



South Bayside System Authority

Providing wastewater services to residents and businesses in Redwood City, San Carlos, Belmont, and West Bay Sanitary District

SBSA BULLETIN

Spring 2009

SBSA Commission

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Manager's Corner

By Daniel Child, SBSA Manager

How We Averted a Catastrophe



In mid-February, I had a wastewater manager's worse scenario. A major catastrophe was narrowly averted by staff. We emailed a summary to many of you reading this newsletter as well as the media.

An outdoor mounted conduit junction box leaked on Sunday, February 15, allowing water to enter a control panel. The control panel shorted out and the plant control system closed a valve (among other things) that prevented water from leaving the filters, receiving disinfection, and ultimately being pumped to the outfall in San Francisco Bay.

When this occurred, the water rose above the structures and ran down the stairwells into our tunnel system – where the vast majority of our plant equipment resides. The water level rose to about four feet in the tunnels before the plant staff was able to isolate the problem and get to a place where they could manually open the affected valve—allowing the water to flow through the treatment process again.

I cannot state unequivocally enough that the outstanding work by SBSA workers prevented a disaster.

The immediate impact of the emergency has subsided, however, many systems are running on borrowed time – with only one of several motors available for use – and the emergency continues as replacement equipment and systems must be replaced as soon and quickly as possible to insure the ability to treat the wastewater and meet our discharge requirements.

I estimate the total cost of this event, for replacement and repair of equipment, spare parts and plant systems to be between \$250,000 and \$500,000, not including labor. As a result of the flooding that occurred in the gallery beneath the treatment plant, many motors and electrical conductors were adversely affected. Some of the equipment is being replaced under emergency repair conditions to ensure operations continue uninterrupted. Other equipment and electrical conductors need to be replaced but are not in “emergency critical” condition.

One project listed in the Capital Improvement Program (CIP)

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covers electrical conductor replacement throughout the treatment plant. This project was originally scheduled to initiate in 2010 but due to the recent flooding needs to be moved up to respond to the current needs. Fortunately, the SBSA Commission has agreed, and we are putting this \$4.9 million CIP project on the front burner. The CIP project identified these facilities as one area of the treatment plant that is vulnerable to damage and could have serious and negative consequences to the overall operation of the plant.

Most of the conduit and cables that serve equipment in the gallery are embedded in the concrete slab and, therefore, are subject to flooding, in many cases are corroded, and are extremely difficult to service.

Update on CIP Projects

New SBSA CIP projects that the Commission has authorized for planning, design, and construction phases since the last SBSA update in December 2008:

- Plant Road Resurfacing
- Fixed Film Reactor Rehabilitation and Upgrade
- Central Data Acquisition Unit PLC System Upgrade
- MCC PLC Installation/

The plant's roadway has areas within it with significant deterioration. Because heavy construction will be starting soon, it is critical to have the roadway in good condition so that subsurface structures are protected and the roadway itself doesn't become further deteriorated.

This project will repair the areas in the plant's pavement that are in the worst condition and subject to the majority of heavy traffic. Resurfacing was broken into phases and this is the first phase of the roadway resurfacing.

The Fixed Film Reactor project is a very large undertaking to rehabilitate and upgrade this critical treatment process. The wastewater treatment that this process performs is significant at little overall operational cost and represents a key component in the secondary treatment of wastewater. The project will begin with a study to determine the extent and scope of the rehabilitation and upgrade.

Initial evaluation of this process indicates that there may be an opportunity to reduce operational costs even further. In addition to upgrades, the fixed film reactor superstructures and the media inside the reactors are in deteriorating condition and need to be rehabilitated and replaced.

The Central Data Acquisition Unit PLC and MCC PLC projects are both in the automation program and will replace and install critical controllers for the Plant's equipment and processes. These are the backbone of the Authority's SCADA system and it is timely to begin these projects now.



350,000 cu ft of plastic media needs replacing

Commission Retains Consultant for Biosolids Master Plan

The SBSA Commission has retained Brown and Caldwell to prepare a Biosolids Master Plan that will evaluate all phases of biosolids production, utilization and disposal at SBSA. The master plan will address regulatory rules and potential future regulatory changes.

“The Biosolids Master Plan project will allow SBSA to improve reliability and operational flexibility, guide the replacement of aging infrastructure and recommend alternatives to reduce operational costs, all of which will allow SBSA to continue to provide excellent and cost-effective service to the member agencies,” SBSA Plant Manager Bob Donaldson said.

The master plan will be done concurrently with the ongoing Energy System Master Plan and will complement the results of that plan.

Brown and Caldwell is a recognized expert firm in California for biosolids processing and disposal and has authored numerous Biosolids Master Plans for local and state-wide wastewater agencies.

Child said that the majority of SBSA's biosolids are currently disposed of in landfills, while a smaller portion is used as alternative daily cover at a landfill.

“Given the uncertain regulatory and public opinion climate in California related to biosolids use and disposal, SBSA would be well served to evaluate options in addition to landfill disposal for its biosolids,” Donaldson reported to the SBSA Commission.

The scope of the master planning effort encompasses all of the solids processing facilities within the treatment plant, as well as hauling and final disposal/reuse options. The Biosolids Master Plan will provide a road map to guide future projects, recommend process improvements to maximize beneficial utilization of the solids and minimize maintenance and disposal costs associated with biosolids processing and disposal. The master plan will also evaluate current trends in biosolids disposal and reduction in carbon emissions associated with various disposal options.



Commission Approves Redesign of Disinfection System

The SBSA Commission has approved an agreement with Brown and Caldwell for the necessary tasks for redesign of SBSA's Sodium Hypochlorite system.

The current Sodium Hypochlorite system is in need of renovation because it has outlived its useful life, is necessary for NPDES Permit compliance, and has numerous leaks in the piping/valving causing safety and reliability issues. This project will replace aging infrastructure and improve reliability, safety, and automation. Renovation of this system is a CIP approved, FY 2008/09 project.

Sodium Hypochlorite is primarily used for disinfection of the wastewater flow for NPDES permit compliance. Other important functions are corrosion and odor control along with filter disinfection. The current piping and valving system has deteriorated, resulting in frequent leaks throughout the system. Automation is near non-existent in the current system and requires significant labor for day-to-day operations. Finally, the pumps are old and no longer serviced by the manufacturer.

New pumping systems are easier to operate and maintain, are likely to have manufacturing support well into the future and are capable of automatic operation through the plant control systems. Higher pump reliability and ease of “swapping out” pumps allows reconfiguration of the header assembly which will significantly reduce the number of valves in the system.

“This project will provide simplified operation, better capacity for automation which will reduce labor requirements and simultaneously increases reliability,” SBSA Manager Daniel Child reported.

Looking for Ways to Improve Grease/Septage Program That Benefits SBSA

In 1986, SBSA began accepting restaurant grease trap waste as part of a first-in-the-nation pilot program to see if this waste could be digested in the anaerobic digesters; 23 years later the program revenue is more than \$2 million and allows the co-generation unit to run 24/7 to produce about 20% of the plant's energy needs, resulting in savings of approximately \$200,000 annually. This program benefits SBSA in the form of revenue from the dumping fees assessed the haulers and because the material forms the basis for increased BTU content of the digester gas.

"From the standpoint of the benefits to SBSA, the grease receiving station is a valuable revenue source," Plant Manager Bob Donaldson said.

There are improvements and repairs to the station that are needed due to its age and due to changes within the plant which have affected certain aspects of the station. A project was included in the 10-Year CIP to address the minimum improvements that are needed at the station.

Since the CIP project initiation in November 2008, the project management team has been working to determine which elements should be included in the design of the improvements. It has become clear that the elements listed in the CIP may not be adequate to fully address the needs at the station. At the same time there are two master planning efforts taking place that may impact the grease receiving station (Energy System Master Plan and Corrosion/Odor Control Master Plan).

The project team, therefore, will begin with preliminary design of the station improvements which will evaluate and determine the specific elements that can be included without risking the potential for work that will later need to be redone.

The elements of the improvements include:

Original CIP-Identified Elements –

- Second pump to offer reliability and redundancy to the single pump.
- Local Control panel on the surface level of the station.
- Drainage improvements.

Additional Necessary Elements–

- Two smaller new pumps, as a second pump will not fit into the station wet well.
- Safety improvements for the operators that clean the screens in the station.
- Rerouting the discharge to better facilitate addition to the digesters and eliminate pipe plugging.
- Odor control (included in the CIP odor control project scheduled for later construction, as the station is currently open to the atmosphere.
- Remote automation and tying controls and alarms into SCADA (included in the plant wide CIP automation project).

The SBSA Commission recently approved a \$171,800 agreement with Whitley Burchett & Associates (WBA) to determine the necessary improvements to the station and a budget for preliminary and detailed design through construction period services for completing work deemed to be prudent to complete. Their work will include a comprehensive review of the elements, a cost estimate for each, and a recommendation for which to include in light of the other planning efforts occurring.



San Carlos Business Wins Award for Pollution Prevention Programs

L-3 Communications' Electron Devices Division, based in San Carlos for more than 50 years, has been honored with a pollution prevention award. The company manufactures electron tubes and associated electronic equipment for the military and electronics industry.

The 2008 Northern California Pretreatment Facility of the Year award was presented recently in Monterey by the California Water Environment Association (CWEA) Pretreatment, Pollution Prevention, and Stormwater (P3S) Committee, which since 1971 has been recognizing the achievement of high performing companies with an annual Facility of the Year Award. The awards are given to industrial dischargers with significant accomplishments in the area of environmental protection and industrial wastewater control.

L-3 Communications efforts have resulted in a zero-discharge status, which means that this facility no longer discharges metal finishing wastewater and its pollutants to SBSA. The company was nominated by Michael Li, a Water Quality Specialist for SBSA. Li is the most experienced SBSA inspector with more than 15 years of industrial inspection experience.

According to Li, L-3 Communications previously operated separate cleaning and plating shops in two different buildings. The cleaning shop produced a caustic effluent that was neutralized and then discharged into the sewer. The plating facility discharged waste that was filtered through a clarifier and ultimately produced a hazardous filter cake. Both shops were supplied with city water.

In order to greatly reduce the amount of input water and eliminate discharges to the sewer, L-3 designed and constructed a state of the art cleaning and plating facility using ion exchange technology through a closed-loop system. In doing so, L-3 eliminated all input chemicals associated with operating the clarifier and neutralization tank and eliminated all filter cake waste. L-3 also increased the efficiency of cleaning and plating parts by combining the two shops, further reducing water usage. The specific design of the shop allows for very little city water input and evaporation of all excess water.

SBSA's Li said that prior to 2008, L-3 Communications, EDD's old pretreatment systems were set up to treat metal finishing-associated wastestreams. These wastestreams were then pumped into the three connecting cooling tower systems for cooling activities. The cooling tower system demanded high quality city water and water were wasted into the sewer system during daily blow down.

Li said that in mid 2008, L-3, EDD made significant changes to their metal finishing operations. All the metal finishing operations were consolidated into a centralized building (formerly metal finishing operations were located in different areas throughout campus).

"L-3 has achieved a large reduction in water usage and input materials by the design of the new cleaning and plating building by using ion exchange filtration systems and high volume evaporator." Li said in his nomination of the company for the statewide award.

Since the shop does not require bulk chemicals for waste treatment, it reduces the potential for chemical exposure to stormwater and the SBSA. The building is also designed to operate in a continuous closed loop cycle.

"As such, process water is cleaned and reused eliminating the need for large amounts of city input water," Li explained. "Water is continuously recycled throughout the system, while maintaining high purity, which is required for production processes."



Commission Approves Design Agreement for New Administration Facilities

The SBSA Commission approved a master services agreement for HKIT Architects last summer to begin planning for SBSA's new Administration and Plant Control Building. The project is included in the 10-Year CIP and is a high priority project to complete.

The existing building was constructed as part of the original treatment plant facilities and is situated atop the primary sedimentation tanks. The tanks are a source of moisture and corrosive air and the building originally was constructed with air scrubbing facilities to mitigate the negative impacts. The air scrubbers were de-commissioned shortly after the plant start-up in early 1980's. Decommissioning the air scrubbers saved the Authority operational costs but resulted in severe consequences on the overall building maintenance requirements and construction materials.

In addition to the deteriorated condition, the building is undersized for SBSA staff, according to a staff report. Personnel currently are being housed in temporary trailers spread throughout the treatment plant which contributes to inefficiencies of the workforce and provides an overall poor work environment.

HKIT first tasks were to prepare a Needs Analysis (Program) and Siting Study. Both work products are complete.

Six sites were reviewed as possible locations for the new building: After review of pros and cons to the possible sites, Manager Dan Child said a decision was made to construct the building at the site of the existing building. The major design change will be that the new build-

ing will be raised approximately nine feet above the primary sedimentation tanks similar to how the adjacent Laboratory building is situated. This will ensure that maintenance of the primary sedimentation tanks can be facilitated and will significantly reduce the corrosion that the existing building has experienced. This site also has the advantage of being the least costly in terms of foundation and structural requirements.

Child reported that the other sites were deemed either too remote from the front entrance or for effective operation of the plant facilities, too expensive and complex from an environmental and permitting standpoint, or have the possibility to interfere with future process facilities' needs. The building will house administrative and plant control (operations) functions. Two primary considerations were taken into account during the process: 1) it was preferred, though not a fatal flaw, to locate staff in a single building and 2) the operations staff needed to be located close to the plant processes, control room and locker room.

The following departments and facility spaces will be located in the building:



Staff offices in temporary trailers

- Support Services including Manager and Environmental Health & Safety Manager. Material Services will be relocated to a new warehouse and will not be housed in this building.
- Technical Services Information Services & Source Control (both functions are currently in the laboratory and will be relocated to this building)
- Operations side of Operations & Maintenance including Plant Control Room. Supervisors will be relocated from their existing trailer to this building.
- Engineering Staff will be relocated from their existing two trailers to this building.

In addition to offices, the building will include the following spaces: reception area/lobby; commission/ large conference room; public restrooms; locker rooms and showers; lunch room; training and conference rooms; learning resource center/library; mail/copy room; archival storage room, and janitor closet. Beneath the building, will be a safety equipment storage room. The Source control wet lab at ground level, east of the existing main deck.

The program specifies an area of approximately 15,500 square feet net, approximately 21,000 gross. The single-story structure covers the footprint of the existing building but “bumps” it out eastward and northward to cover the full extent of the primary deck. The difference between net and gross is a “rule-of-thumb” value of 35% and generally accounts for non-usable spaces such as hallways and walls.

HKIT has performed exceptionally well during the planning phase and the SBSA Commission recently approved a staff recommendation authorizing a design task order to HKIT for slightly over \$1 million. This will include preparation of bid specifications based on their design.

Employee Corner

SBSA is pleased to announce the hiring of four new fulltime employees.

Francis Rooney – Water Quality Specialist – Source Control

Peter Fong – Water Quality Specialist – Source Control

Vanessa Ventura – Administrative Assistant – Engineering

Jerry Dye – Regular appointment from PT/Temp – Materials Services Coordinator

South Bayside System Authority

Public Notice of

VIOLATION OF POLLUTION REGULATIONS

During the twelve month period ending December 31, 2008, the following industry was found in violation of federal regulations that control discharges into sanitary sewers. For additional information, please contact **Norm Domingo**, Technical Services Supervisor, South Bayside System Authority, at (650) 832-6240. This announcement satisfies the federal requirement for public notification in 40 CFR 403.8(f)(2)(vii).

Industry

Cal Art & Engraving
(City of San Carlos)

Compliance Issue

Violation of Federal Daily
and Monthly Average limits for Zinc