | $192,000 |
| Ramona Ave | Park Ave | Sunnyside Ave | 1973 | 8 | 550 | CWP | 8" | $200 | $110,000 |
| Rancho Road | Sierra Madre Blvd | Santa Anita Ct | 1973 | 8 | 300 | CWP | 8" | $200 | $60,000 |
| Baldwin Ave | Montecito Ave | Sierra Madre Blvd | 1975 | 10 | 435 | CWP | 6" | $175 | $76,125 |
| Ross Pl. | North End | Mariposa Ave | 1975 | 6 | 120 | WS | 6" | $175 | $21,000 |
| Ross Pl. | South End | Mariposa Ave | 1975 | 6 | 230 | WS | 6" | $175 | $40,250 |
| Grandview Ave | Auburn | Michillinda Ave | 1987 | 8 | 2,500 | DIP | 8" | $200 | $500,000 |
| Alta Vista Drive | Sturtevant Dr | Vista Cir | 1987 | 6 | 870 | DIP | 6" | $175 | $152,250 |
| Foothill Ave | Grandview Ave | Acacia St | 1987 | 6 | 820 | DIP | 6" | $175 | $143,500 |
| Foothill Ave | Grandview Ave | Acacia St | 1987 | 6 | 820 | DIP | 6" | $175 | $143,500 |
| Mariposa Ave | Lima St | Park Ave | 1987 | 8 | 890 | DIP | 8" | $200 | $178,000 |
| Mariposa Ave | Park Ave | Sunnyside Ave | 1987 | 8 | 540 | DIP | 8" | $200 | $108,000 |
| Mariposa Ave | Sunnyside Ave | Michillinda Ave | 1987 | 8 | 970 | DIP | 8" | $200 | $194,000 |
| Oakdale Drive | Sturtevant Dr | Vista Cir | 1987 | 6 | 300 | DIP | 6" | $175 | $52,500 |
| Orange Grove Ave | Park Ave | Sunnyside Ave | 1987 | 8 | 565 | DIP | 8 | $200 | $113,000 |
| Orange Grove Ave | Old Oak Ln | Hermosa Ave | 1987 | 8 | 380 | DIP | 8 | $200 | $76,000 |
| Orange Grove Ave | Hermosa Ave | Lima St | 1987 | 8 | 960 | DIP | 8 | $200 | $192,000 |
| Orange Grove Ave | Lima St | Park Ave | 1987 | 8 | 910 | DIP | 8 | $200 | $182,000 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Orange Grove Ave | Sunnyside Ave | Michillinda Ave | 1987 | 8 | 950 | DIP | 8 | $200 | $190,000 |
| Orange Grove Ave | Baldwin Ave | Old Oak Ln | 1987 | 8 | 700 | DIP | 8 | $200 | $140,000 |
| Sturtevant Drive | Alta Vista Dr | Oakdale Dr | 1987 | 6 | 330 | DIP | 6" | $175 | $57,750 |
| Sturtevant Drive | Canon Dr N | Bend | 1987 | 6 | 560 | DIP | 8" | $200 | $112,000 |
| Sturtevant Drive | 500' E/O Canon Dr | Canon Dr | 1987 | 6 | 500 | DIP | 8" | $200 | $100,000 |
| Sturtevant Drive | Oakdale Dr | 500' E/O Canon Dr | 1987 | 6 | 430 | DIP | 6" | $175 | $75,250 |
| Sturtevant Drive | North End | Lotus Lane (Dirt/NAP) | 1987 | 6 | 400 | DIP | 8" | $175 | $70,000 |
| Vista Circle Drive | Alta Vista | Oakdale | 1987 | 6 | 530 | DIP | 6" | $175 | $92,750 |
| Vista Circle Drive | Oakdale Dr | 600' S/O Oakdale Dr | 1987 | 6 | 600 | DIP | 6" | $175 | $105,000 |
| Vista Circle Drive | 600' S/O Oakdale | Vista | 1987 | 6 | 600 | DIP | 6" | $175 | $105,000 |
| Fern Glen | Fern Drive | West End | 1990 | 8 | 150 | DIP | 8" | $200 | $30,000 |
| Mount Wilson Trail | Mira Monte Ave | North End | 1990 | 8 | 2,318 | DIP | 8" | $300 | $695,400 |
| Brookside Lane | Lower | Lower | 1991 | 6 | 510 | DIP | 6" | $200 | $102,000 |
| Carter Ave | Hermosa Ave | Sierra Meadow Dr | 1991 | 12 | 350 | DIP | 12" | $300 | $105,000 |
| Carter Ave | Sierra Meadow Ln | Lima St | 1991 | 12 | 568 | DIP | 12" | $300 | $170,400 |
| Carter Ave | Auburn Ave | Hermosa Ave | 1991 | 12 | 580 | DIP | 12" | $300 | $174,000 |
| Hermosa Ave | Sierra Madre Blvd | Mariposa Ave | 1991 | 8 | 300 | DIP | 6" | $175 | $52,500 |
| Hermosa Ave | Esperanza Ave | Bonita Ave | 1991 | 8 | 540 | DIP | 6" | $175 | $94,500 |
| Hermosa Ave | Bonita Ave | Orange Grove Ave | 1991 | 8 | 510 | DIP | 8" | $175 | $89,250 |
| Hermosa Ave | Mariposa Ave | Esperanza Ave | 1991 | 8 | 300 | DIP | 6" | $175 | $52,500 |
| Laurel Ave | Canon Ave | Mountain Trail Ave | 1991 | 8 | 880 | WS | 8" | $175 | $154,000 |
| Laurel Ave | Merrill Ave | Baldwin Ave | 1991 | 8 | 900 | DIP | 8" | $200 | $180,000 |
| Laurel Ave | Mountain Trail Ave | Merrill Ave | 1991 | 8 | 300 | DIP | 8" | $200 | $60,000 |
| Lima Street | Sierra Madre Blvd | Mariposa Ave | 1991 | 6 | 410 | DIP | 6" | $175 | $71,750 |
| Lima Street | Mariposa Ave | Ramona Ave | 1991 | 6 | 440 | DIP | 6" | $175 | $77,000 |
| Lima Street | Ramona Ave | Manzanita Ave | 1991 | 6 | 440 | DIP | 6" | $175 | $77,000 |
| Lima Street | Manzanita Ave | Orange Grove Ave | 1991 | 6 | 390 | DIP | 6" | $175 | $68,250 |
| Mariposa Ave | Hermosa Ave | Lima St | 1991 | 8 | 890 | DIP | 6" | $175 | $155,750 |
| Mira monte Ave | Baldwin Ave | Auburn | 1991 | 6 | 800 | DIP | 12" | $300 | $240,000 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Olive Ave | Baldwin Ave | Auburn | 1991 | 8 | 775 | DIP | 6" | $175 | $135,625 |
| Orange Grove Ave | Canon Ave | Oak Meadow Rd | 1991 | 8 | 430 | DIP | 8 | $200 | $86,000 |
| Orange Grove Ave | Mountain Trail Ave | Private Street | 1991 | 8 | 690 | DIP | 8 | $200 | $138,000 |
| Orange Grove Ave | Windwood Ln | Canon Ave | 1991 | 8 | 580 | DIP | 8 | $200 | $116,000 |
| Orange Grove Ave | Oak Meadow Rd | Mountain Trail Ave | 1991 | 8 | 450 | DIP | 8 | $200 | $90,000 |
| Park Ave | Mariposa Ave | Ramona Ave | 1991 | 6 | 370 | DIP | 6" | $175 | $64,750 |
| Park Ave | Ramona Ave | Manzanita Ave | 1991 | 6 | 370 | DIP | 6" | $175 | $64,750 |
| Park Ave | Sierra Madre Blvd | Mariposa Ave | 1991 | 6 | 400 | DIP | 6" | $175 | $70,000 |
| Park Ave | Manzanita Ave | Orange Grove Ave | 1991 | 6 | 370 | DIP | 6" | $175 | $64,750 |
| Woodland Drive | Alta Vista Dr | Holly Path Trail | 1991 | 4 | 570 | DIP | 6" | $175 | $99,750 |
| Carter Ave | Miramonte Ave | Baldwin Ave | 1992 | 12 | 800 | DIP | 12" | $300 | $240,000 |
| Ida May Lane | Jameson Ct | Cul-de-sac | 1994 | 6 | 254 | DIP | 6" | $175 | $44,450 |
| Jameson Ct. | Grandview Ave | Highland Ave | 1994 | 6 | 830 | DIP | 6" | $175 | $145,250 |
| San Gabriel Ct. | Rancho Rd | Colony Dr | 1998 | 6 | 340 | DIP | 6" | $175 | $59,500 |
| Elkins Ave | East City Limits | Vista Ave | 2001 | 8 | 220 | DIP | 6" | $175 | $38,500 |
| Elkins Ave | Vista Ave | Grandview Ave | 2001 | 8 | 270 | DIP | 6" | $175 | $47,250 |
| Orange Drive | Canyon Crest Dr | Skyland Dr | 2001 | 6 | 250 | DIP | 6" | $175 | $43,750 |
| Orange Drive | Skyland Dr | Idlehour Ln | 2001 | 6 | 440 | DIP | 6" | $175 | $77,000 |
| Vista Ave | East City Limits | Elkins Ave | 2001 | 8 | 830 | DIP | 6" | $175 | $145,250 |
| Mariposa Ave | Baldwin Ave | Hermosa Ave | 2005 | 6 | 1,060 | DIP | 6" | $175 | $185,500 |
| Sierra Madre Blvd. | Pump house | Mountain Trail Ave | 2012 | 12 | 2,500 | CL/RS | 12 | $285 | $712,500 |
| Sierra Madre Blvd. | Mountain Trail Ave | Sierra Pl | 2012 | 12 | 490 | CL/RS | 12 | $285 | $139,650 |
| Sierra Madre Blvd. | Sierra Pl | Baldwin Ave | 2012 | 12 | 880 | CL/RS | 12 | $268 | $235,840 |
| | | | | | | | | | $35,046,365 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | Total | $41,379,791 |

**Reservoir Replacements or Improvements**

The City's water system continues to operate two very old reservoirs and one that, although not considered old, still needs seismic upgrades according to the 1997 SRS. In addition, there are two very small reservoirs (13,000 gallons each) located at the top of Oak Crest Drive, providing water for seven homes at the top of Oak Crest.

Auburn Reservoir 2 is a partially buried concrete 0.432 MG reservoir built in 1924. The SRS recommended repairs which were implemented by staff in 2010 and increased monitoring and maintenance for this reservoir; it was not prioritized for replacement due to the small size of the facility and the relative inaccessibility of the site. The distribution / transmission pipeline to Auburn reservoir No. 2 needs to be replaced. The existing line is a 12" riveted steel main installed in 1954. The main runs through the private property at 800 Auburn and under the County flood control channel adjacent to the cement reservoir. Current maps do not show the exact location of this 12" pipeline. Estimated cost $200,000 for this Priority Repair.

The settling basin reservoir located at the Main Plant in a 0.40 MG partially-buried concrete tank of unknown construction date. Its purpose as a settling basin for sand entrained in well water has been superseded by the 2007 filtration facility construction. However it is still vital in its function as a pumping forebay for the adjacent Main Plant pumping facility. The SRS found this reservoir to be functional and adequate under all loading conditions and made no recommendations for improvements to the structure. However, as a routine maintenance action the reservoir should be drained, inspected, and all expansion joints and cracks repaired.

Auburn Reservoir 1 is a freestanding steel reservoir with a capacity of 1.36 MG, constructed in 1957. The SRS found the tank itself to be sound but noted some inadequacies in the footing and the overflow piping. Water Division staff have inspected the inside of the tank and note that it is in need of replacement of its anti-corrosion coating at an estimated cost of $80,000. It is also in need of exterior painting.

Well Replacements or Reconstruction

The City owns and operates four wells in the vicinity of the maintenance yard and Sierra Vista Park. The wells are numbered Three through Six, with 3 located adjacent to the T-ball field, 4 in the maintenance yard parking lot, 5 adjacent to the maintenance yard main gate, and 6 within an enclosure in Sierra Vista Park. All four are drilled to their maximum depth.

As noted above, these wells are showing a rapid decline in water levels and may require replacement in the near future. The estimated cost of constructing a new well is $1.7 to $2.5 million.

Well 3 is vibrating in excess of allowable tolerance. The well must be removed from service as soon as a reduction in pumping demand allows; providing the Well does not break down before then. The pump will require 86 rubber bushings to be removed and replaced with brass bearings. In addition the well will be inspected by video, wire brushed to 580' and bailed. The pump assembly will be inspected for damage and repaired if necessary. The estimated cost of this priority repair is $75,000.

Main plant reconstruction

The main plant is a concrete building constructed in about 1927. The building houses three booster pumps, numbered five through seven, which lift water from that location to the Mira Monte Reservoirs for distribution and further transmission to other reservoirs. The building also houses the control system for the wells and booster pumps in the maintenance yard area as well as the electronic base station controlling the operation of the entire water system.

There are no construction plans on file for this building. Based on the age of the structure, it is not likely that it meets current seismic safety standards. Further, the electrical panel components were damaged in a fire in 1998, and have never been fully rebuilt, as the antiquated replacement parts are too hard to find.

Booster 7 is operating at an overall efficiency of 51%. Booster 7 is need of a major overhaul involving a new pump, motor and re-piping. Edison is offering up to $8,974.61 in cash incentives to increase efficiency to 71%. In addition SCE estimates a yearly savings of $8,110.51 in pumping cost. Design estimates pump will operate at 81% efficiency further decreasing annual pumping cost. The estimated repair cost is $106,516.

Booster 5 has been out of operation for over 15 years. Booster 5 requires an overhaul similar to booster 7. In addition, Booster 5 would require installation of automatic control valves and new wiring Cost estimate: $135,000

SCADA – Priority Repair

The Supervisory Control and Data Acquisition System (SCADA) which remotely controls the city's water system was installed in 1997. It has become obsolete and replacement parts are no longer available. The replacement cost for the system, including upgrades that will allow for operator notification in the event of chlorine gas leaks is $30,000.

Chlorine Room Risk Management Plan – Priority Project

The Los Angeles County Fire Department requires that the City submit a Risk Management Plan to the County Fire Department prior to January 5, 2013. The cost of plan preparation for the chlorination room at the Main Plant is $9,000.

Tunnels Rehabilitation

West Tunnel – Priority Repair

The West Tunnel transmission line needs to be replaced. In May of 2012 Public Works repaired a large leak on the transmission line and made an attempt to patch several small pinhole leaks. There are sections of leaking pipeline that are not repairable. Cost: Line the Main $50,000 (if possible)
Replace the main $80,000

Chlorine Containment Facility – Priority Repair

A chlorine containment structure and scrubber should be installed at the West Tunnel to prevent chlorine from entering the atmosphere in the event of accidental release. Estimated Cost: $95,000.

East Tunnel

The East Tunnel has two sources of water. In order to bring the East Tunnel to drinking water standards the source influenced by surface water needs to be isolated. The tunnel was inspected in 2001 and a proposal to bring that tunnel to drinking water standards at that time was $250,000. In 2012 dollars that cost would be $325,000.

**Priority Repair Summary**

| | |
|---|---|
| Well 3 | $75,000 |
| SCADA System | $30,000 |
| Chlorine Room RMP | $9,000 |
| West Tunnel | $80,000 |
| Tunnel Chlorine Containment | $95,000 |
| Auburn Reservoir Main | $200,000 |
| **Total, Priority Repairs** | **$489,000** |

Replacement of Main Plant Emergency Generator

The emergency generator at the Maintenance Yard provides power for all public works operations at that location. Those operations include all emergency relief and the operation of all four of the City's wells along with the booster pumps that move water from the wellheads to reservoirs for distribution. In the aftermath of the December 2011 windstorm, the emergency generator at the maintenance yard failed. The unit has since been repaired and is operational. However, the City's experience with the unit failing in an extended emergency use leads staff to be concerned about the existing generator's dependability. The cost to replace the existing generator with a used generator meeting current EPA Tier II emission requirements (as required by SCAQMD under permitting requirements) is estimated at $392,360. A used Tier II generator, Model year 2007 or newer would cost approximately $40,000 less. The City Council has approved expenditures of $60,000 in AB2766 funds and $75,000 in facilities internal services funds for generator replacements in this location and at the civic center. While those allocations are adequate to more than cover the cost of the replacement unit for the Civic Center, they come up short on covering the cost of a replacement generator for the Main Plant by over $300,000.

Meter replacement program

The Water Department has been in the process of replacing water meters on a citywide basis for several years. Typically, a water meter has a service life of 12 years. As meters are replaced, they are replaced with "smart meters;" capable of being retrofitted with radio-reading devices. The estimated cost to complete the replacement of all meters in the city with smart meters is approximately $415,000.

The next step in the process of establishing a system in which the City can provide its customers with real-time water usage information, (including leak notification) would be to retrofit all of the smart meters with the radio read units and to install a base unit and antennae to receive use data. The estimated cost to retrofit all of the meters with the radio-read units is approximately $480,000 and the base station an additional $50,000. There is a potential of obtaining a grant from the San Gabriel Valley Municipal Water District to offset a portion of this cost, as they have provided for some of their other member cities.

**Recurring Mechanical System Maintenance**

The City's four wells each require a basic overhaul at least every 6 years. The cost of a basic overhaul is $150,000. Because of the high cost of these overhauls they are considered as capital projects rather than recurring maintenance costs.

Well 3 needs an overhaul now
Well 4 is due for its regular overhaul
Well 5 is due for an overhaul in 2013
Well 6 is due for an overhaul in 2018

The City operates 8 booster pumps to move water between reservoirs. The booster pumps typically require overhaul every 10 years at an estimated cost of $35,000 each.

Boosters 1-4 will require overhaul in 2018.
As noted above, Booster 5 is currently out of service and in need of major overhaul and new wiring.
Booster 6 will be due for an overhaul in 2016
As noted above Booster 7 is in need of a major overhaul.
Booster 10 will be due for its next overhaul in 2015.

## Streets

Status of Citywide Street program

Included with this report is the 2010-15 Pavement Management Program. The PMP is essentially an inventory of the city's streets and an analysis of each street's pavement condition, listed in block-by-block segments. The 2010 PMP is the third such study that has been done on Sierra Madre's streets.

The PMP is based on engineers' inspection of each street segment. From their examination of pavement condition, each segment is assigned a Pavement Condition Index (PCI) value, with 0 representing a pavement that is completely failed and 100 indicating a brand-new pavement with no deterioration. The 2010-15 PMP reports that the City's overall PCI rating is at 69.4, for a rating of Good according to recognized pavement condition standards.

The California Infrastructure Report Card reports that the statewide PCI is at 66, slightly lower than Sierra Madre's PCI. The report card further reports that the PCI for the Los Angeles region is at 62.4, again lower than that of this community. Thus Sierra Madre compares slightly better than both the state and the region in regards to pavement conditions.

However, the Report Card also states, " the statewide average PCI of 66 should be viewed as a warning sign of increased costs ahead if adequate pavement efforts are soon implemented." The 2010 PMP includes recommendations for a five-year program that would increase the City's overall PCI to 73.6. Those recommendations, while based on sound pavement engineering, have not been fully implemented due to the fact that many of the street segments overlay leaking water mains, and most importantly due to lack of adequate funding. The result of not fully implementing the Pavement Management Plan reflects the statement of the Report Card; the City's overall PCI is actually down from the PCI of 74 that was reported in the 2006 PMP.

At current spending levels, the City will not be able to move the overall PCI in a positive direction. The recommended expenditures from the 2010 PMP for increasing the overall PCI to 73.6 are shown along with the actual or projected expenditures for pavement maintenance in Table E.

**Table E**

| Fiscal Year | Total / yr (Recommended) | Total/yr (Actual/projected) |
|---|---|---|
| **2010-11** | $1,407,026 | $704,132 |
| **2011-12** | $1,670,677 | 0 |
| **2012-13** | $1,636,994 | $650,690 |
| **2013-14** | $1,082,506 | $161,210 |
| **2014-15** | $1,245,221 | $150,000 |
| | **$7,042,424** | **$1,666,032** |

Sierra Madre's Citywide Street Resurfacing Program was initiated in 2001, with the goal of resurfacing all of the City's streets within five years. While the program was a very high priority for the City Councils of those years, the shortage of funding limited the number of street sections that could be resurfaced within that period. Nevertheless, since 2001 over 3,633,500 square feet of the City's streets have been resurfaced, or 61.7% of the entire street system.

The following is the City's latest Pavement Management Program. The Pavement Management Program is due for an update, which is expected to be done in 2013. In order for the City to utilize Proposition C funds for street maintenance, the City must have an up-to-date pavement management system, revised every three years. It is estimated that a professional services contract for updating the Pavement Management Program would cost approximately $22,500. That is a cost that can be paid from Proposition C funds.

Bridge Rehab program

The City owns eight roadway bridges spanning Sierra Madre Wash. The bridges are inspected annually by Los Angeles County Public Works Department per state requirements. In December 2011, the City Council adopted Resolution 11-101 approving the City's participation in the County's bridge rehabilitation program. Under this program, the County or its contractor will perform rehabilitation work on six of the bridges, with the City to pay a small local match (11.47%) and the County to pay the major portion of the cost, estimated at that time to be $175,000.

The Infrastructure Report Card notes that Caltrans is responsible to inspect all bridges in the state and issue a Sufficiency Rating for each structure. (That responsibility is delegated to LACDPW in this county.) Bridges with a sufficiency rating of less than 80 are defined as in need of maintenance. Ratings are also made for bridges being structurally deficient and/or functionally obsolete. Five of the City's bridges have sufficiency rating of less than 80. One bridge is considered functionally obsolete and none are classed as structurally deficient. The Report Card notes that statewide, 40 % of bridges have a sufficiency rating of less than 80. Sierra Madre does not compare favorably to that state average, with 63% of its bridges having sufficiency ratings less than 80.

Once completed, the County's work on the bridges will improve the bridges' sufficiency ratings.

The County is expecting to go to bid on this project in FY 2013-14. Functional obsolescence in the case of Sierra Madre's bridge at Mary's Market is due to roadway geometrics. The bridge is considered too narrow. However, right of way limitations in that location do not allow for the bridge to be widened, nor would widening the bridge appear to be beneficial in that Woodland Drive is itself very narrow in multiple locations both above and below the bridge.

Sidewalk Repair Program

The City's sidewalks are typically considered a part of the street system. However the sidewalks are identified as a separate matter in this report because the City Council has specifically asked about sidewalk repairs.

Public Works field staff members have walked the entire city and identified addresses and locations of displaced sidewalk.

Sidewalk damage is typically repaired in one of three ways. The usual temporary means of repair is to use a fine mix of asphalt to create a ramp or patch to eliminate the pedestrian tripping hazard. In practice this is a temporary repair because the asphalt does not permanently adhere to the concrete sidewalk or because continued tree root growth increases the amount of sidewalk deflection requiring replacement patches. Residents often object to the unsightly black asphalt patch in front of their homes. Sometimes this ramping is done with a concrete mortar mix; it isn't as unsightly, but it doesn't last as long as asphalt.

Another means of temporary repair is to cold-plane or grind the raised portion of the sidewalk down to eliminate the tripping hazard. It leaves unsightly markings on the sidewalk but is a longer-lasting repair than asphalt or mortar patches. However, on very old sidewalks the concrete is too brittle to utilize this repair technique.

The third means of repair is to remove and replace the broken sidewalk with new concrete. This provides the best appearance and the smoothest walking surface. However the concrete material is increasingly expensive, and this type of repair often requires undesirable root trimming or even removal of entire trees. A portion of the City's sidewalk damage is repaired each year through this process; there is not adequate funding to correct all the deficiencies with permanent repairs.

The 2011 sidewalk inspection resulted in the identification of 403 sidewalk defects, estimated to require the replacement of 20,150 square feet of concrete sidewalk. The estimated cost to contract for replacement of that sidewalk is $83,420. Material costs alone are estimated to exceed $35,000.

The sidewalk inspection/damage inventory was updated during the summer of 2012. Of the 403 sidewalk defects identified twelve months ago, 134 have been temporarily repaired with asphalt ramping to reduce tripping hazards. Fourteen defects were replaced with permanent concrete under the sidewalk partnership program. An estimated 19,450 square feet of sidewalk remains in need of permanent repair/replacement at an estimated cost of $80,525.

Sidewalk Partnership Program. The Sidewalk Partnership Program has generated a modest amount of interest and community participation. In FY 11-12 over 3200 square feet of sidewalk and driveway approaches were replaced through the program. As of

September 4, there were nine additional addresses signed up and paid to participate with another nine awaiting their estimates so that they could sign up.

## Building Facilities

While it is acknowledged that all buildings have a useable lifespan and that all city buildings will at some point in the future need to be replaced, those replacement costs are not reflected in this report.

Library

The Sierra Madre Public Library is in need of a number of improvements. As a facility built to house 25,000 print materials, it has become overcrowded, housing over 57,000 print materials along with a greater number of staff than was originally envisioned for the facility. Space needs have become critical in the library, and most of the improvements needed are space-related.

1.) Construct closet space for computer fileservers in basement/relocate fileservers. This project has been approved by City Council, budgeted, and will be constructed by Public Works staff. Re-cabling is estimated to cost $15,000. Construction materials cost estimated at $10,500. Total cost estimated at $25,500.
2.) Exterior painting of building. Cost is estimated at $7,500.
3.) Create separate area for Friends of Library operations. The Friends' operations require more space than is available in the basement that they share with library storage and operations. Thus, it is recommended that additional space be created on the site, to allow for relocation of either Friends storage and operations from the basement, or to do similarly with Library storage and operations.
    a.) Install modular classroom-type building on rear (vacant lot)
    b.) Utilize a two-room floorplan to allow for separation of Library-related activity and to provide additional archival area for City documents.
    c.) Budget-level quotes have been requested from multiple temporary building suppliers. No responses have been received.
4.) Remove interior circular staircase and dumbwaiter. The work can be done by Public Works field staff at no cost to the City. The circular staircase could be sold as surplus.
5.) Purchase and install compact shelving for basement storage. The estimated cost for this improvement is $40,000.
6.) Purchase and install secure storage for artwork at an estimated cost of $30,000.
7.) Construct an access ramp to basement. This could be done by field staff at an estimated material cost of $10,000.
8.) Remodel/reconfigure staff work area. This would be done following relocation of the computer fileservers into the basement. Estimated cost $5,000.
9.) Electrical system upgrades. Estimated cost $40,000.

## Police/Fire Public Safety Building

Apparatus room ceiling
The ceiling in the apparatus room is in need of replacement. Portions of the ceiling have recently collapsed. The estimated cost to replace the ceiling tiles and t-bar support system is $13,600.

Generator Replacement
The Civic Center emergency generator was purchased used in approximately 1998. Its failure during the December 2011 windstorm indicated that it is not reliable for more than just short term use. In addition, it does not meet current EPA emissions standards. The generator needs to be replaced, and staff has estimated that the cost to replace the existing generator with a new Tier III compliant generator would be $90,000. For a similar used Tier III compliant, Model year 2007 or newer generator, the cost would be around $60,000. These estimates assume that the replacement generator can be placed within the current generator enclosure with little site modifications.

The City Council has approved expenditures of $60,000 in AB2766 funds and $75,000 in facilities internal services funds for generator replacements in this location and at the maintenance yard. Purchase of the replacement generator for this site has been delayed as staff has tried to identify a generator that would meet current AQMD requirements.

## City Hall

Replacement of Roof
Prior to the December 2011 windstorm and the damage it caused to the roofs of City Hall and several other Sierra Madre city buildings, staff had received bids for replacement of the roof on City Hall. The building still carries its original roofing and numerous leaks existed in the south-facing and flat portions of the roof. Although the repair of the wind damage will cover most of the existing leaks in the City Hall roof, it should be noted that the remainder of the roof that is not being repaired is nearing or at the end of its service life. The June 2011 roof replacement bid for City Hall was $160,600.

Replacement of Timber Architectural Feature
The heavy timber architectural trellis over the rear entry to City Hall is heavily deteriorated. It should be removed from the building to eliminate the termite infestation from exposure to the building. The cost to replace the structure is estimated at $7,500.

## Park House/Senior Center

The Senior Center area of the Hart Park House was recently renovated and reopened to the public in November of 2011. There are no capital improvements needed at that location. However, the exterior-accessed restrooms in the Park House building are in poor condition. They are in need of complete refurbishment or remodeling at an estimated cost of $69,000 if they are to continue to be used as public restrooms. They have been replaced by a new restroom building located behind City Hall and it has

been suggested that the old restrooms be remodeled to provide additional space for senior-related activities at an estimated cost of $50,000.

**Recreation Center**

The Recreation Center is comprised of the Sierra Madre Room, the Fireside Room, a classroom and office spaces.

The Sierra Madre Room Renovation was completed in March of 2011. The bid documents included an optional item to install padding on the walls of the Sierra Madre Room, which would have helped attenuate the noise level in the building. That option was deleted prior to construction for cost reasons. It has now been found that there is a need to improve the acoustics in the Sierra Madre Room and reduce noise created by the air conditioner. This can be done with the installation of acoustic panels on the ceiling and walls, at a quoted cost of $29,000.

The Sierra Madre Room Renovation included renovation of the Fireside Room and the public restrooms. Other than the sound attenuation needs, no capital improvement work is needed at the Recreation Center.

**Youth Activity Center**

The Youth Activity Center was constructed/completed in September of 2005. As a relatively new facility, it is not in need of capital improvements.

**Aquatic Center**

The parks and Facilities Master Plan Committee recommends the following top-priority repairs on the Aquatics Center/Pool equipment enclosure:

- Leaking seals on the main pool circulation pump wetting the building wall and causing water damage.
- Leaves and debris blowing into the building and accumulating around and under equipment.
- External corrosion of piping and electrical conduit.
- Frequent failure of main pool circulation pump.
- Inadequate access space around equipment.

Estimated repair cost $650,000.

**Maintenance Yard**

The Maintenance yard complex is comprised of several structures, including the Dutyman House, the Rose Float Building, the Maintenance Yard office, the Welding/Sign Shop, Fleet Mechanic Shop, Fueling Island, and carport.

The Dutyman House was at one time a residence provided for a Water Division staff member that allowed for on-site water system emergency coverage on a 24/7 basis. The building is no longer used as a residence; due to a lack of storage space in any other city-owned building, it is now a location where city record documents are stored. The building has reached its capacity, however document storage needs continue to expand. Additional document storage capacity is badly needed. One option for

increasing document storage capacity is noted under the library discussion above. Other locations may be available on city property for installation of buildings for document storage.

The garage associated with the Dutyman House is used by the Sierra Madre Fire Department for storage of equipment.

Volunteers of The Sierra Madre Rose Float Association operate the Rose Float Building under a lease from the City. The terms of the lease require that the Association maintain the interior, the structure, and the systems of the building at its sole expense. The City is required to maintain the exterior of the building to the extent that funding permits. The Association has not requested any significant improvements to the building, however, they have indicated that they feel the building is in need of exterior paint.

The Maintenance Yard Office houses the water system control center, the Deputy Director, Water Superintendent and Street Foreman offices, a locker room, and a small lunch room. The basement/ground floor houses a small workshop and a garage/warehouse for water division supplies and equipment. The building is in reasonably good repair overall. However, the lunch room is too small to seat the entire Public Works field staff, making lunch breaks and departmental meetings unpleasant in inclement weather.

The Welding/Sign shop and Fleet Mechanic's buildings are antiquated but serviceable corrugated metal buildings. No major improvements to those buildings are needed at this time. The Welding/Sign Shop needs to have its rolling doors modified in order to allow them to be properly locked and secured.

The Maintenance Yard complex is also the site of the Water Department's spreading basins. The northerly frontage of the site (East Grand View Avenue) and a portion of the westerly frontage are not properly fenced. The lack of proper fencing allows relatively easy public access to the spreading basin facility. For public safety reasons, the fencing along those should be replaced with new chain link fencing with a minimum height of 6 feet. The estimated cost of that improvement is $27,200.

**186 West Highland**

The "Old YAC" located at 186 West Highland and the property underlying the Senior Housing project on Esperanza are owned by the City's new Housing Agency. There are no plans for any kind of capital improvement of either site.

**Richardson House/Lizzies Trail Inn**

Volunteers of The Sierra Madre Historic Preservation Society operate the historic Richardson House and Lizzie's Trail Inn under a twenty-five year lease of those facilities from the City. The terms of the lease require that the Society maintain the interior of the buildings at its sole expense. The terms further require that the City make all structural or exterior repairs and perform all exterior maintenance at its sole

expense. A representative of the SMHPS has provided the following list of maintenance and repair work that it recommends for the two buildings.

Due to the historic nature of the buildings, and the desire of the SMHPS to do all restoration with great attention to detail and authenticity, staff is unable to accurately estimate restoration, remodeling and repair costs. Staff has therefore requested cost estimates from the SMHPS for work on the two buildings. Those estimates are pending at this time.

| WORK ITEM | PRIORITY | SCOPE/ACTION | DONE BY/PAID BY |
|---|---|---|---|
| **Lizzie's** | | | |
| Oak Tree | Emergency | Public Works and Arborist to determine necessary action. Will issue emergency permit if appropriate | City |
| Termite work | Emergency | Abatement contractor to verify scope of services. Do not include woodwork repair | City to Contract |
| Electrical upgrade | Budget | Need adequate power for space heaters.<br>A. Scope requirements see scope/action Note 2 below.<br>B. Upgrade as required | SMHPS and contractor |
| Correct roof leaks | Emergency | A. Investigate cause(s) of leaks and general condition of roof. Determine scope and details.<br>B. Repair/replace as necessary | SMHPS and contractor<br><br>City to contract |
| Debris Removal | Maintenance | Leaf and debris removal from underneath and north side of building. | City crew. |

| | | | |
|---|---|---|---|
| **Richardson House** | | | |
| Termite work | Emergency | Abatement contractor to verify scope of services. Do not include woodwork repair. | City to Contract |
| Grade Correction | Emergency<br><br>Budget | A. Trench and/or sandbag to divert rainwater from around back of building to the east.<br>B. Revise grade and asphalt walk as part of work to restore rear shed. | City crew |
| Reconstruct rear shed | Budget | | |
| Correct dry rot | Budget | Detailed scope to be determined? | SMHPS to provide scope and perform work. |
| Exterior painting | Budget | Schedule after prior-listed items are complete. | SMHPS to provide detail, City to contract |
| Replacement gutter | Budget | Plain half-round galvanized at rear eaves | SMHPS to provide detail, |

| | | | |
|---|---|---|---|
| | | | city to contract |
| Interior cleaning | Maintenance | | SMHPS |

SMHPS PRIORITY FOOTNOTES:
(1) "Emergency" work performed by City from emergency or discretionary funds.
(2) "Budget" work paid for by City based on available funds from mid-year budget adjustment.
(3) "Maintenance" work by City crew or SMHPS as indicated.

SCOPE/ACTION NOTES:
1. City and/or its contractors to coordinate all repair and upgrade work with SMHPS for compliance with historic restoration standards.

2. Scope requirements for electrical work:
   A. Investigate adequacy of service and panel. Determine if any upgrading is needed.
   B. Determine distribution to heater locations.
   C. Historic knob and tube wiring to remain undisturbed.
   D. SMHPS will be responsible for any required woodwork modifications.

3. Procedures for reconstruction of rear shed:
   A. Selective removals and architectural survey to proceed simultaneously by SMHPS. City to issue demolition permit.
   B. Design of reconstruction work by SMHPS. City to issue building permit.
   C. Design to include corrected grade per Richardson House note above, at rear of building and under shed. Determine grading, drainage, paving and footing work that can be performed by City crews.
   D. All other work to be performed by SMHPS.
   E. Include gutter per Richardson House note above.

**December 2011 Windstorm Damage**

The windstorm of December 1, 2011 damaged the roofs several city buildings. Those damages are listed below as taken directly from a bid provided by a bidder for the City's insurance carrier. The repair costs are as quoted by the City's insurance carrier, which has indicated that it will contract for and pay for all but the $5,000 deductible on the roofing repairs.

| | |
|---|---|
| City Hall Roof | $11,062.80 |
| City hall Interior Corridor | $1,515.24 |
| Public Safety Bldg. Roof | $11,442.22 |
| Band Shell Roof | $2,450.66 |
| Memorial Park Picnic Shelter Roof | $3,623.45 |
| Maintenance Yard Carport Roof | $19,790.18 |
| Maintenance Yard Fueling Station Roof | $5,834.08 |
| Pool Mechanical Room Roof | $9,721.23 |

| | |
|---|---|
| Poolhouse Roof | $16,889.12 |
| Subtotal | $82,328.98 |
| Wind Damage | $82,328.98 |
| Materials Sales Tax (8.750%) | $2,098.03 |
| Overhead (10%) | $8,442.70 |
| Profit (10%) | $8,442.70 |
| Total Insurance Payout | $101,312.41 |

## Parks

The Draft 2012 Parks and Facilities Master Plan, dated August 13, 2012 provides the following outline of park infrastructure needs as defined by the Parks and Facilities Master Plan Committee. The Parks and Facilities Master Plan has not been reviewed yet by City Council. Staff is including this list of projects as a part of an overall look at City infrastructure; estimated costs of some of the park improvements were provided by members of the Master Plan Committee. Other costs have not yet been estimated.

## PROJECT PRIORITY LEVEL DEFINITIONS

In its development of the draft 2012 Parks and Facilities Master Plan, the Committee developed the following ranking of needs. For purposes of prioritization, three levels were created to span projects ranging from immediate needs to possible future enhancements/new facilities. The different levels are described as:

**Level I** items are projects that are either necessary to keep an existing park or facility in safe operating condition or a project/program which has already commenced or for which the City is committed. This level includes non-routine, major maintenance projects, some of which have been previously deferred. In several cases, projects in this category are necessary if the park/facility is to continue to operate without incurring safety or increased liability issues.

**Level II** items are projects that would upgrade existing facilities but are not, at this time, necessary to ensure the continued viability of the facility. It should be noted, however, that many of these projects would become Level I if they are deferred indefinitely.

**Level III** are projects that either represent new facilities or major enhancements at existing facilities. Several of the projects in this category have costs that may well be beyond the scope of foreseeable funding sources and would likely require new or extraordinary funding sources.

## Bailey Canyon Wilderness Park

### Level I Priorities

- Ensure accessibility of handicapped parking with signs to include Bailey Canyon Park (excludes Wilderness Area).

### Level II Priorities

- Provide permanent containers for dog dropping plastic bags.
- Continue preservation of open space.

**Level III Priorities**

- Obtain funding for a small amphitheater around the fire ring.

**Mt. Wilson Trail**

**Level I Priorities**

- Provide additional handicapped parking at the foot of the Trail.

**Level II Priorities**

- Add a recycling bin at the foot of the Trail.
- Add signage suggesting to hikers to respect the residents who live at the foot of the Trail.
- Add signage to remind users to pick up any trash, and for pet owners to clean up after their pet.
- Replace worn destination markers along the Trail.

**Level III Priorities**

- Provide drinking fountains for hikers and their pets.

**Memorial Park**

**Level I Priorities**

- Straighten and stabilize the fencing poles for the tennis courts. Estimated cost of $7,845 to repair the fencing. Estimated cost of $2,186 to repair the wind screen wall.

**Level II Priorities**

- Install a brick retaining wall at the bottom of the sloping shaded dirt area that goes from the staircase on the east side of the Hart Park Senior Center, along the north side of the sidewalk toward Hermosa, and all the way to the point where the sidewalk turns north by the Memorial Wall.
- Add drainage to the area in front of the Band Shell and along the sloping shaded dirt area to Hermosa.
- Replant the area in front of the Band Shell and in the sloping shaded dirt area in order to prevent further erosion, enhance moisture retention, and provide additional usable space that has aesthetic appeal.
- Tennis courts need to be resurfaced. Estimated cost of $6,700 to resurface the courts.
- Provide safety lighting on the path from Hart Park House down to Mariposa.
- Provide safety lights for playground area. Estimated cost $36,600, includes safety lighting from Park House to Mariposa.

**Level III Priorities**

- Replace wooden picnic tables under the Pavilion and elsewhere in the Park.
- Add additional benches throughout the Park.

**Sierra Vista Park**

**Level I Priorities**

- Straighten and stabilize the fencing poles for the tennis courts. Estimated cost $7,845.
- Remove the basketball poles and baskets and replace outside the play area to address safety concerns. Pad the basketball poles pending the move.

**Level II Priorities**

- Tennis courts need to be resurfaced. Estimated cost of $6,700 to resurface the courts.
- Update the rules signs for the tennis courts.
- Replace wooden picnic tables under the pavilion and elsewhere in the Park.
- Add additional benches in the basketball court area.
- Add additional seating in dog park for dog owners.
- Add identifying signage in the dog park (Title and Rules) so that the public is aware of their existence and purpose as well as the rules of use for each of the two parks.

**Level III Priorities**

- Consider future of beach volleyball area.
- Field lights project – need an electronic on/off system to conserve energy and costs and/or to pass on some of the costs to the users.
- Add additional picnic tables, benches, and pavilion to under-utilized west side of Park.
- Remodel/Replace the restrooms located in the northwest area of the Park (near Rose Float Barn and Dapper Field) and at Heasley Field.
- Provide some decomposed granite pathways at dog park.

**Kersting Court**

**Level I Priorities**

- Evaluate bell tower and information kiosk for wood rot/termite damage and structural safety.

**Level II Priorities**

- Grade the area where the pepper tree was, add new landscaping, picnic tables and/or benches, and shade trees or other covering in that area.
- Replace the kiosk with a more durable material such as stone. Keep the stained glass inlays as part of the kiosk.
- Replace the information board in the kiosk. A digital display, containing a

downtown business directory and other points of interest is desired.
- Add more bike racks.

**Level III Priorities**
- Place a monument sign (i.e., Welcome to Sierra Madre), similar to the one on Sierra Madre Boulevard at Michillinda, or the one at Bailey Canyon, on the southeast corner of Kersting Court.
- Create signage detailing the history of the bell tower.
- Install additional flag pole for City flag to be flown from.
- Undertake a parking study to determine whether parking configuration in Kersting Court should be changed.

## Mount Wilson Trail Park

**Level I Priorities**
- Ascertain whether there is termite or other damage to the existing monument sign.

**Level II Priorities**
- Research, write up, and make available the history of the beloved turtle.
- Preserve the beloved turtle for posterity.
- Add the third light to the existing pole.

**Level III Priorities**
- Revisit the issue of painting a silhouette of a Pack Train on the reservoir tank in 2015.

## Goldberg Park

**Level I Priorities**
- Ensure flagstone walkway is stable as the border stones appear to be uneven and/or loose.

**Level II Priorities**
- None.

**Level III Priorities**
- Add tables, benches, play equipment for children, and shade in the sand pit area and/or in the areas to the southwest of the sand pit.
- Add adult exercise stations
- Add drinking fountain for pets and their owners.
- Signage for the native plants, trails, and hut should be developed to increase user appreciation of Goldberg Park, similar to that for Bailey Canyon.

## Trees

The city's tree inventory includes 5114 trees located in parks, open space and parkways across the City. While staff has equipment (limited), training, and experience in tree trimming due to limited Public Works manpower, tree trimming is generally done under contract. The Department uses West Coast Arborists which can provide on-call emergency tree work, on-call tree trimming, planting, and removal; and also provides "grid trimming" at a very low price of $42.30 per tree. Under a grid-trimming program, trees are trimmed to raise them for proper clearance, dead wood is removed, and the trees are lightly shaped. Under a grid-trimming program, staff designates an area of the city (grid) to be trimmed, and WCA goes to trim every tree in that area. While this has been done successfully in Sierra Madre in past years, more recently there has been very little grid-trimming done due to budget constraints. An optimum grid trimming program would have every tree trimmed once every four years. To implement this level of program, the City would have to increase its tree maintenance budget by about $54,000 annually.

The City has been notified that it has been awarded a grant by the Los Angeles County Regional Parks and Open Space District in the amount of $42,812 for the replacement of trees lost in the December 1, 2012 windstorm. In addition, the City has received a grant from the State Department of Forestry and Fire Protection, for the development and implementation of a Community Forest Management Plan. The Tree Advisory Commission, working in conjunction with other community volunteers, a Consulting Arborist, and Public Works staff will prepare the Community Forest Management Plan which will guide the use of the County tree replanting grant to ensure that the proper type of trees be planted as replacements for those lost in the storm. This Community Forest Management Plan will fulfill the City Council Strategic Plan goal of identifying how the trees lost in the 2011 windstorm will be replaced, both in terms of funding (utilization of the County grant) and species selection.

**Constraints on Infrastructure Improvement & Repairs**

Public Works field staff consists of two mid-management personnel, five full-time and one part-time water division staff; six full-time and one part-time street and sewer division staff, one facility maintenance worker, and one fleet mechanic. These talented and experienced staff members are fully capable of constructing a wide range of infrastructure improvements, and have done so in the past. Because the personnel costs are already included in annual budgets, having Public Works staff implement Infrastructure improvements saves the labor costs and overhead that would be charged by contracting for the same work. For example, water division staff has the equipment and expertise to undertake water main replacement projects. Water and street/sewer personnel all have the experience and skills to do building remodels. However, there are a number of factors that limit the city's ability to deal with infrastructure issues with in-house personnel:

Funding limitations:

- The Public Works Department's personnel costs are spread over a number of funds for which there are use restrictions, such as gas tax, water funds, or sewer funds. It is important that a staff member whose position is funded primarily from

the water fund be limited to water system-related work. The department would not want to have a water-funded or sewer-funded staff member spending the majority of his time working on a building facility project for example.

Statutory:

- State law limits the amount of work that may be done by in-house staff. Public Contracts Code Section 22032. (a) Public projects of forty-five thousand dollars ($45,000) or less may be performed by the employees of a public agency by force account, by negotiated **contract**, or by purchase order.

- The Municipal Code limits staff to certain types of maintenance work, as defined in SMMC 3.08.010:

  *"Maintenance work" shall have that meaning provided in Section 22002(d) of the act, as that section may be amended from time to time. In this light, maintenance work shall include, but shall not be limited to, all of the following:*

  *1. Routine, recurring, and usual work for the preservation or protection of any publicly owned or publicly operated facility for its intended purposes;*
  *2. Minor repainting;*
  *3. Street and highway maintenance, including utility patching, skin patching, crack filling, filling of pot holes, slurry sealing, edge grading, street striping, resurfacing of streets and highways at less than one inch, sign replacement, sidewalk repair and replacement, curb and gutter repair and replacement, and street and traffic light repair and replacement. Maintenance work shall not include striping of a new street or highway;*
  *4. Sewer maintenance, including foaming, video taping, cleaning and manhole restoration;*
  *5. Traffic signal maintenance. Maintenance work shall not include installation of a new traffic signal;*
  *6. Storm drain related maintenance;*
  *7. Landscape maintenance, including mowing, watering, trimming, tree pruning, planting, tree and plant replacement, irrigation and sprinkler system servicing, retrofit and repair, and landscape rehabilitation;*
  *8. Maintenance of facilities, including roof repairs, heating and air conditioning repairs, and electric repairs;*
  *9. Vehicle and equipment maintenance and repairs;*
  *10. Work performed to keep, operate, and maintain publicly owned water, power, or waste disposal systems, including, but not limited to, dams, reservoirs, power plants and electrical transmission lines of two hundred thirty thousand volts and higher.*

Training/Equipment

Public Works field staff receive a great deal of on-the job training; training and experience are required in order to obtain the certifications that some of our staff

must obtain. However, certain maintenance tasks that could be otherwise be undertaken by Public Works field staff are not done due to the need for specialized equipment or extensive training. A good example is tree trimming. Although staff is experienced and training in trimming, they are not trained in tree work in which they must climb the trees they are working on. Thus, they are limited to working from the bucket of our lift truck, which does not allow them to effectively prune or remove the City's larger trees. Other areas of work requiring special training or equipment include confined space work areas, chemical application (pesticides or herbicides), and roadway striping.

Manpower

Finally, manpower availability is a factor in the department's ability to address all of the City's infrastructure needs. Whenever possible, the Department's work tasks are staffed with two workers. Although the department's safety record is good, on the rare occasion that an injury does occur, it is important that there be someone on scene to assist the injured person. Further, many work tasks require two or more workers on site, such as water system leak repairs. With our six-person water department for example, if we have two water main leaks in one day, all other water-related work, (sampling, meter reading, system operation) has to be delayed. This doesn't leave much flexibility for staff to be able to go out and replace an entire water main, for example.

## FINANCIAL REVIEW

| | |
|---|---|
| **Sewer** | |
| Correction of sewer system deficiencies | $683,130 |
| **Storm Drain** | |
| Correction of drainage deficiencies | $5,043,400 |
| NPDES Compliance (Costs largely unknown) | $160,000 (minimum) |
| | $5,203,400 |
| **Water System** | |
| Priority 1 Main Replacements | $2,836,495 |
| Leaker Replacements | $3,496,931 |
| Miscellaneous Priority Projects | $489,000 |
| Boosters 5 & 7 | $241,516 |
| | $7,063,942 |
| **Water Supply** | |
| East Raymond Basin Projects | $900,938 |
| Water Supply Alternatives | $887,307-$6,230,954 |
| **Streets** | |
| Pavement repair/replacement (To reach overall PCI of 73.6) | $5,376,392 |
| **Sidewalks** | |

| | |
|---|---|
| Contracted replacement of 19,450 sf concrete sidewalk | $83,900 |

Building Facilities

| | |
|---|---|
| Improvements to Library, PD/Fire, City Hall, Rec Center, Pool equipment shelter, Park House rest rooms, and Maintenance Yard* | $1,014,300 |

Trees

| | |
|---|---|
| Windstorm tree replacement | $42,812 |

*Building costs do not include roof repairs for windstorm damage, or repairs to Lizzie's/Richardson House.

Funding Sources

General Funds

The City can use General funds for any municipal purpose. However, the City's General fund revenues are barely adequate to fund City services and programs. Allocating General fund revenues to capital projects would necessitate a reduction in services or programs. The City also has General Fund reserves, and the reserves could be used to fund capital projects; but would result in lower reserves available for future emergencies.

Parcel Taxes

Parcel Taxes can be used as a mechanism to generate revenue. Since the passage of Proposition 218, all parcel taxes require 2/3 voter approval. Therefore any parcel tax, regardless of the service, program or project it funds, would require a 2/3rd majority to pass. Placing a parcel tax on the ballot will require professional services to determine the actual amount of the tax and the method that the tax would be distributed to properties in order to be legally defensible.

As a very rough estimate, there are approximately 4,100 parcels in the City. If each parcel was assessed $500, approximately $2 million in revenues would be generated. The parcel taxes are placed on property tax bills and are paid along with the property taxes.

Dedicated Sales Tax Increase

The City currently receives approximately $200,000 in sales taxes each year. The imposition of a dedicated sales tax would not result in an increase in revenues sufficient to meet financial needs.

Assessments

An assessment is not assessed on "property ownership" like a parcel tax. It is based upon the value received by the parcel for the service rendered. Parcels can only be assessed for the special benefit they receive and general public services cannot be

financed through an assessment. This is the mechanism currently used by the City for lighting assessment districts and maintenance districts.

An assessment requires an enabling statute, and the implementation process requires the preparation of a resolution of intent ordering the preparation of an engineer's report. Once the report is ready, a second resolution must be passed to approve the report and order the holding of a mail ballot election (for property owners only). There are two hearings required, and if a majority of the ballots, weighted by dollars is received in favor of the assessment, it passes.

Bonds

Bonds can be issued for infrastructure improvements. There are costs associated with issuing bonds, and a revenue source must be identified to repay the bonds. However, the issuance of bonds can be accomplished without a public vote.

## ALTERNATIVES

This report presents a lengthy list of unmet infrastructure needs. It is not possible to address all of them at one time, so the first step in dealing with the City's infrastructure is to set priorities, to determine which infrastructure needs to address first.

1.) Streets are and are likely to always be a very high priority. However, it is important that inadequate, worn out infrastructure under those streets be replaced before resurfacing the streets. And, as noted earlier in this report, it will do the community little good to have all-new water infrastructure if the source of the water has dried up. Therefore staff would recommend that the City Council should set as its highest priority the protection and improvement of the City's water sources. Following closely on that, and in order to continue to efficiently access the source water, staff recommends that the high priority water system repairs be completed. The four highest infrastructure priorities that staff would recommend would thus be:
    a.) Water Supply
    b.) High priority water system repairs
    c.) Water main replacements
    d.) Street resurfacing
2.) All infrastructure needs are important. Sidewalk repair, tree maintenance, and facility maintenance all compete for limited general funds.
3.) Sewer infrastructure repairs can be carried out under the existing sewer fund reserves while the priority one infrastructure work proceeds.
4.) Storm drain repairs have been done in Sierra Madre with sewer funding. However, as reserves in the sewer fund are reduced through sewer repairs, and as NPDES requirements increase, storm drain will have to compete with other infrastructure for general funds.
5.) NPDES requirements will have to be met. The state will dictate what the deadlines/time frames are, and the City will have to comply or risk enforcement action by the state or by third-party lawsuits.

**PUBLIC NOTICE PROCESS**

This item has been noticed through the regular agenda notification process. Copies of this report are available at the City Hall public counter and the Sierra Madre Public Library.

**STAFF RECOMMENDATION**

Staff recommends that the City Council provide staff with direction regarding the setting of priorities for dealing with the City's infrastructure needs.

Attachments: Exhibit A – FY 11-13 5 Year CIP
Exhibit B – Pavement Management Program 2010-2015

# City of Sierra Madre Agenda Report



TO: Honorable Mayor Moran and Members of the City Council

FROM: Elaine I. Aguilar, City Manager
Bruce Inman, Director of Public Works

DATE: February 12, 2013

**SUBJECT: DISCUSSION OF A POTENTIAL CITY UTILITY (WATER, SEWER, STORM DRAIN) RATE STUDY**

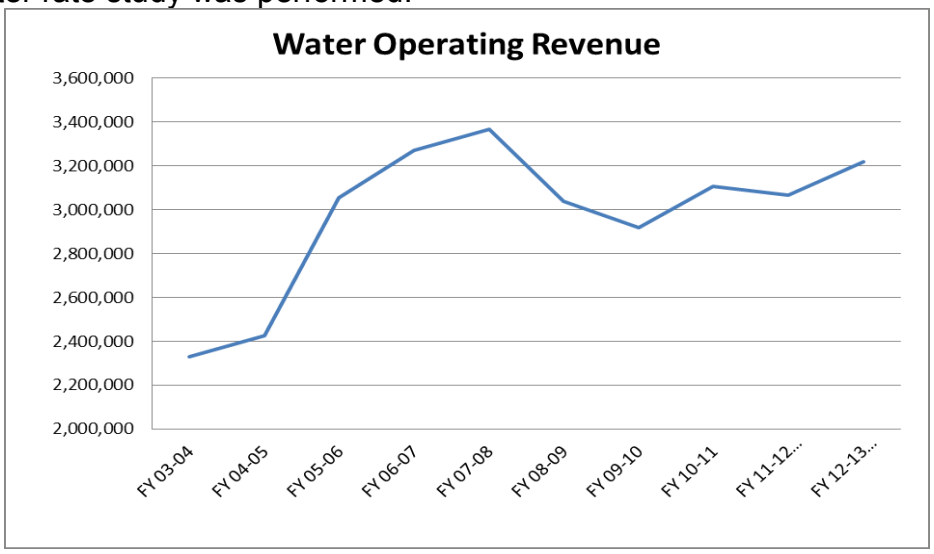
---

## SUMMARY

Water revenue has not kept pace with water expenses under the recently adopted rate schedule. Staff is seeking direction from the City Council as to: 1.) Whether or not staff should initiate the rate study process by issuance of a professional services Request for Proposal for preparation of the Study, and 2.) If so, what specific provisions should the required Scope of Services include.

## FINANCIAL REVIEW

From information presented to the City Council in May of 2012, in the water fund, revenue projections for the fourth straight year have not met projections. Although in comparison to the prior year, the water revenue grew by 7.5% because of the water rate increase; projected revenue trends were based upon 2008 revenues when the original water rate study was performed.




**FOR CITY COUNCIL AGENDA_____** **AGENDA ITEM # _____**

As the City has experienced in both the Utility User Tax collection and Franchise Fee collections, residents have been conserving and on average, utility costs overall have been decreasing consistently with the downturn in the economy. Two years ago when the revenue downslide began, it was assumed to be temporary and perhaps more related to seasonal water usage rather than being recognized as an ongoing trend. The water consumption rate is down from the base year of 2008, but up from 2011.

The table below illustrates the trends in water revenue and water expenses. While revenues have increased, operating expenditures in the Water fund have been reduced from a high in FY 08-09. Those operational savings are found in the reduced pumping costs that are the result of water conservation, and a good source of water from the City's tunnels. There has also been a savings in personnel costs from frozen, unfilled and vacant positions. However, capital costs have begun to increase, primarily due to early rehabilitation needs of Wells 3 and 6 and from carryover capital projects for the city filtration system.

| **WATER FUND APPROPRIATIONS (as presented 5/2012)** | | | | | |
|---|---|---|---|---|---|
| | FY 08-09 | FY 09-10 | FY 10-11 | FY 11-12 Estimated | **FY 12-13 Revised** |
| Operating Revenue | 3,039,138 | 2,920,048 | 3,108,021 | 3,067,432 | 3,217,390 |
| Federal Grants | 1,043,645 | 248,500 | 29,619 | - | - |
| SGVWD | | - | - | - | - |
| Investment Income | 183,169 | 26,449 | 7,653 | 11,540 | 11,655 |
| Bond Proceeds | 3,218,904 | - | 47,624 | - | - |
| **Revenues** | **7,484,856** | **3,194,998** | **3,192,917** | **3,078,972** | **3,229,045** |
| Utility Billing | 95,000 | 95,742 | 122,193 | 140,101 | 136,147 |
| Water Personnel | 509,993 | 592,876 | 727,387 | 629,891 | 746,060 |
| Purchased Supplies and Services | 343,740 | 471,762 | 361,697 | 462,538 | 383,638 |
| Electricity | 517,326 | 474,714 | 413,724 | 405,000 | 500,000 |
| Cost Allocation/Property Insurance | 587,017 | 525,329 | 555,954 | 762,556 | 809,684 |
| Capital-Budgeted | 2,132,469 | 153,336 | 151,468 | 455,000 | 150,000 |
| Debt Payments | 850,615 | 813,386 | 796,822 | 848,345 | 995,345 |
| **Expenses** | **5,036,160** | **3,127,146** | **3,129,245** | **3,703,431** | **3,720,874** |
| ***Change In Net Assets** | **2,448,696** | **67,852** | **63,672** | **-624,459** | **-491,829** |

*Note Changes in Net Assets: Debt payments include bond payments and interest fee loan already recorded in the Water Fund's Balance Sheet. This amount reflects changes in cash assets.

The Water Department has worked within its budget for all routine operational costs and has been successful in reducing in some areas. However, unplanned, high

expense items, such as the repair and rebuilding of Well 6 and now Well 3, have impacted the Water Fund's resources. At present there are sufficient reserves to meet these financial needs. But going forward at this pace, the Water fund could use its full reserves within five years. Furthermore, as we have seen with four major water main failures in recent months, some portions of the City's water infrastructure are reaching an age where they are far more fragile, and the leaks far more costly to repair. Current funding levels simply do not allow for implementing a meaningful water main replacement program.

## ANALYSIS

If the City Council determines that a study of water rates should be done, it is important that a Scope of Work be provided to the professional firms preparing proposals for the City. The level of analysis, the number of public meetings to attend, the number of rate options to consider, and other factors will have a direct bearing on the number of hours the respondents to a Request for Proposals will have to devote to the project. For that reason, staff is seeking City Council direction as to any particular rate options to be considered, as well as levels of expenditure to include in the expenses that a new rate is to cover. Staff typically provides its proposal evaluation criteria in its RFP's. Therefore, it would be helpful for staff to know if there are any specific qualifications that the City Council would like staff to evaluate applicants on so that those qualifications can be listed in the RFP.

## ALTERNATIVES

1.) The City Council may direct staff to prepare a Request for Proposals seeking professional services for the preparation of a water rate study. The Council may further direct staff to include in the proposed Scope of Services any or all of the following items of work:
    a. Conduct an impartial review of water department operations to ensure that it is operating as cost effectively as possible.
    b. Include in expenses covered under the water rate, all operational expenses, including capital costs, and the costs to purchase water from SGVMWD via the City of Arcadia.
    c. Analyze multiple rate structures and provide recommendations to the City Council regarding the advantages and disadvantages of each:

        Customer water-budget-based rates

        Some water agencies have adopted water-budget-based rates. In this type of structure, each water customer is provided a water budget. That budget is comprised of an indoor use location based on the number of occupants and an outdoor allocation based on the landscaped area of the customer's property. This water budget becomes the customer's base rate. Water consumption above that budgeted amount is billed at increasingly higher rates depending on the amount that the budget is exceeded.

Tiered Rates

Sierra Madre currently has a tiered water rate structure in place. The differences between the current rates are not significant; initiating greater differences between tier rates would better encourage conservation.

Flat Rate based on water units consumed

Some agencies bill water consumption solely on the amount of water consumed. Under this structure, the rate must be set high enough to allow for coverage of system/operational costs as conservation increases.

Combination rate

The current Sierra Madre water rate structure is a combination structure. There is a flat rate charge for each account, the meter charge. There is also a tiered consumption charge based on the amount of water consumed.

Surcharge Rates

One operational expense that the water department is currently not budgeted for, and which may come up during the upcoming two-year budget cycle, is the cost of purchasing imported water. At a minimum cost of $107,000 per year, that could have an impact on other water department functions, yet it would not need to be included in the regular rates unless it is actually used. In order to provide imported water, only if the need arises, that cost could be added to the rate structure as an "importation rate." This would allow a pay as you go approach to importing water. Other water expenses could also be separated out of the rate, within the ability of the billing software to do so. For example, current bond payment costs, or an annual allocation for capital improvements or deferred maintenance might be added to the billing document, much as Edison does in breaking down its various charges to its customers.

2.) The Sewer/Storm Drain Fund has similar funding problems, particularly with very little of funding for compliance with the new NPDES permit. Staff occasionally receives complaints about the current flat rate structure of the sewer rate being unfair to businesses and multi-family residential customers. The City Council may direct staff to include a sewer rate re-structuring or rate study in the Scope of Services, as well as establishment of a separate Storm Drain/NPDES Fund.

3.) The City Council may direct staff to return with additional information at a future Council meeting.

4.) The City Council may select to take no action at this time.

## PUBLIC NOTICE PROCESS

This item has been noticed through the regular agenda notification process. Copies of this report are available at the City Hall public counter and the Sierra Madre Public Library.

## STAFF RECOMMENDATION

Staff recommends that the City Council provides staff with direction as to: 1.) Whether or not staff should initiate the rate study process by issuance of a professional services Request for Proposal for preparation of the Study, and 2.) If so, what specific provisions should the required Scope of Services include.