CITY OF HAYWARD
AGENDA REPORT

AGENDA DATE 05/29/01
AGENDA ITEM
WORK SESSION ITEM WS 3

TO: Mayor and City Council

FROM: City Manager

SUBJECT: Five-Year Capital Improvement Program 2001/02 through 2005/06

RECOMMENDATION:

It is recommended that the City Council review and comment on the Five-Year Capital Improvement Program.

BACKGROUND:

The purpose of this worksession is to review the proposed budget in advance of the public hearing planned for June 5, 2001.

Because substantial work is planned at the Wastewater Treatment Plant, a supplemental memorandum has been prepared concerning the proposed improvements. (See Attachment A.)

The Planning Commission initially reviewed the proposed CIP budget at its work session of May 10. The Commission will consider the budget at its meeting of May 24, for purposes of determining consistency with the City's General Plan.

The Council's CIP Committee reviewed the CIP budget on May 10, at which time the significant increase in monies available to address sidewalk rehabilitation and construction needs was discussed. Committee members suggested that use of the Route 238 monies typically earmarked for sidewalk repair, instead be used for new sidewalk construction in the vicinity of schools and other activity centers. These monies would augment the Measure B Non-motorized Funds that are proposed to be used for construction of new sidewalks on heavily traveled pedestrian routes. If the Council supports this approach, staff will prepare the necessary revised pages of the proposed budget for consideration with adoption of the CIP budget.

Following its review, the Committee indicated the document is responsive to direction from the Council and responsive to numerous community needs and concerns. As a result, the Committee voted unanimously to recommend its approval.

Jesús Armas, City Manager

Attachment A

DEPARTMENT OF PUBLIC WORKS
PUBLIC WORK ADMINISTRATION
Interoffice Memo

May 4, 2001

TO: City Manager

FROM: Director of Public Works

SUBJECT: Necessary Upgrades to the City's Wastewater Treatment Plant

BACKGROUND:

The City's wastewater treatment plant, officially referred to as the Water Pollution Control Facility (WPCF), was planned and constructed in the early 1950s. Prior to that time all sewage generated in the City was discharged directly to the Bay, without treatment, through a near shore outfall located on A Street. Initially, the treatment was comprised of some primary treatment such as solids removal, and a rudimentary "secondary" treatment, consisting of storing the effluent in oxidation ponds in the sun, and aeration.

In the early 1970s, the Environmental Protection Agency promulgated the requirements for discharge from municipal treatment plants. Under the new rules, the discharge had to meet full secondary treatment requirements and be discharged through a deep water outfall, or be treated at even higher levels and discharged near shore. At that time the City took a leadership position in joining with the City of San Leandro, Oro Loma Sanitary District and Castro Valley Sanitary District to form a joint powers authority called the East Bay Dischargers Authority (EBDA) for the purpose of constructing and managing a deep water outfall. (Union Sanitary District joined EBDA a few years afterwards.) With the deep water outfall in place, the City was required to select a scheme for full secondary treatment, and construct the improvements.

At the time the City had two choices for construction of full secondary treatment: One was a conventional, tried and true "activated sludge" process, and the other was a process comprising of "new and innovative" technologies that EPA was spearheading. Based on the recommendations of the City's wastewater consultant at the time, and based on the fact that EPA would have provided a higher percentage of the costs of the "new and innovative" alternative, the City decided on that alternative.

The "new and innovative" secondary process comprised of two biological treatment elements, first a trickling filter called a Fixed Film Reactor (FFR), followed by a process called a Fluidized Bed Reactor (FBR). These systems were designed and constructed in early 1980s. The FFR was a success from day one. It did what it was supposed to do with minimal attention, and produced good results on a continuous basis. As a matter of fact, the FFR has never been out of service for more than a few hours at a time during the past two decades. In contrast, the FBR was a problem facility from the onset. The main problem areas were related to plugging of the nozzles with sand, and the

sand/biomass separation. Finally, after about a year of trying to operate the facility, the City decided to take it out of operation, and obtain a grant from EPA to fix the FBR.

The grant for fixing the FBR was obtained in early 1990s. The design work for the fix was completed in 1995, and the modification were constructed and the unit was placed back in operation in the beginning of 1999. Unfortunately, the unit is still not working as it should. In fact, the unit is not capable of being operated the way the designers had intended. Any such attempts to run the unit "per the book" result in collapse of the fluidized biomass, and shutdown of the unit.

Coincidentally, over the past five years or so there has been a marked increase in the amount and biological treatment requirements of the City's wastewater. There are two reasons behind that, the first being the increase in water usage after the drought years which ended in 1993, coupled with a more than expected increase in the City's population, and the second being new and large businesses that located in Hayward. Chief among such businesses are New Century Bottling Plant (Pepsi) which opened in 1995, and Berkeley Farms dairy plant, which opened in 1998. While these plants do not have a tremendous impact on the amount of flow that comes to the plant, they do have significant impact on the biological capacity of the treatment plant. On average, each of these plants use up the equivalent of the treatment capacity needed for 8,000 to 10,000 single family homes.

DISCUSSION:

The above described increases in flow and so called "waste strengths" have stressed the treatment plant to a point that reliable operation at the plant is no longer feasible. Based on the obvious need to increase treatment capacity, reliability, and redundancy of the operation, construction of certain improvements were anticipated and incorporated in the City's Capital Improvement Program last year. At the same time, the City hired a wastewater consultant, Brown and Caldwell, to assess the situation at the plant and review the City's approach for addressing the problem. Brown and Caldwell has recently completed the work and prepared a report titled WPCF Master Plan.

The current flow to the WPCF during the dry summer months (dubbed Average Dry Weather Flow) is about 13.5 million gallons per day. The findings of Brown and Caldwell confirm staff's experience at the plant that the current capacity of the plant is around that number. However, based on the completion of the project to fix the FBR and construction of some other hydraulic improvements, the City was successful in convincing the Bay Area Regional Water Quality Control Board that the rated capacity of the plant should be 16.5 million gallons per day. This capacity is now included in the new EBDA discharge permit issued last year by the Regional Board. This same capacity is also required to accommodate the City's needs at "buildout" as currently envisioned in the City's General Plan. The improvements recommended in the aforementioned Master Plan will provide such capacity.

Under the proposed draft Master Plan, several facilities are recommended to increase the capacity and reliability of the plant processes. They include construction of a second Fixed Film Reactor in order to provide redundancy for the sole existing unit, a new primary clarifier to add capacity, two new final clarifiers to replace the existing inefficient clarifier, and to provide for more capacity and redundancy, and to add process units to improve sludge processing and handling.

A significant process change recommended under the Master Plan is removing the problematic Fluidized Bed Reactor from service, and replacing it with a process called a "Solids Contact" (SC) tank. A solids contact tank is somewhat similar to activated sludge, but is on a smaller scale. Usually, but not always, plants that have existing FFRs, which is a form of a trickling filter, opt for

the less expensive, more compact SC as the second stage of the secondary process. In fact the complete process is called TF/SC, which stand for trickling filter, followed by solid contact tank.

Staff has performed due diligence review of the TF/SC process, talked to other experts, and more importantly, contacted several facilities that have installed and used the TF/SC process. Most appear to be impressed by the simplicity, reliability, and robustness of the process. At this point we feel that TF/SC is appropriate for the City's current and future needs.

Plant Improvements Costs and Financing

Brown and Caldwell has estimated the total cost of this improvements at around $37 million. This cost which includes engineering, design, construction and construction management, is about twice as much as the cost of the improvements initially envisioned by staff. However, staff's initial projections last year did not call for replacing the FBR with a new process (Solids Contact) since staff did not have a clear picture of the performance shortcomings of the FBR, and did not include some of the redundancies that are proposed in the Master Plan, such as two new final clarifies (instead of one) and two new dissolved air flotation thickeners.

However, primarily due to two reasons, the cost is much more manageable that it appears. First, about half of the needed cost was anticipated and already programmed in last year's CIP, and second, the existing balance in the CIP's sewer funds can be utilized to fund a part of the proposed projects. Approximately, $13.8 million remains to be funded. This amount is proposed to be financed through a twenty year sewer revenue bond financing.

Schedule

Due to the fact that these improvements are needed to meet existing or near terms needs, most of the unit processes have been scheduled for design and construction in the next two or three years. Some which do not have a direct impact on treatment and meeting the City's discharge permit requirements, have been delayed for up to five years.

CONCLUSION:

The improvements are necessary in order to enable the WPCF to reliably and efficiently treat the wastewater from existing and future residential, institutional, industrial, and commercial facilities in Hayward. Not proceeding with the improvements will cause the City to not be able to consistently meet the requirements of the EBDA discharge permit, which could have undesirable consequences for the City and its wastewater customers.