



Office of the City Auditor

**Report to the City Council
City of San José**

**AN AUDIT OF THE SAN JOSE
MUNICIPAL WATER SYSTEM
FIRE HYDRANT MAINTENANCE
AND REPAIR PROGRAM**

**The San Jose Municipal Water System Has
Met Its Goal To Service All Fire Hydrants
Within Its Service Area, However,
Operational Improvements Would Enhance
The Fire Hydrant Maintenance And Repair
Program**

**The City Should Negotiate An Agreement
Concerning Ownership, Maintenance, And
Replacement Of About 13,500 Fire Hydrants
In The Respective San Jose Service Areas Of
The Two Private Water Companies**

**Report 06-02
May 2006**

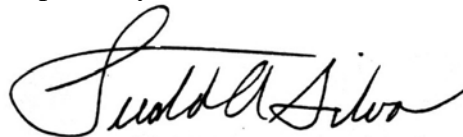
May 10, 2006

Honorable Mayor and Members
of the City Council
200 East Santa Clara Street
San Jose, CA 95113

Transmitted herewith is a report on *An Audit Of The San Jose Municipal Water System Fire Hydrant Maintenance And Repair Program*. This report is in accordance with City Charter Section 805. An Executive Summary is presented on the blue pages in the front of this report. The City Administration's response is shown on the yellow pages before the appendices.

This report will be presented to the Making Government Work Better Committee at its May 18, 2006, meeting. If you need any additional information, please let me know. The City Auditor's staff members who participated in the preparation of this report are Mike Edmonds and Robin Opheim.

Respectfully submitted,



Gerald A. Silva
City Auditor

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Executive Summary

In accordance with the City Auditor's 2005-06 Audit Workplan, we have completed an audit of the San Jose Municipal Water System (MWS). Specifically, at a City Councilmember's request, we reviewed the MWS Fire Hydrant Maintenance and Repair Program. This is the second report on the MWS. On October 13, 2004 the City Auditor issued a *Report On San Jose Municipal Water System Compliance With City Council Ordinance No. 26903*, finding that the MWS was in compliance with the City Council ordinance to establish and fully-fund two reserve funds and to limit Fund 515 transfers to the General Fund. We conducted this audit in accordance with generally accepted government auditing standards and limited our work to those areas specified in the Objective, Scope, and Methodology section of this report.

Finding I

The San Jose Municipal Water System Has Met Its Goal To Service All Fire Hydrants Within Its Service Area, However, Operational Improvements Would Enhance The Fire Hydrant Maintenance And Repair Program

In July 2002, the City transferred hydrant maintenance and repair responsibility to the three water companies serving the City of San Jose - the San Jose Municipal Water System (MWS), the San Jose Water Company (SJWC), and the Great Oaks Water Company (GOWC). In 2003, in response to a privatization proposal from the SJWC, the MWS proposed to provide fire hydrant maintenance and repair services within its service area. Specifically, the MWS estimated that it could service all hydrants within its service area every three years at a cost of \$128,000 annually. We found that the MWS has essentially met its commitment to service all hydrants every three years and was within its cost estimates. However, we also found that operational improvements would enhance the fire hydrant maintenance program. Specifically, we noted the following:

- The MWS did not correct all identified defects;
- The MWS did not address some minor maintenance issues; and
- The MWS did not replace some missing blue reflective fire hydrant road markers.

To address these issues, the MWS should develop procedures to followup on identified fire hydrant defects; re-evaluate the type of paint used on hydrants; and instruct MWS meter readers in the field to check for minor maintenance problems and report them to the MWS. In addition, the City needs to establish a reporting mechanism for the water companies to report blue reflective markers that need to be replaced and establish a process for ensuring that the markers are replaced in a timely manner.

RECOMMENDATIONS

We recommend that the MWS:

- Recommendation #1** **Improve its followup process and documentation for fire hydrant repairs. (Priority 3)**
- Recommendation #2** **Re-evaluate the type of paint it uses on fire hydrants. (Priority 3)**
- Recommendation #3** **Establish a procedure whereby meter readers during the course of their regular routes note and report fire hydrant maintenance and repair problems to the MWS for correction. (Priority 3)**

In addition, the City should:

- Recommendation #4** **Establish a reporting mechanism for the water companies to report blue reflective road markers that need to be replaced and establish a process for ensuring that the markers are replaced in a timely manner. (Priority 3)**

Finding II The City Should Negotiate An Agreement Concerning Ownership, Maintenance, And Replacement Of About 13,500 Fire Hydrants In The Respective San Jose Service Areas Of The Two Private Water Companies

In July 2002, the City of San Jose (City) transferred responsibility for fire hydrant maintenance and repair to the three water purveyors in San Jose. Prior to the transfer, the City's Department of Transportation (DOT) maintained all the hydrants in the City. Now, the San Jose Water Company (SJWC), the Great Oaks Water Company (GOWC), and the San Jose Municipal Water System (MWS) maintain the hydrants in their respective service areas. Although fire hydrant maintenance responsibility now rests with the water companies in their service areas, the City still owns the fire hydrants. In contrast, the water companies own the rest of the water system infrastructure needed to supply water for residential and commercial uses and for fire protection purposes in their service areas. We found that the private water companies are maintaining the hydrants in their respective service areas; however, the water companies are handling hydrant replacements differently. Specifically, when the SJWC replaces a fire hydrant it pays for the hydrant and assumes ownership of it. On the other hand, the City's General Fund is still paying for hydrant replacement in the GOWC service area.

Negotiation of an agreement concerning ownership, maintenance, and replacement of all hydrants in each company's service area would resolve outstanding issues with replacement of hydrants in GOWC's service area and could provide some compensation or other form of consideration to the City.

RECOMMENDATION

We recommend that the City:

Recommendation #5

Negotiate the ownership, maintenance, and replacement of about 13,500 fire hydrants with the private water companies in San Jose service areas. (Priority 2)

Introduction

In accordance with the City Auditor's 2005-06 Audit Workplan, we have completed an audit of the San Jose Municipal Water System (MWS). Specifically, at a City Councilmember's request, we reviewed the MWS Fire Hydrant Maintenance and Repair Program. This is the second report on the MWS. On October 13, 2004 the City Auditor issued *A Report On San Jose Municipal Water System Compliance With City Council Ordinance No. 26903*, finding that the MWS was in compliance with the City Council ordinance to establish and fully-fund two reserve funds and to limit Fund 515 transfers to the General Fund. We conducted this audit in accordance with generally accepted government auditing standards and limited our work to those areas specified in the Objective, Scope, and Methodology section of this report.

The City Auditor's Office thanks the employees in the Municipal Water System, Department of Environmental Services, Department of Transportation, the Fire Department, Public Works' Development Division, and the City Attorney's Office that gave their time, information, and cooperation during this audit.

Background - San Jose Municipal Water System

The San Jose Municipal Water System (MWS) is a division of the Environmental Services Department (ESD), providing water service to the communities of Evergreen, North San Jose/Alviso, Edenvale, and Coyote. The MWS four-community service area comprises about 12% (110,000) of the City's population and consists of approximately 26,000 metered connections. There are 325 miles of water mains, providing for 7 billion gallons of municipal water consumption per year. Projects in the 2005-2009 Adopted Capital Improvement Program include construction of new facilities, maintenance of existing infrastructure and improvements to MWS facilities.

The MWS service area represents about 12% of the City's total land area but contains approximately 29% of the City's remaining developable land. The City's General Plan anticipates significant development overall within the MWS service area and water demand is projected to increase by 80% by the year 2020. Two private water retailers – San Jose Water Company and Great Oaks Water Company – provide water service to the rest of San Jose. These private water retailers

have made several offers over the past decades to lease or purchase the MWS and operate it on behalf of the City or to contract with the City to provide other water-related services.

Organization

The MWS consists of four sections: Administration, Engineering, Billing, and Operations and Maintenance. Operations and Maintenance (O&M) is split into two units: Production and Distribution. The Production Unit is responsible for major facilities, communications, instrumentation, electrical, source of supply, and other duties related to production. The Distribution Unit is responsible for water quality management, regulation compliance, cross connection, flushing program, meters, distribution pipeline, customer service, hydrants, and other appurtenances. MWS staff in each section performs the following functions:

Administration Section

- Operate and maintain the MWS.
- Provide analysis services and strategies related to water use and supply for both short and long-term water resources planning.
- Develop and implement programs to educate MWS customers about environmental issues and conserving water resources.
- Report conformance to regulations and agreements mandated by Federal, State, and local agencies to those agencies as required.

Engineering Section

- Prepare master plans, plans and specifications for major facilities.
- Provide construction administration and provide construction inspection services.
- Review plans, monitor water quality and provide water supply training.
- Perform water allocation and use analyses.
- Develop and implement water conservation programs in the service area.

Customer Service Section

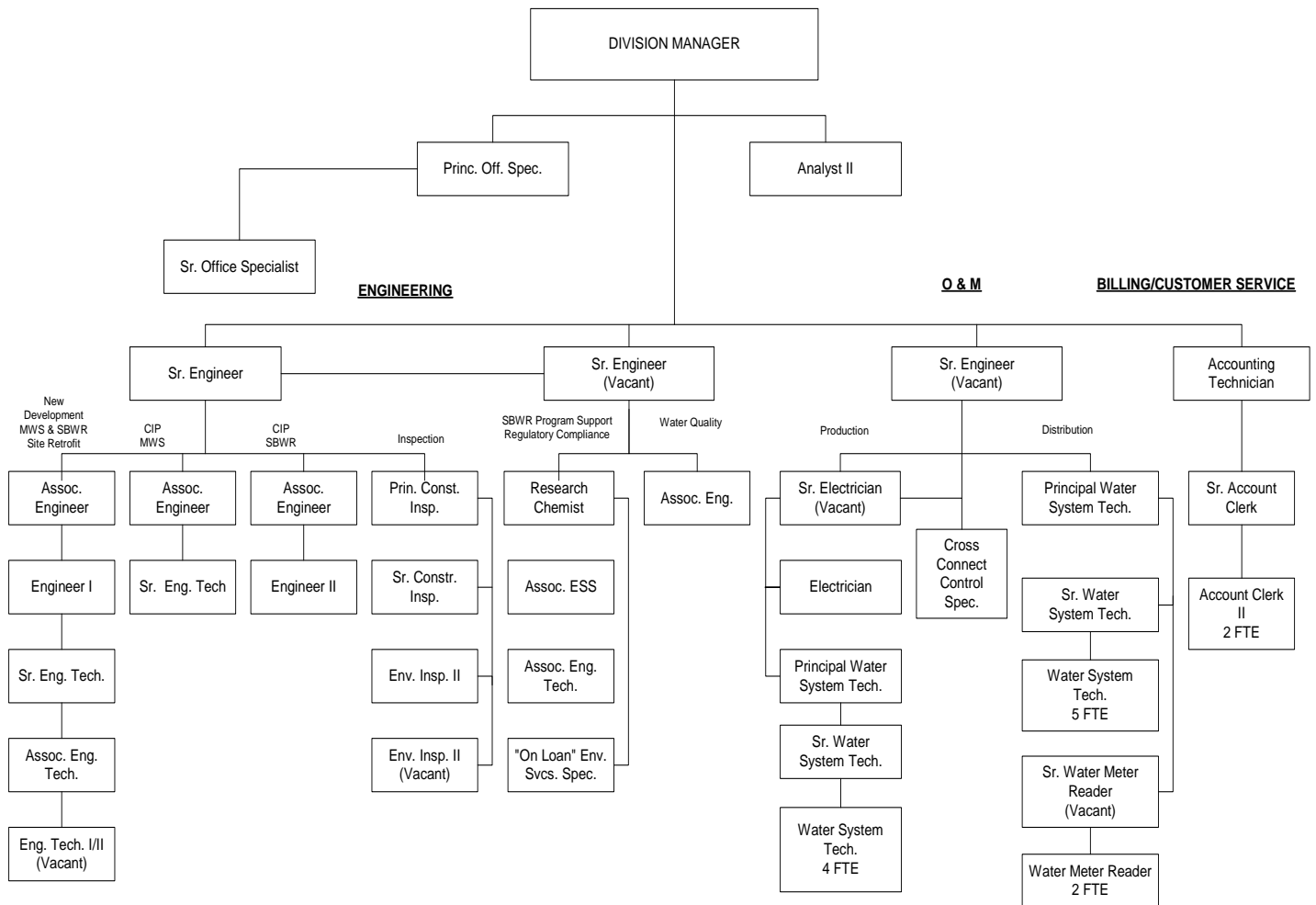
- Maintain customer accounts and prepare bills for water services.
- Read meters.
- Collect payments.
- Respond to customer requests for service.

Operations and Maintenance Section

- Maintain pumps, pipelines, hydrants, valves and reservoirs.
- Maintain electric controls and telemetering systems.
- Operate pumps, control valves, and telemetering equipment.
- Obtain water samples and perform testing to enforce cross connection controls.
- Turn water service on and off.

Exhibit 1 shows the MWS organization chart.

Exhibit 1 Municipal Water System Organization Chart



Objective, Scope, And Methodology

The objective of this audit was to determine whether the San Jose Municipal Water System (MWS), during the period of July 2002 through March 31, 2006, met its Fire Hydrant Maintenance and Repair Program goals. To determine whether the MWS program to maintain and repair fire hydrants in the MWS service area was operating efficiently and effectively we:

- Interviewed MWS management and staff;
- Obtained and reviewed MWS’ inventory listing of fire hydrants in the City service area;

- Reviewed MWS staff progress on entering fire hydrant information into the MWS computerized asset management system database;
- Obtained and reviewed MWS fire hydrant program policies and procedures;
- Scheduled field site visits and observed MWS staff performing fire hydrant maintenance;
- Reviewed MWS annual costs and costs-to-date to perform the fire hydrant program;
- Met with Department of Public Works Development Division management and staff;
- Reviewed MWS performance goals with regard to fire hydrant maintenance and repair;
- Performed a field survey of fire hydrants the MWS had inspected and serviced between September 2003 and December 2005;
- Interviewed San Jose Fire Department personnel regarding communication and coordination with the MWS, San Jose Water Company, and Great Oaks Water Company for fire hydrant maintenance and repair;
- Interviewed Department of Transportation (DOT) staff who were formerly responsible for maintaining and repairing fire hydrants in the City service area;
- Met with San Jose Water Company and Great Oaks Water Company management responsible for maintaining and repairing fire hydrants in their respective service areas; and
- Discussed with the City Attorney's Office pending legal issues regarding ownership of the fire hydrants and operation of the system to deliver water to all City of San Jose residents.

**Major
Accomplishments
Related To This
Program**

In Appendix B, the Director of Environmental Services informs us of major accomplishments of the San Jose Municipal Water System Fire Hydrant Maintenance and Repair Program.

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Finding I

The San Jose Municipal Water System Has Met Its Goal To Service All Fire Hydrants Within Its Service Area, However, Operational Improvements Would Enhance The Fire Hydrant Maintenance And Repair Program

In July 2002, the City transferred hydrant maintenance and repair responsibility to the three water companies serving the City of San Jose - the San Jose Municipal Water System (MWS), the San Jose Water Company (SJWC), and the Great Oaks Water Company (GOWC). In 2003, in response to a privatization proposal from the SJWC, the MWS proposed to provide fire hydrant maintenance and repair services within its service area. Specifically, the MWS estimated that it could service all hydrants within its service area every three years at a cost of \$128,000 annually. We found that the MWS has essentially met its commitment to service all hydrants every three years and was within its cost estimates. However, we also found that operational improvements would enhance the fire hydrant maintenance program. Specifically, we noted the following:

- The MWS did not correct all identified defects;
- The MWS did not address some minor maintenance issues; and
- The MWS did not replace some missing blue reflective fire hydrant road markers.

To address these issues, the MWS should develop procedures to followup on identified fire hydrant defects; re-evaluate the type of paint used on hydrants; and instruct MWS meter readers in the field to check for minor maintenance problems and report them to the MWS. In addition, the City needs to establish a reporting mechanism for the water companies to report blue reflective markers that need to be replaced and establish a process for ensuring that the markers are replaced in a timely manner.

The City's Department Of Transportation Was Responsible For Fire Hydrant Maintenance And Repair

Prior to July 2002, the Department of Transportation (DOT) was responsible for fire hydrant maintenance and repair for all fire hydrants in the City of San Jose. In 2002, the DOT recommended that the City outsource the hydrant maintenance and repair function because it could not adequately administer the program with existing resources. With three, two-person hydrant crews, the DOT reported that it was performing preventive maintenance on the City's estimated 17,000 hydrants on a nine-year cycle. In addition to its preventive maintenance program, the DOT also estimated that it responded to 80 knockdowns and 100 repair requests per year.

Beginning In July 2002, The City Transferred Responsibility For Fire Hydrant Maintenance And Repair To The Water Companies Serving The City Of San Jose

Beginning in July 2002, the City transferred the hydrant maintenance and repair responsibility for fire hydrants in the MWS' service area from the DOT to the MWS. The DOT continued providing hydrant maintenance and repair to hydrants in the SJWC and GOWC service areas until these two private water retailers accepted responsibility for hydrant maintenance and repair in their respective areas.

During this time, the City was involved in discussions with the SJWC to privatize some or all of the MWS. Both the SJWC and the MWS responded to a July 2001 Request For Proposal (RFP) for the Operations and Maintenance of the San Jose, California Municipal Water System. During 2002, the City Council determined that the MWS continuing to operate the entire system was the most cost effective option. However, the City Council then directed the City Manager's Office to negotiate with the SJWC to provide certain services to the MWS. Between June 2002 and November 2002, the City Manager's Office and SJWC discussed various privatization options. As a result of these discussions, SJWC developed a proposal to provide water billing and fire hydrant maintenance services to the MWS.

San Jose Water Company Proposal To Service The Hydrants In The San Jose Municipal Water System Service Area

In January 2003, the SJWC proposed to provide fire hydrant maintenance services to the MWS at a price of \$135,000 annually for ten years. The SJWC's price for maintenance services was based on a three-year preventative maintenance schedule and a five-to-six year schedule for painting the hydrants. The price included minor repairs and parts

replacement. The SJWC did not price out major repairs and replacements and stated that this service would be provided on a time and materials basis.

**In February 2003,
The MWS
Submitted A
Proposal To
Maintain Fire
Hydrants In Its
Service Area On A
Three-Year Cycle**

In accordance with the City's Managed Competition Policy, the MWS was allowed to respond to the same scope of services for hydrant maintenance that SJWC offered. In February 2003, the MWS submitted a proposal to provide hydrant maintenance and repair services for fire hydrants located in its service area. The scope of the MWS' proposed services consisted of inspecting the hydrants, checking for proper operation, lubrication, checking gaskets, performing minor repairs not requiring hydrant lifting, and replacing hydrant packing if necessary. MWS staff would follow procedures which require that fire hydrant maintenance tasks be performed on a three-year cycle.

The MWS' proposal included \$1,313,300 over ten years to provide hydrant maintenance on a three-year cycle and paint hydrants every five years. In addition, the MWS estimated that it would spend an additional \$1,356,520 over ten years to repair hydrants. In March 2003, the City Council authorized the MWS to provide fire hydrant maintenance and repair in its service area.

The MWS Developed A Program To Maintain And Repair Fire Hydrants In Its Service Area

The DOT provided the MWS with an inventory listing of fire hydrants in its service area and DOT's maintenance records to-date for fire hydrants upon the MWS taking over the fire hydrant maintenance and repair program. According to MWS staff, the DOT's hydrant inventory was inaccurate and the manual maintenance records which the DOT kept on a card catalogue system were not in good order. In order to develop its hydrant maintenance and repair program, the MWS:

- performed a field count of fire hydrants in the MWS service area;
- developed a numbering scheme and assigned an identification number to each fire hydrant; and
- implemented a computerized asset management system.

The MWS Met Or Exceeded Its Performance Goals But Operational Improvements Would Enhance The Hydrant Maintenance Program

As noted earlier, the MWS committed to servicing all the hydrants in its service area in three years. To reach this goal, the MWS established a target to service 960 fire hydrants annually. This target was based on servicing approximately 2,880 hydrants in three years.

We found that the MWS inspected and serviced all of the hydrant inventory as of December 2005. Specifically, MWS records showed they serviced the following number of hydrants over the last 2 ½ years:

- 361 fire hydrants from September 2003 through December 2003.
- 1,238 fire hydrants from January 2004 through December 2004.
- 1,256 fire hydrants from January 2005 through December 2005.

We obtained all the MWS records documenting the fire hydrant inspection dates. We verified that each fire hydrant in the MWS service area had been inspected and maintained between September 2003 and December 2005. In addition, to verify whether the MWS actually serviced the hydrants, we visually inspected 75 hydrants. During our observations, we confirmed that the MWS inspected and serviced these hydrants. Thus, the MWS has met its goal to service all the hydrants in its service area within three years.

In addition, we determined that from 2002-03 through 2004-05 the MWS was able to deliver the program for \$375,866 less than proposed costs. However, in our opinion, operational improvements would enhance the MWS' hydrant maintenance program.

Fire Hydrant Field Observation

We sampled 75 hydrants to determine if the MWS had 1) serviced these hydrants, 2) made return visits to correct defects, and 3) provided proper service to the hydrants. In general, we found that the MWS had serviced the hydrants in our sample, made return visits, and properly serviced the hydrants. However, we noted that the MWS:

- Did not correct all identified defects and
- Did not address some minor maintenance issues.

In addition, we noted several missing blue reflective fire hydrant road markers.

The MWS Did Not Correct All Identified Defects

MWS staff prepare a Hydrant Maintenance Report (Report) for each hydrant serviced. The Report shows the hydrant number, location, and lists the routine maintenance activities that staff performed. MWS staff note any defects on the form along with the inspection date, any defects corrected, and the initials of the staff doing the work. MWS staff indicate on the Report initial flushing, greasing, and painting activities and note any defects still needing correction. We reviewed Reports for our sample of 75 hydrants and found that the MWS did not consistently follow up and correct identified fire hydrant defects. All 75 of the hydrants we sampled had some deficiency that needed to be corrected. Our visual inspections of these 75 hydrants identified 14 hydrants with defects that the MWS had not corrected. Specifically,

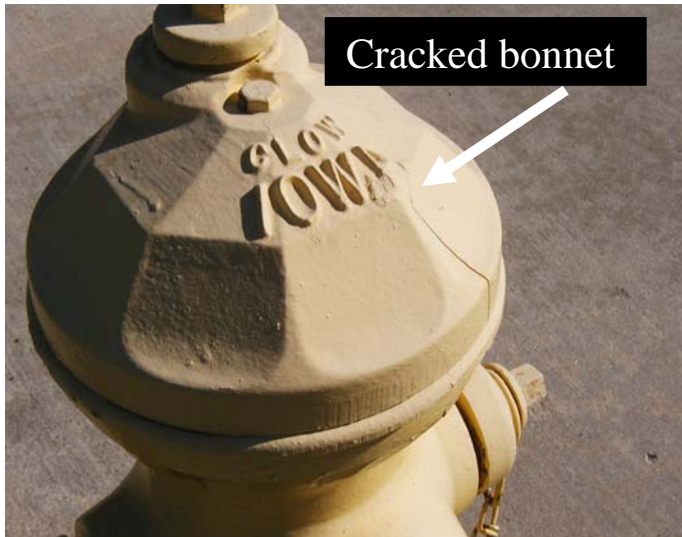
- On May 26, 2004, MWS staff inspected and serviced a hydrant on the east side of Hellyer, north of Fontanoso; the Water System Technician (WST) noted 'need a new bonnet – cracked'. We found that on January 25, 2006 the bonnet was still cracked.
- On April 20, 2005, MWS staff inspected and serviced a hydrant on Grey Cliffs Court, the WST noted 'need to turn hydrant to face street'. We noted on February 9, 2006 that MWS staff had not turned the hydrant to face the street;

Fire Hydrant Maintenance & Repair Program

- On August 4, 2004, MWS staff inspected and serviced a hydrant in the Evergreen/Edenvale/Coyote service area and the WST noted 'needs chain for cap'. We observed on January 27, 2006 that MWS staff had not replaced the cap chain;
- On October 6, 2004, MWS staff inspected and serviced six hydrants in the Evergreen service area and the WST noted 'needs road marker' on each Report. On March 8, 2006 we observed that MWS staff had installed a road marker for only one of the six hydrants; and
- We also observed that the MWS had not installed needed brass ID tags for six fire hydrants.

Exhibit 2 shows pictures taken during our field observation of identified fire hydrant defects still needing correction.

**Exhibit 2 Examples Of Identified Fire Hydrant Defects Still
Needing Correction**



During our visual inspections we noted several instances of the MWS not correcting fire hydrant defects in a timely manner.

Followup On Identified Problems Needs Improvement

When the MWS took over fire hydrant maintenance and repair in its service area, it created its Hydrant Survey. Specifically, MWS staff entered fire hydrant ID numbers, manufacturers, and address locations into Excel spreadsheets with columns for the dates serviced and comments. MWS staff returning from inspecting and servicing hydrants provide the Hydrant Maintenance Reports (Reports) to their analyst who enters the information into the Hydrant Survey. Then, the MWS staff file Reports in binders. The MWS' hard copy system is not conducive to timely followup on defects. Specifically, we found

- Although there is a space on the Report to indicate that the MWS corrected the defect, MWS staff did not routinely record that information on the form. Specifically, the Reports for 40 of the 61 defects in our sample did not show that MWS staff corrected the defect. Thus, it was unclear if MWS staff corrected the defect or not;
- In some instances, MWS staff filed two Reports in the binder for the same hydrant and the same defect. Of the two Reports, one noted the defect while the other indicated staff had corrected it; and
- MWS staff place Reports noting defects to be corrected in binders and there is no system in place to monitor when or if MWS staff correct the defect.

To ensure that it follows up and corrects identified defects, the MWS needs to develop procedures for following up, correcting the defect, and documenting that the work was completed.

We recommend that the MWS:

Recommendation #1
Improve its followup process and documentation for fire hydrant repairs. (Priority 3)

The MWS Did Not Address Some Minor Maintenance Issues

We noted some minor maintenance problems which developed after MWS staff performed the initial hydrant inspection and maintenance procedures. Specifically, we noted

- Faded paint on several hydrants;
- Broken chains; and
- Rust.

Faded Paint

Newly-painted fire hydrants are bright yellow so that they are easy to locate. The paint is also a protective measure to prevent the hydrant from rusting. We noted the paint had faded to light yellow on some of the fire hydrants in our sample that were painted just two years ago. The MWS plans to evaluate its current five-year fire hydrant painting cycle. In our opinion, MWS staff should also re-evaluate the type and quality of paint it uses on fire hydrants.

We recommend that the MWS:

Recommendation #2

**Re-evaluate the type of paint it uses on fire hydrants.
(Priority 3)**

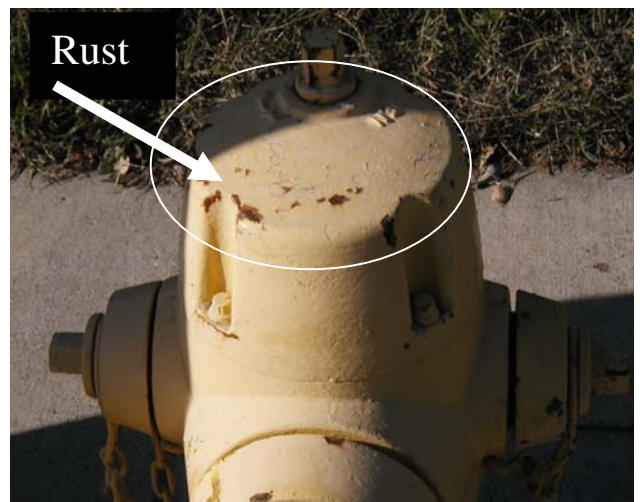
Broken Chains

Fire hydrant chains restrain the hydrant caps in case of water pressure surges and help prevent vandalism. Some fire hydrants in our sample had one or two broken chains. The MWS staff who inspected these hydrants did not note on their Reports “broken chain/needs replacement” as a defect to be corrected. MWS staff either missed the broken chain when conducting their inspection or the chains broke after MWS staff had inspected and serviced the hydrants during the three-year inspection and maintenance cycle.

Rust

Rust can damage hydrants and keep them from working properly. During our field visits we noted rust on some fire hydrants that MWS staff had recently painted. The observed rust could be caused by MWS staff not properly painting or preparing the hydrant or using poor quality paint. In addition, the hydrants may have been exposed to chemicals or cleaners. Exhibit 3 below shows examples of fire hydrants with minor maintenance issues.

Exhibit 3 Fire Hydrant Minor Maintenance Issues



Although MWS records show that it maintained all fire hydrants within the three-year performance cycle, hydrants are exposed to weather and other elements and hydrant parts wear out with operation and age. We noted during our field observations some minor fire hydrant maintenance problems that may have developed after MWS staff inspected and maintained the hydrants during the three-year maintenance cycle. MWS meter readers perform regular rounds in the City's service area and could report on minor maintenance and repair

problems. In our opinion, meter readers performing their regular rounds should note and report fire hydrant maintenance and repair problems to the MWS for correction.

We recommend that the MWS:

Recommendation #3

Establish a procedure whereby meter readers during the course of their regular routes note and report fire hydrant maintenance and repair problems to the MWS for correction. (Priority 3)

**Some Blue
Reflective Fire
Hydrant Markers
Were Not In Place**

Blue reflective fire hydrant markers on City streets indicate the curbside location of fire hydrants. When responding to fire calls, the San Jose Fire Department uses the reflective blue marker to easily identify the hydrant location. We found that the City needs to clarify who is responsible for blue reflective fire hydrant marker placement. The DOT replaced broken blue road markers when it was responsible for the hydrant maintenance program. The DOT's Road Marking Crew is still responsible for replacing the missing or broken blue reflective fire hydrant markers but replacing these markers is a low priority. In addition, the City has not established a process for the private water retailers to report blue reflective markers that need replacement to DOT. Currently, neither of the private water retailers is replacing the blue reflective road markers. For our sample group, we noted that the MWS had replaced only one of six blue reflective markers that needed replacing. Further, we generally observed many missing blue reflective fire hydrant markers on heavily-traveled City streets. Exhibit 4 shows a damaged blue reflective road marker that needed replacement.

**Exhibit 4 Damaged Blue Reflective Fire Hydrant Road
Marker Needed Replacement**



According to MWS staff, replacing blue reflective fire hydrant markers requires more than a one-person crew to provide traffic control during pavement cleaning and drying time. In our opinion, the City needs to establish a reporting mechanism for the water companies to report blue reflective fire hydrant markers that need to be replaced and establish a process for ensuring that the markers are replaced in a timely manner.

The City should:

Recommendation #4

Establish a reporting mechanism for the water companies to report blue reflective fire hydrant markers that need to be replaced and establish a process for ensuring that the markers are replaced in a timely manner. (Priority 3)

CONCLUSION

In June 2002, the City transferred hydrant maintenance and repair responsibility to the three water companies serving the City of San Jose - the San Jose Municipal Water System (MWS), the San Jose Water Company (SJWC), and the Great Oaks Water Company (GOWC). In 2003, in response to a privatization proposal from the SJWC, the MWS proposed to provide fire hydrant maintenance and repair services within its service area. Specifically, the MWS estimated that it could service all hydrants within its service area every three years at a cost of \$128,000 annually. We found that the MWS has essentially met its commitment to service all hydrants every

three years and was within its cost estimates. However, we found that operational improvements would enhance the MWS' fire hydrant maintenance and repair program. Specifically, we noted the following:

- The MWS did not correct all identified defects;
- The MWS did not address some minor maintenance issues; and
- The MWS did not replace some missing blue reflective fire hydrant road markers.

To address these issues, the MWS should develop procedures to followup on identified fire hydrant defects; re-evaluate the type of paint used on hydrants; and instruct MWS meter readers in the field to check for minor maintenance problems and report them to the MWS. In addition, the City needs to establish a reporting mechanism for the water companies to report blue reflective road markers that need to be replaced and establish a process for ensuring that the markers are replaced in a timely manner.

RECOMMENDATIONS

We recommend that the MWS:

- Recommendation #1** **Improve its followup process and documentation for fire hydrant repairs. (Priority 3)**
- Recommendation #2** **Re-evaluate the type of paint it uses on fire hydrants. (Priority 3)**
- Recommendation #3** **Establish a procedure whereby meter readers during the course of their regular routes note and report fire hydrant maintenance and repair problems to the MWS for correction. (Priority 3)**

In addition, the City should:

- Recommendation #4** **Establish a reporting mechanism for the water companies to report blue reflective road markers that need to be replaced and establish a process for ensuring that the markers are replaced in a timely manner. (Priority 3)**

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Finding II

The City Should Negotiate An Agreement Concerning Ownership, Maintenance, And Replacement Of About 13,500 Fire Hydrants In The Respective San Jose Service Areas Of The Two Private Water Companies

In July 2002, the City of San Jose (City) transferred responsibility for fire hydrant maintenance and repair to the three water purveyors in San Jose. Prior to the transfer, the City's Department of Transportation (DOT) maintained all the hydrants in the City. Now, the San Jose Water Company (SJWC), the Great Oaks Water Company (GOWC), and the San Jose Municipal Water System (MWS) maintain the hydrants in their respective service areas. Although fire hydrant maintenance responsibility now rests with the water companies in their service areas, the City still owns the fire hydrants. In contrast, the water companies own the rest of the water system infrastructure needed to supply water for residential and commercial uses and for fire protection purposes in their service areas. We found that the private water companies are maintaining the hydrants in their respective service areas; however, the water companies are handling hydrant replacements differently. Specifically, when the SJWC replaces a fire hydrant it pays for the hydrant and assumes ownership of it. On the other hand, the City's General Fund is still paying for hydrant replacement in the GOWC service area.

Negotiation of an agreement concerning ownership, maintenance, and replacement of all hydrants in each company's service area would resolve outstanding issues with replacement of hydrants in GOWC's service area and could provide some compensation or other form of consideration to the City.

The City's Department Of Transportation Was Responsible For Fire Hydrant Maintenance And Repair

Prior to July 2002, the Department of Transportation (DOT) was responsible for fire hydrant maintenance and repair for all three water companies serving the City of San Jose – the San Jose Municipal Water System (MWS), the San Jose Water Company (SJWC), and Great Oaks Water Company (GOWC). In 2002, the DOT recommended that the City outsource the hydrant maintenance and repair function because it could not

adequately administer the program with existing resources. With three, two-person hydrant crews, the DOT reported that it was performing preventive maintenance on the City's estimated 17,000 hydrants on a nine-year cycle. In addition to its preventive maintenance program, the DOT also estimated that it responded to 80 knockdowns and 100 repair requests per year. Thus, the DOT recommended outsourcing hydrant maintenance and repair to the water companies in San Jose.

**The City Still Owns
The Hydrants In
The SJWC And
GOWC Service
Areas**

The City owns the fire hydrants that are connected to the three water systems through which water is supplied for residential and commercial uses and for fire protection purposes in San Jose. Specifically, the City owns the above-ground hydrants and the elbow pipes that connect the hydrants to the water mains, while SJWC, GOWC, and MWS own the below-ground mains, pipes, and cross-connections in their respective service areas.

SJWC provides water service to other cities. In addition to the City of San Jose, SJWC services 6,000 fire hydrants in the cities of Cupertino, Saratoga, Monte Sereno, Campbell, and Los Gatos. There are about 12,000 fire hydrants in the SJWC service area in San Jose. According to the SJWC, it owns the 6,000 hydrants in the other cities' service areas, while it does not own the 12,000 hydrants in San Jose. There are about 1,500 fire hydrants in GOWC's San Jose service area.

When the City informed SJWC and GOWC they would be responsible for fire hydrant maintenance and repair of the hydrants in their respective San Jose service areas, both private companies expressed interest in owning the hydrants for which they would become responsible. Both the DOT and the City Attorney's Office corresponded with SJWC and GOWC, affirming they would work with the water providers on this issue. In 2002, the City Attorney's Office crafted an agreement outlining conditions for private water providers to purchase the City-owned fire hydrants.

In 2002, City staff initiated discussions on a proposed purchase agreement with SJWC, but these discussions ended when SJWC decided it did not want to pay the City for the fire hydrants. Instead, SJWC suggested the City convey the fire hydrants at no cost to SJWC. When the City Attorney's Office indicated that the City would need to receive some form of

compensation for the hydrants in order to avoid a gift of public funds, negotiations between the City and SJWC ended with neither party signing the proposed purchase agreement.

SJWC And GOWC Are Servicing Hydrants In Their Service Areas

According to SJWC and GOWC management, SJWC and GOWC are inspecting and performing routine maintenance on the fire hydrants in their service areas. SJWC and GOWC management also stated they maintain their fire hydrants on a three-year cycle, as does the MWS. In preparing to take over fire hydrant maintenance and repair in their service areas, SJWC and GOWC requested California Public Utilities Commission (CPUC) authorization to increase rates for water service.

In October 2002, SJWC requested a rate increase for the specific purpose of paying operating expenses incurred as a result of taking over fire hydrant maintenance and repairs. The CPUC approved the SJWC request. In November 2002, GOWC requested the CPUC authorize a rate increase for hydrant maintenance and approve a separate capital expenditure for hydrant replacement. In December 2003, the CPUC approved the rate increase for GOWC to perform fire hydrant maintenance but did not approve the GOWC request for capital expenditure to replace fire hydrants.

SJWC And GOWC Handle Hydrant Replacements Differently

SJWC performs both hydrant maintenance and hydrant replacement in their service area. GOWC maintains but does not replace the fire hydrants in their service area. As noted above, the CPUC did not approve GOWC capital expenditures to cover hydrant repair and replacement of fire hydrants in the GOWC service area. As a result, GOWC has not performed emergency repairs on or replaced fire hydrants in their area. Instead, the City's Department of Transportation (DOT) has a \$10,000 open purchase order with SJWC to repair or replace out-of-service, knocked down, or non-functioning fire hydrants in the GOWC service area. According to the DOT, it has no budget for this hydrant expense and must cover the open purchase order expenses through its General Fund non-personal budget.

From October 2003 through November 2005, the DOT has paid SJWC about \$24,000 through the open purchase order to perform emergency repairs on or replace fire hydrants in the GOWC service area. Because the amount and extent of

emergency repairs and number of fire hydrants needing replacement is difficult to determine, the \$10,000 open purchase order was a DOT estimate. In 2003, the year the DOT initiated the purchase order, SJWC costs were minimal, only \$3,075. Likewise, in 2005, the DOT paid only \$2,600 to SJWC to repair and replace GOWC service area fire hydrants. However, in 2004, GOWC fire hydrant emergency repair and replacement costs paid to SJWC were \$18,102. The DOT requested an increase in the \$10,000 open purchase order in 2004 to cover the additional costs.

It should be noted that in June 2002, the City Council took an action that was intended to move the entire fire hydrant maintenance and repair function away from the General Fund and turn it over to the MWS, the SJWC, and the GOWC. The City Council's action notwithstanding, the DOT still pays for GOWC hydrant repairs and replacements with General Fund monies.

Transferring Hydrant Ownership Would Clear Up Ownership Issues And Could Provide Some Compensation Or Other Form Of Consideration To The City

When the City told the private water companies that they were expected to take over fire hydrant maintenance and repair in their service areas, both SJWC and GOWC expressed an interest in owning the fire hydrants within their service areas. As noted earlier, the DOT and City Attorney's Office developed a fire hydrant purchase agreement which neither the City, SJWC, nor GOWC signed. In January 2003, SJWC submitted a fire hydrant service agreement to the DOT stating that all replacements of existing City-owned as well as all the new public fire hydrants installed on their system would become SJWC property. The City did not enter into this service agreement with SJWC. An April 2003 letter from SJWC informed the DOT that absent a City response to their request to clear up fire hydrant ownership in San Jose:

1. *SJWC has replaced 11 fire hydrants since 1/1/03 in the City of San Jose. These hydrants will be stamped with a SJWC name/identification to designate SJWC ownership.*
2. *SJWC will own all replaced fire hydrants and will rate base hydrant and installation cost.*
3. *All new fire hydrants will be furnished and owned by SJWC.*

The CPUC allows a water provider to request water delivery rate increases if it incurs additional operating expenses and/or increases capital investment in their service area. SJWC has received rate increases for repairs and replacement of fire hydrants but GOWC has only received increases for the maintenance. Negotiation of an agreement concerning ownership, maintenance, and replacement of all hydrants in each company's service area would resolve the outstanding issues with replacement of hydrants in GOWC's service area and could provide some compensation or other form of consideration to the City. However, as already noted, the City's proposed draft fire hydrant purchase agreement was never formalized. Further, beginning in January 2003, SJWC stated it has taken ownership of City-owned fire hydrants replaced or newly-installed in their service area. According to GOWC management, they would do likewise if they were replacing the City-owned fire hydrants in their service area. In our opinion, the City should negotiate the ownership of the 13,500 fire hydrants with the private water companies in San Jose service areas.

We recommend that the City:

Recommendation #5

Negotiate the ownership, maintenance, and replacement of about 13,500 fire hydrants with the private water companies in San Jose service areas. (Priority 2)

CONCLUSION

There are unresolved issues regarding fire hydrant ownership, maintenance, and replacement in City of San Jose water service areas. When the City told the two private water providers that they were expected to take over fire hydrant maintenance and repair in their service areas, both SJWC and GOWC expressed an interest in owning the fire hydrants within their service areas. In 2002, the City Attorney's Office crafted an agreement outlining conditions for private water providers to purchase the fire hydrants. Neither the City, SJWC, or GOWC ever signed the agreement. As a result, the City still owns the fire hydrants in all three water service areas. However, since 2003, SJWC has claimed ownership for newly-installed as well as replaced City-owned fire hydrants in their service area. In our opinion, negotiating an agreement concerning the ownership, maintenance, and replacement of fire hydrants in SJWC and GOWC service areas would resolve outstanding issues with

replacement of hydrants in GOWC's service area and could provide some compensation or other form of consideration to the City. Accordingly, we recommend that the City negotiate an agreement concerning the ownership, maintenance, and replacement of 13,500 fire hydrants with the private water companies in San Jose service areas.

RECOMMENDATION

We recommend that the City:

Recommendation #5 **Negotiate the ownership, maintenance, and replacement of about 13,500 fire hydrants with the private water companies in San Jose service areas. (Priority 2)**

Memorandum

TO: Gerald A. Silva
City Auditor

FROM: John Stufflebean
Kay Winer

SUBJECT: SEE BELOW

DATE: May 1, 2006

Approved



Date

5/1/06

SUBJECT: RESPONSE TO "AN AUDIT TO THE SAN JOSE MUNICIPAL WATER SYSTEM FIRE HYDRANT MAINTENANCE AND REPAIR PROGRAM"

BACKGROUND

The Environmental Services Department (ESD) has reviewed the final draft report entitled "An Audit to the San Jose Municipal Water System Fire Hydrant Maintenance and Repair Program," and is in general agreement with all recommendations, which we agree will benefit the Department once they are fully implemented.

In addition to recommending areas for improvement, we appreciate that the audit also acknowledges the measures Municipal Water System (Muni) has taken to meet its commitment to service all fire hydrants within its service area, and for less than proposed costs.

RESPONSES

FINDING I. The San Jose Municipal Water System Has Met Its Goal To Service All Fire Hydrants Within Its Service Area; However, Operational Improvements Would Enhance The Fire Hydrant Maintenance And Repair Program

Recommendation #1: Improve its followup process and documentation for fire hydrant repairs. (Priority 3)

Response: The Department concurs with this recommendation. This recommendation has already been implemented. With the implementation of the Data Stream computerized asset management system in January 2006, tracking and scheduling are better managed. The work order procedures have been modified so that an incomplete work order is not turned in until completed. Follow-up items are audited on a weekly basis and scheduled for repair. Confirmed completed work orders are entered into the Data Stream system.

Recommendation #2: Re-evaluate the type of paint it uses on fire hydrants. (Priority 3)

Response: The paint Muni currently uses is "Sunburst Yellow." It is oil-based and the longest lasting according to the representative at Kelly Moore. It is the same paint used by DOT when it was responsible for the hydrant maintenance program and now being used by San Jose Water Company. Muni is proposing to paint the hydrants every three years along with the maintenance cycle to improve the hydrant visibility and aesthetics as opposed to the five-year cycle previously recommended. Muni will continue research to see if there is a more durable paint that would be more resistant to the elements.

Gerald A. Silva

May 1, 2006

Subject: Response to "An Audit to the SJMWS Fire Hydrant Maintenance and Repair Program"

Page 2

Recommendation #3: Establish a procedure whereby meter readers during the course of their regular routes note and report fire hydrant maintenance and repair problems to the MWS for correction. (Priority 3)

Response: A written procedure will be established and added to the existing meter procedures. If a meter reader comes across a hydrant in need of repair, a Data Stream work order would then be created and tracked until completed.

Recommendation #4: Establish a reporting mechanism for the water companies to report blue reflective road markers that need to be replaced and establish a process for ensuring that the markers are replaced in a timely manner. (Priority 3)

Response: Muni staff will be replacing missing blue reflective markers in residential streets in its service area that require no traffic control. Information of missing blue markers in high traffic area will be inputted into Data Stream and a list of hydrant locations will be created to give to DOT on a scheduled basis. DOT, which is better set up for traffic control, will be coordinating the replacement of the blue marker citywide with San Jose Water Company and Great Oaks Water Company.

FINDING II: The City Should Negotiate The Ownership Of Its 13,500 Fire Hydrants In The Respective San Jose Service Areas Of The Two Private Water Companies

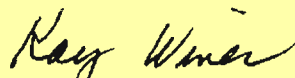
Recommendation #5: Negotiate the ownership of the 13,500 City-owned fire hydrants with the private water companies in San Jose service areas. (Priority 2)

Response: The Administration concurs with this recommendation and will pursue discussions with San Jose Water Company and Great Oaks regarding ownership, maintenance and replacement of fire hydrants.

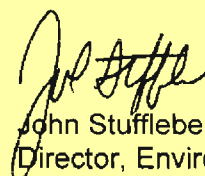
CONCLUSION

We are in agreement with the five recommendations of which three have been addressed or implemented. We are committed to improving Muni's procedures to improve performance and working with Great Oaks and San Jose Water Company to resolve any issues pertaining to hydrants in their respective areas. We also acknowledge and appreciate the significant time and effort extended to Muni staff by the Auditor's staff to assist us in improving the hydrant maintenance program, as well as the professional and objective manner in which the audit was conducted.

Please let me know if you have any questions regarding our responses to the recommendations.



Kay Winer
Deputy City Manager



John Stufflebean
Director, Environmental Services

JS:MMN:eb

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APPENDIX A

DEFINITIONS OF PRIORITY 1, 2, AND 3 AUDIT RECOMMENDATIONS

The City of San Jose's City Administration Manual (CAM) defines the classification scheme applicable to audit recommendations and the appropriate corrective actions as follows:

Priority Class ¹	Description	Implementation Category	Implementation Action ³
1	Fraud or serious violations are being committed, significant fiscal or equivalent non-fiscal losses are occurring. ²	Priority	Immediate
2	A potential for incurring significant fiscal or equivalent fiscal or equivalent non-fiscal losses exists. ²	Priority	Within 60 days
3	Operation or administrative process will be improved.	General	60 days to one year

¹ The City Auditor is responsible for assigning audit recommendation priority class numbers. A recommendation which clearly fits the description for more than one priority class shall be assigned the higher number. (CAM 196.4)

² For an audit recommendation to be considered related to a significant fiscal loss, it will usually be necessary for an actual loss of \$25,000 or more to be involved or for a potential loss (including unrealized revenue increases) of \$50,000 to be involved. Equivalent non-fiscal losses would include, but not be limited to, omission or commission of acts by or on behalf of the City which would be likely to expose the City to adverse criticism in the eyes of its citizens. (CAM 196.4)

³ The implementation time frame indicated for each priority class is intended as a guideline for establishing implementation target dates. While prioritizing recommendations is the responsibility of the City Auditor, determining implementation dates is the responsibility of the City Administration. (CAM 196.4)

APPENDIX B



Memorandum

TO: Gerald A. Silva
City Auditor

FROM: John Stufflebean

SUBJECT: SEE BELOW

DATE: May 5, 2006

Approved

Ray Winer

Date

5/8/06

**SUBJECT: ACCOMPLISHMENTS OF THE SAN JOSE MUNICIPAL WATER SYSTEM
FIRE HYDRANT MAINTENANCE AND REPAIR PROGRAM**

Thank you for the opportunity to provide information on program accomplishments to be included in your final audit report on the Hydrant Maintenance and Repair Program.

Over the last three years since the Municipal Water System (Muni) took over hydrant maintenance in its service territory, several improvements and enhancements have been implemented that have improved both the quality and service cycle of the hydrant maintenance program.

Muni accomplished what it set out to do and met its commitment to service all hydrants every three years within its cost estimate. Specifically, we note the following accomplishments of the Fire Hydrant Maintenance and Repair Program:

- All fire hydrants were serviced within three years rather than nine years, as was the case before September 2003 when Muni took over the program.
- Muni was able to deliver the program for \$375,866 less than proposed costs.
- Muni staff performed a field count to verify the actual number of fire hydrants located in its service area.
- Muni developed a numbering scheme to identify each fire hydrant based on citywide map quadrant locations. This allows for searches and status queries as necessary for infrastructure asset planning. All the fire hydrants have been given brass tags with identification numbers.
- Muni installed Data Stream, a computerized management asset system that allowed the migration of fire hydrant information on Excel spreadsheets into the system database. As of January 2006, the system has been generating automated work orders for fire hydrants and other maintenance work.
- All hydrants have been painted with an enamel oil-based "Sunburst Yellow" color.

Please let me know if you need further information.

JOHN STUFFLEBEAN
Director, Environmental Services