



# City of Palo Alto

## City Council Staff Report

(ID # 2914)

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Report Type: Action Items Meeting Date: 7/2/2012

Summary Title: Acceptance of Long Range Plan for the RWQCP

Title: Acceptance of the Long Range Facilities Plan (LRFP); Provide Direction to Staff to Develop a Financing Plan, and, for Biosolids, to A) Retire the Incinerators; B) Prepare a Biosolids Facility Plan; and C) Coordinate Biosolids Options with the Energy/Compost Facility Evaluation; Regional Water Quality Control Plant CIP WQCP 10001

From: City Manager

Lead Department: Public Works

### Recommendation

Staff recommends that Council:

1. Accept the Long Range Facilities Plan (LRFP) for the Regional Water Quality Control Plant (Plant) (hardcopies of this report were provided to the Council, and copies of the report are available for public viewing on the City's public website and at libraries and the City Clerk's office);
2. Direct staff to prepare a biosolids facility plan to finalize a biosolids treatment and disposal option and retire the Plant incinerators as soon as practical;
3. Direct staff to evaluate biosolids treatment options including potential green waste, food waste, and other organic treatment options arising from the Energy/Compost Facility evaluation; and
4. Direct staff to develop a Financing Plan for the LRFP.

### Executive Summary

The Regional Water Quality Control Plant is aging and in order to make informed decisions in terms of financing and operations a Long Range Facilities Plan (LRFP) is necessary. In 2010 the City hired Carollo Engineers to prepare the LRFP.

Staff requests that Council accept the LRFP. Implementing the projects and recommendations of the LRFP will ensure capital reinvestment, wastewater treatment services for six agencies, and ongoing water quality control to protect the San Francisco Bay and local creeks. A biosolids facility plan is needed to finalize a treatment and disposal solution for the Plant's biosolids. The final four options from the LRFP along with any viable biosolids treatment or disposal options arising from private company proposals in the Energy/Compost Facility RFP process (staff report ID # 2557) would be evaluated in the biosolids facility plan. Additionally, a financing plan is needed to detail financing options and further define partner shares.

### **Background**

Palo Alto owns and operates the Plant. Approximately 39% of the treatment cost is funded by Palo Alto sewer ratepayers, with remaining expenses covered by five other contributing agencies (called "partners"), which include the City of Mountain View, Los Altos, Los Altos Hills, Stanford University, and East Palo Alto Sanitary District. The Plant treats the sewage from about 217,000 residents and 170,000 jobs. Sewage flows average 22 million gallons per day and are treated using various industrial equipment on 25 acres of land adjacent to the airport and Byxbee Park. Stormwater is not treated at the Plant but is instead directed to the San Francisco Bay in separate pipes.

Most of major Plant facilities are 40 years old and operate under industrial service conditions. Most of these facilities require major rehabilitation or replacement within the near-term.

On July 26, 2010, Council approved a contract with Carollo Engineers to prepare the Long Range Facilities Plan (CMR:322:10). This is the first comprehensive long range plan for the Plant since 1966. This new long range plan will help the City make financially and operationally wise decisions for reinvestment in capital infrastructure, site planning, and dealing with future regulations. Staff is requesting that Council accept the LRFP.

Numerous meetings were held with the public (10/27/10, 2/9/11, 5/4/11, 11/16/11, & 3/1/12), Plant partners (1/10/11 & 4/23/12), and Stanford engineering professors (3/31/11). Meetings were well attended, with lively

discussions. Meetings addressed updating long term goals, review of emerging technologies, review of solid and liquid treatment options, and financial impacts. Public input provided staff a roadmap for planning needed facilities.

## **Discussion**

### Source Control

The LRFP is primarily a capital infrastructure plan; however, source control efforts clearly support operational and capital rehabilitation by extending the life of existing facilities and improving overall Plant performance. Source control supports capital planning. The City is a leader in protecting the Bay by identifying and controlling harmful pollutants at the source. A few source control examples include potable water conservation to reduce wastewater treatment equipment wear-and-tear, traditional pollutant-specific efforts (e.g., copper, pharmaceuticals, etc.) to avoid costs for new facilities, reduction of infiltrating water into sewers to mitigate Plant wet-weather capacity constraints and improve recycled water quality.

### Flow / Load Projections

The LRFP utilized the Association of Bay Area Governments (ABAG) population projections from 2009. Population estimates were translated into flow and pollutant loads for the 50-year planning horizon. Forecasting was required to determine if the Plant operational footprint and treatment capacity needed expansion. Fortunately, the LRFP work concluded that the Plant has sufficient capacity to meet the projected flow and pollutant loads and does not need to be expanded. However, the LRFP did identify the need for major capital projects due to rehabilitate or replace aging facilities.

### Regulatory Issues

The LRFP previewed major regulatory issues that might trigger significant capital investment. Emerging contaminants (e.g., pharmaceuticals) are a long range issue currently being addressed by more cost-effective source control methods. Nutrients are a key potential issue impacting capital facilities in the midterm. Nutrients (nitrogen and phosphorous) can harm marine life if they cause too great an increase in algae and plant growth (eutrophication). San Francisco Bay algae levels appear to be increasing, but regulatory agencies have, so far, not concluded that sewage treatment plants should remove nutrients, or that the Bay is impaired. Staff is participating in studies being conducted by scientists at the

direction of regulatory agencies. The Plant discharges nutrients into the Bay in the treated water. If ultimately required by the regulatory agencies, the Plant would need to install new nutrient removal equipment. The LRFN narrowed nutrient removal solutions to three technology options. New nutrient removal facilities would, in all likelihood, be required because source control would not likely remove sufficient amounts of nutrients. In any case, the City will continue its efforts working on nonpoint sources to keep nutrients out of local creeks and the Bay (e.g., lawn fertilizer). Staff will continue to monitor regulatory developments in this area.

### Retire Incinerators

The City is one of two agencies still running a sewage sludge (biosolids) incinerator in California. Staff recommends retirement of the 40-year old incinerators as soon as practical as they are at the end of their useful life. The LRFN planned for incinerator retirement by 2019.

Besides being at the end of their useful life, there are other reasons for retiring the incinerators. They are of an older generation and are not amenable for conversion to a renewable bioenergy facility that would recover energy from the biosolids. The LRFN recommended anaerobic digestion and gasification options for further evaluation in the Biosolids Facility Plan. The incinerators are the largest source of greenhouse gas (GHG) emissions from City facilities. In contrast to incinerators, which release the greenhouse gas carbon dioxide (CO<sub>2</sub>) to atmosphere, the recommended technologies convert carbon from the biosolids into renewable fuel.

Additionally, the evolving United States Environmental Protection Agency air regulations are becoming more difficult to meet. While new requirements are not imminent, judicial or regulatory action may enforce a regulatory limit that the City cannot meet. Air pollution control solutions will be expensive and likely involve an inflexible compliance schedule. Operation of the existing incinerators is difficult as they produce a hazardous waste ash with a high level of soluble copper. Staff efforts to reduce copper residue sufficiently to meet anticipated regulations have been unsuccessful. Mechanical repairs on the furnace are becoming more and more complex (e.g., the steel shell has been rusting and bricks are shifting) and the incinerators are becoming less and less reliable.

## Next Steps

Given the need to retire the incinerators, the LRFP narrowed down the solids handling options to four solutions: onsite anaerobic digestion, offsite anaerobic digestion at the San Jose wastewater plant, onsite gasification, and offsite gasification through a regional coalition of wastewater agencies (i.e., Bay Area Biosolids to Energy). Final evaluation of these options is needed in the proposed Biosolids Facility Plan. The Biosolids Facility Plan will identify a recommended solids handling treatment technology and disposal option for Council approval leading into the CEQA process, design, and construction.

Because of timing issues with LRFP finalization and the recently passed Measure E which permits a portion of Byxbee Park to be used for an Energy/Compost facility, the LRFP did not evaluate use of undedicated portions of Byxbee Park for biosolids handling options. Vendors that propose on potential solutions on the 10 acres might have viable solutions for consideration as part of any ultimate biosolids handling solution. To this end, the Biosolids Facility Plan will evaluate the four options from the LRFP as well as the viable biosolids treatment options resulting from vendor proposals originating in the Energy / Compost Facility evaluation. As a result of these two studies, a recommended solution for biosolids will be brought back to Council along with a combined recommendation for food waste and green waste.

To realize these goals, significant staff, consultant, and vendor work will be required and a strategy is needed to guide these efforts. An Organics Resource Recovery Strategy (ORRS) is needed to define community goals for organic waste options. For biosolids, this will include defining strategic resource and recovery options for organics traditionally sent through public sewers (e.g., human wastes, food wastes via garbage disposals, fats/oils/grease (FOG), screenings, etc.). Public Works staff for both projects will oversee the ORRS and the RFP to vendors of dry anaerobic digestion, composting, and/or energy conversion facilities (see Energy/Compost Facility Action Plan, Staff Report 2557).

## Biosolids Schedule

A timeline of next steps is shown below:

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Item	Anticipated Completion
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Financing Plan Framework Completed	December 2012
Organics Resource Recovery Strategy	April 2013
Solids Technology/Disposal Recommendation to Council	February 2014
Biosolids Facility Plan Completion	July 2014
CEQA Environmental Review	Fall 2015
Biosolids Facility Design	2017
Startup New Biosolids Facility	2019

**Resource Impact**

Funds needed to construct the identified replacement and rehabilitation projects will be provided by the Wastewater Treatment Fund. The Wastewater Treatment Fund recovers costs from the Palo Alto Wastewater Collection Fund and from the other five partners. The Wastewater Treatment Fund’s debt service expenses are recovered through partner billing; the billing share is based on contract-defined flow capacity allocations. The LRF’s minor capital projects (about \$2.6M / year) are authorized in the partner contracts and based on annual flow shares. Minor capital projects will continue to be authorized each year by Palo Alto City Council, and no debt service is required for these minor capital projects. Financing for the seven major projects most likely will require debt financing, partner contract modification, and/or grants; these “major” projects need to be approved by Mountain View, Los Altos, Stanford, and East Palo Alto Sanitary District as part of a contract requirement with Plant partners. The contract with Los Altos Hills does not require partner approval for capital projects.

The LRF addressed the need for capital projects as summarized below:

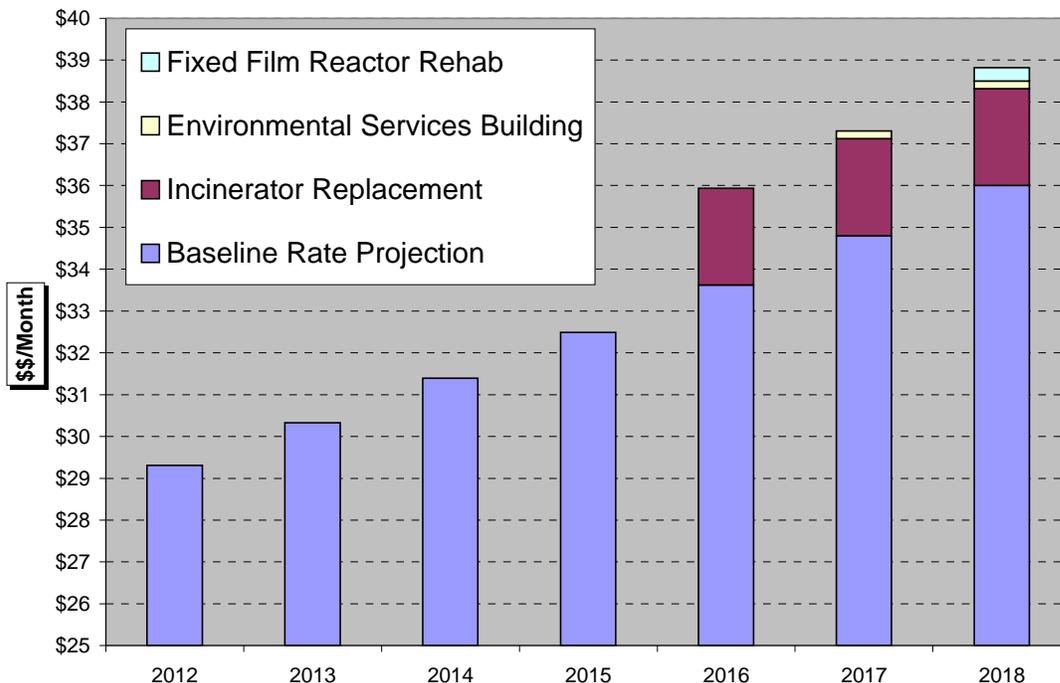
Facility Renovation & Replacement	\$157M
Incinerator Replacement	\$13 - \$89M
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Total Renovation & Replacement	\$170 - \$246M
Potential Future Regulatory Demands	\$146M
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Total Capital Needs	\$316 - \$392M

Both the identified and the potential regulatory needs represent significant capital expenses. The needs are consistent with neighboring wastewater

treatment plant capital plans (e.g., rehabilitation costs for South Bayside System Authority in Redwood City: \$151M; Sunnyvale: \$225M; and San Jose: \$1,800M).

Financing opportunities fall into two basic debt financing alternatives: (a) a low-interest loan from the State Water Resources Control Board (i.e., an SRF loan), or (b) a utility revenue bond backed by rates or charges of the system. Using partner contract modifications to create a greater “pay-as-you-go” approach constitutes another alternative. Grant opportunities may also be available, particularly for recycled water and energy projects. A financing plan is required to explain financing instruments, to detail partner shares and contract modifications, and evaluate expected sewer rate increases. Preliminary analysis indicates low to moderate sewer rate increases for the typical Palo Alto residential sewer bill would cover the first four major capital projects through 2018 (see chart below). This analysis is based on issuance of revenue bonds. Rate increases would be even lower if a low interest State Water Board loan was obtained. It is too early to determine state eligibility for an award of a state loan.

### Palo Alto Single Family Wastewater Bill Projection



Even with new debt service, the overall monthly sewer rate will remain consistent with residential sewer rates within San Mateo and Santa Clara Counties.

Staff proposes to more fully analyze these options and will return to Council with a more detailed financing plan.

### **Policy Implications**

The recommendations of the LRFP are consistent with City policy.

### **Environmental Review**

The LRFP is exempt from review under the California Environmental Quality Act pursuant to Section 15262. A CEQA environmental review will be completed for each project resulting from the LRFP.

Prepared By:

Jim Flanigan, Senior Engineer

Department Head:

J. Michael Sartor, Director

City Manager Approval:

  
James Keene, City Manager