AGENDA ITEM E-07

CITY OF LODI
COUNCIL COMMUNICATION

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AGENDA TITLE: **Adopt Resolution Authorizing the City Manager to Approve the Purchase of White Slough Water Pollution Control Facility Filter, Aeration and UV Disinfection Equipment; Appropriate Wastewater Funds; and Adopt Reimbursement Resolution (Up to $6.6 Million)**

MEETING DATE: **December 17, 2003**

PREPARED BY: **Public Works Director**

RECOMMENDED ACTION: That City Council adopt a resolution authorizing the City Manager to approve the purchase of White Slough Water Pollution Control Facility filter, aeration and UV disinfection equipment, appropriate Wastewater funds and adopt a reimbursement resolution up to $6.6 million.

BACKGROUND INFORMATION: The City has made substantial progress on the State-mandated improvements at the White Slough Water Pollution Control Facility. Phase 1 – Interim Aeration Improvements and Miscellaneous Electrical and Earthwork Improvements is underway. This project, as well as past expenses ($5 million), was financed through participation in the California Statewide Communities Development Authority bond pool. Phase 2 consists of installation of tertiary filters, UV disinfection equipment, additional aeration improvements and related work and is in final design. Our State discharge permit requires that these improvements be operational before we discharge to the Delta after May 2004, which is usually around September 1. As staff indicated to the Council in our presentation on September 17, 2003, to meet this schedule, we will need to pre-purchase some equipment in order to get it in production and then furnish it to the installation contractor. In addition to time savings, there is likely to be some cost savings in that the contractor will not have equipment included in the installation cost, resulting in reduced "mark-up" and overhead.

The Phase 2 equipment consists of:

- Tertiary Filters – Following an extensive analysis of conventional sand filters, advanced membrane filters and various media-type filters, staff and our consultants are recommending a cloth media type filter. This design has significantly lower operating costs than the membrane filter and will offer improved levels of treatment over a sand filter, with the potential of better performance as the cloth media is improved over time. Until very recently, only one such filter (Aquadisk) has received the appropriate State approval. Another filter manufactured by Kruger has recently received approval and is currently undergoing pilot testing at White Slough. If this filter is deemed acceptable based on the pilot test and other operational factors, we will seek competitive bids from the two. If not, we would negotiate a purchase with the sole supplier, all with the City Manager's review and approval. The cost of this equipment is approximately $1.5 million.

- UV Disinfection Equipment – The ultraviolet light (UV) disinfection equipment is part of the tertiary treatment process. The filter basically removes the remaining small solids after the secondary process and the UV disinfects the wastewater – killing bacteria and viruses. This

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APPROVED: _____
J. Dixon Flynn, City Manager

system will replace use of hazardous chlorine and sulfur dioxide (used to deactivate the chlorine). As with the filters, staff and our consultants have researched the equipment that currently has State approval. There are two companies – Trojan and Wedeco – that have State approval, with a third (Ondeo) that nearly has approval. However, due to operational issues, staff does not recommend considering the Ondeo equipment. We propose to bid the other two and recommend award to the City Manager based on life-cycle costs. Due to the heavy power usage, first cost alone is not a fair or economical way to consider this purchase. The City routinely does this for large pumps and motors and electrical transformers. The capital cost of this equipment is approximately $3.6 million.

- Aeration Panels – The aeration panels are the hardware that receives the pressurized air from the blowers being constructed under Phase 1 and create fine air bubbles in the secondary treatment process. In this process, certain bacteria are cultivated which digest waste products in the water, and, as part of the process, the biochemical oxygen demand and turbidity of the wastewater is reduced. This is basically an enhancement of the current process needed to meet current loading and will provide effluent ready for tertiary treatment. (Additional aeration and other improvements to the secondary process are needed under the Phase 3 project.)

  As with the other equipment, staff and our consultants evaluated various types of aeration and have selected one manufactured by Parkson Company. The various aerators on the market have different air flow characteristics that affect many other elements of the design, such as the blowers, piping and electrical service. Thus, the design engineers must settle on one in order to complete the plans. This was done earlier in the design process, and staff proposes to negotiate the final price with this supplier with the final approval of the City Manager. The cost for this component is approximately $300,000.

These equipment cost estimates total $5.4 million. With engineering and contingencies, the total amount is $6.6 million. As indicated in September, the total Phase 2 project, including these costs and the installation contract and related work, is $24 million. This amount also included an estimate of $2.8 million for additional land. Also as indicated in September, staff is pursuing a separate financing for this Phase with the guidance of our financial advisor, Alex Burnett of Public Financial Management (PFM). We plan to complete the financing in conjunction with the bidding of the installation contract so we have the appropriate cost for the financing. In order to include these advance purchase costs in that financing, the Council needs to approve a reimbursement resolution.

FUNDING: Wastewater Fund

Vicky McAthie, Finance Director

Richard C. Prima, Jr.
Public Works Director

RCP/pmf

cc: Del Kerlin, Wastewater Superintendent
Joel Harris, Purchasing Officer
West Yost & Associates

AGENDA ITEM E-7

CITY OF LODI
COUNCIL COMMUNICATION

TM

AGENDA TITLE: **Adopt Resolution Authorizing the City Manager to Approve the Purchase of White Slough Water Pollution Control Facility Filter, Aeration and UV Disinfection Equipment; Appropriate Wastewater Funds; and Adopt Reimbursement Resolution (Up to $6.6 Million)** ***Supplemental Information***

MEETING DATE: **December 17, 2003**

PREPARED BY: **Public Works Director**

RECOMMENDED ACTION: That City Council adopt a resolution authorizing the City Manager to approve the purchase of White Slough Water Pollution Control Facility filter (***sole source***), aeration and UV disinfection equipment, appropriate Wastewater funds and adopt a reimbursement resolution up to $6.6 million.

BACKGROUND INFORMATION: As indicated in the staff report on this item, the bid specifications for the tertiary filter equipment specified filters from two manufacturers; however, one was still undergoing evaluation. Staff and our engineering consultants – West Yost & Associates – have completed this evaluation and we both concur that the City will be best served by specifying only one manufacturer – AquaDisk by Aqua Aerobics Systems, Inc.

A letter from Bruce West, Principal partner in West Yost & Associates, is attached and describes the basis for their recommendation. In spite of the roughly $350,000 higher initial cost for the AquaDisk filter, staff concurs with their recommendation. White Slough operations staff participated in the evaluation of the filters, which included site visits to existing installations. They are much more confident in the AquaDisk filter in terms of its operation and reliability over the long term.

From a management perspective, it is important that the people who will operate and maintain the equipment have this confidence. In addition, there are design and construction details of the other filter that are of concern – use of lighter materials, including plastic disk frames and filter media, and the design of the filter covers. (The filters need to be covered to keep out light which will lead to algae growth.) The covers are lift-off plates, as compared to hinged covers on the AquaDisk. We are also concerned that the pilot testing done this winter is not at all comparable to what was done last summer with the AquaDisk, as was noted in West Yost's letter.

Staff is well aware of our responsibility to be cost-conscious in how we provide wastewater treatment service to the citizens of Lodi. When we were approached by the manufacturer's representative on the alternate filter after they received their Title 22 approval, our initial reaction was, "It's too late in the process to consider another filter." The representatives pointed out possible cost savings and simply asked to be considered. We took the time to listen to their presentations, conducted pilot testing, and gave their equipment serious consideration. Having done that, we are now confident in our selection, rather than simply relying on timing.

FUNDING: Wastewater Fund

Richard C. Prima, Jr.
Public Works Director

RCP/pmf
Attachment
cc: Del Kerlin, Wastewater Superintendent
Joel Harris, Purchasing Officer
West Yost & Associates

APPROVED: _____
H. Dixon Flynn, City Manager

W E S T
Y O S T
& ASSOCIATES
Consulting Engineers

December 16, 2003

Mr. Richard C. Prima, Jr.
Public Works Director
City of Lodi
P.O. Box 3006
Lodi, CA 95241-1910

Project No. 213-02-09

SUBJECT: Tertiary Filter Selection—City of Lodi White Slough Water Pollution Control Facility

Dear Richard:

As you are aware, West Yost & Associates (WYA) is in the process of designing tertiary filtration facilities for the City of Lodi White Slough Water Pollution Control Facility (WPCF). This letter addresses a recent investigation of two types of cloth-media filtration equipment.

Background

Waste discharge requirements adopted by the State of California require that after May 2004 any wastewater discharged to the Sacramento-San Joaquin Delta by the City of Lodi (City) must be filtered. The City normally ceases to dispose of its effluent by irrigation and begins discharging to the Delta around September 1. Therefore, filtration equipment should be operational at the White Slough WPCF by September 1, 2004.

WYA and City staff visited filters with three general types of media: membranes, cloth, and sand. In September 2003 WYA completed an evaluation of potential alternatives and recommended the purchase of an AquaDisk cloth media filter. The AquaDisk filter is Swiss-engineered system that has been used successfully since 1978 in a variety of municipal and industrial applications. The system is manufactured and distributed in the United States by Aqua Aerobics Systems, Inc. The AquaDisk filter was recommended because:

1. At that time the AquaDisk filter system was the only cloth-media type filter approved for Title 22 unrestricted reuse applications by the California Department of Health Services.

2. Construction costs of the AquaDisk filter system were estimated to be significantly less than alternative filter systems that were approved for Title 22 use at that time.

1260 Lake Boulevard, Suite 240 Davis, California 95616 Phone 530 756-5905 Fax 530 756-5991 email: mail@westyost.com

3. Operating costs for the AquaDisk filter system were expected to be lower than those for alternative filter systems.

4. The AquaDisk filter system requires significantly less site area than alternative filter systems approved for Title 22 use at that time.

5. The AquaDisk filter was pilot-tested at the City's White Slough WPCF, and performed very well during all phases of the pilot test.

6. The City's operations staff visited several AquaDisk installations, and are comfortable that the system is relatively easy to operate and maintain, and will perform satisfactorily at the City's White Slough WPCF.

7. The AquaDisk filter system has been selected for installation at several nearby wastewater treatment facilities, including those operated by the City of Turlock and the University of California at Davis.

8. The AquaDisk filter had been installed and successfully operated to achieve Title 22 or equivalent compliance at a number of municipal scale applications using a variety of disinfection technologies – including U.V. The success of these systems has been documented in published papers at professional conferences and has been further validated by acceptance of AquaDisk by the "conservative" engineering profession who have been specifying the AquaDisk system for Title 22 applications.

In October 2003 a second cloth-media type filtration system, the Kruger Hydrotech filter system, received Title 22 approval from the California Department of Health Services. In November representatives for the Kruger Hydrotech filter system met with City and WYA staff and requested that the Kruger Hydrotech filter system be considered for installation at the White Slough WPCF. In response to this request, City and WYA staff visited a Kruger Hydrotech filter system installation in Mesquite, Nevada in November 2003, and the Kruger Hydrotech filter was pilot tested at the White Slough WPCF in early December 2003.

Assessment of Kruger Hydrotech Filter System

The Kruger Hydrotech filter system is a relatively new product in the United States. Although there are several installations at small wastewater treatment facilities in the United States, none have been in operation for more than about one year. Some applications in Europe have been in operation for several years.

The Kruger Hydrotech filter produced satisfactory effluent turbidities during the pilot test period. The AquaDisk filter was pilot tested during summer months when treatment plant effluent is disposed of by irrigation, and discharge requirements are less stringent. This allowed City staff to subject the AquaDisk filter to very rigorous testing. City staff were not able to subject the Hydrotech filter to the same rigorous testing because pilot-testing of the Hydrotech filter occurred during winter months.

A concern that was noted by City and WYA staff during the visit to the Kruger Hydrotech filter system installation in Mesquite, Nevada, as well as during pilot-testing at the Lodi White Slough

WPCF, was the need for relatively frequent backwashing. During pilot testing of the AquaDisk filter the pilot filter generally required backwashing after about 10 to 30 minutes for use, while the Hydrotech filter unit required backwashing almost continuously during much of the pilot test period. This difference is apparently due to the basic design of the two cloth media. The AquaDisk media is 3 to 5 millimeter thick pile-cloth. The Hydrotech media is a 0.060 millimeter thick woven polyester. The greater thickness of the AquaDisk media allows solids to build up on the media without clogging the filter. Frequent backwashing of the Hydrotech filter is of concern for the following reasons:

1. Mechanical equipment contained in the Hydrotech filter system may wear and fail prematurely due to the frequency of operation during backwash cycles.

2. The need for relatively frequent backwashing under lower loading conditions the system indicates that the Hydrotech system has less ability to respond to high loading conditions that may occur in the event of an upset to the secondary treatment process.

Conclusions and Recommendations

Preliminary information indicates that the basic AquaDisk filter system would cost about $1,250,000, and that a similarly designed Hydrotech filter system would cost about $900,000. Appurtenant valves and accessories will increase the cost of either type of system by about $300,000. In spite of the potential cost saving associated with installation of the Hydrotech filter, WYA recommends that the City purchase a AquaDisk pile-cloth filter system for installation at the White Slough WPCF for the following reasons:

1. The AquaDisk filter system is much more widely used in the United States, and has developed a track record of successful municipal operation at larger wastewater treatment facilities, while the Hydrotech filter systems lacks similar successful US installations. While Hydrotech may eventually be proven to be equivalent to the AquaDisk filter for municipal Title 22 applications and widely accepted by the engineering community as such, this is currently not the case.

2. An Allen Bradley PLC capable of interfacing with the treatment plant's SCADA system controls the AquaDisk filter system. Hydrotech's standard method of control is a timer with relays. Hydrotech has indicated that it can supply a PLC controller, however this would be a modification to their standard design that has not been subjected to field-testing.

3. The AquaDisk filter system is housed in a one-fourth inch thick stainless steel tank, while the Hydrotech filter system is housed in as one-eighth inch thick stainless steel tank.

4. The AquaDisk filter in manufactured in the United States, while the Hydrotech filter is manufactured in Europe. This is a concern with respect to the delivery of both equipment and replacement parts.

5. We believe that the Kruger system may have limitations compared to the AquaDisk system, though we have not documented these in operating or testing history to date:

    - Mechanical equipment contained in the Hydrotech filter system may wear and fail prematurely due to the frequency of operation during backwash cycles.

    - The AquaDisk filter system apparently has a greater ability to respond to high loading conditions that may occur in the event of an upset to the secondary treatment process than the Hydrotech filter system.

    - The Hydrotech filter is designed with an "inside-out" flow pattern, which may allow plastic or other large solids passing through the treatment process to become trapped within a filter disk. The AquaDisk filter has the opposite flow pattern, therefore trapping of solids within the filter disk is not a concern.

Sincerely,

WEST YOST & ASSOCIATES

Bruce G. West
Principal

BGW/DJA:md

Del Kerlin, Assistant Wastewater Treatment Superintendent

RESOLUTION NO. 2003-246

A RESOLUTION OF THE LODI CITY COUNCIL AUTHORIZING THE CITY MANAGER TO APPROVE PURCHASE OF WHITE SLOUGH WATER POLLUTION CONTROL FACILITY FILTER, AERATION, AND UV DISINFECTION EQUIPMENT; AND FURTHER APPROPRIATE WASTEWATER FUNDS FOR THIS PROJECT

NOW, THEREFORE, BE IT RESOLVED that the Lodi City Council does hereby authorize the City Manager to approve the sole-source purchase of White Slough Water Pollution Control Facility filter, aeration and UV disinfection equipment as outlined in the December 17, 2003, Public Works Director's Council Communication; and

BE IT FURTHER RESOLVED that funds be appropriated up to the amount of $6.6 million for this project.

Dated: December 17, 2003

I hereby certify that Resolution No. 2003-246 was passed and adopted by the City Council of the City of Lodi in a regular meeting held December 17, 2003, by the following vote:

AYES: COUNCIL MEMBERS – Beckman, Hitchcock, Howard, Land, and Mayor Hansen

NOES: COUNCIL MEMBERS – None

ABSENT: COUNCIL MEMBERS – None

ABSTAIN: COUNCIL MEMBERS – None

Susan J. Blackston

SUSAN J. BLACKSTON
City Clerk

RESOLUTION NO. 2003-247

A RESOLUTION OF THE LODI CITY COUNCIL
DECLARING ITS INTENT TO REIMBURSE
CERTAIN EXPENDITURES FROM PROCEEDS
OF INDEBTEDNESS

WHEREAS, the City of Lodi (the "City") owns and operates a wastewater system (the "System") serving the City and its inhabitants; and

WHEREAS the City intends to acquire, install, and construct additions, replacements, and improvements to the System, including land (or interests therein) and equipment (the "Project"); and

WHEREAS, the City expects to pay certain expenditures (the "Reimbursement Expenditures") in connection with the Project prior to the issuance of indebtedness for the purpose of financing costs associated with the Project on a long-term basis; and

WHEREAS, the City reasonably expects that debt obligations in an amount not expected to exceed $25,000,000 will be issued in connection with the Project and that certain portions of the proceeds of such debt obligations will be used to reimburse the Reimbursement Expenditures.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Lodi that:

Section 1. The City finds and determines that the foregoing recitals are true and correct.

Section 2. The City hereby declares its official intent to use proceeds of indebtedness to reimburse itself for Reimbursement Expenditures.

Section 3. This declaration is made solely for purposes of establishing compliance with the requirements of Section 1.150-2 of the Treasury Regulations. This declaration does not bind the City to make any expenditure, incur any indebtedness, or proceed with the Project.

Section 4. This resolution shall take effect from and after its adoption.

Dated: December 17, 2003

I hereby certify that Resolution No. 2003-247 was passed and adopted by the Lodi City Council in a regular meeting held December 17, 2003, by the following vote:

AYES: COUNCIL MEMBERS – Beckman, Hitchcock, Howard, Land, and Mayor Hansen

NOES: COUNCIL MEMBERS – None

ABSENT: COUNCIL MEMBERS – None

ABSTAIN: COUNCIL MEMBERS – None

Susan J. Blackston

SUSAN J. BLACKSTON
City Clerk

CITY OF LODI

PUBLIC WORKS DEPARTMENT

CITY HALL, 221 WEST PINE STREET
P.O. BOX 3006
LODI, CALIFORNIA 95241-1910
(209) 333-6706
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EMAIL pwdept@lodi.gov
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December 11, 2003

West Yost & Associates
1260 Lake Blvd., Suite 240
Davis, CA 95616

SUBJECT: Adopt Resolution Authorizing the City Manager to Approve the Purchase of White Slough Water Pollution Control Facility Filter, Aeration and UV Disinfection Equipment; Appropriate Wastewater Funds; and Adopt Reimbursement Resolution (Up to $6.6 Million)

Enclosed is a copy of background information on an item on the City Council agenda of Wednesday, December 17, 2003. The meeting will be held at 7 p.m. in the City Council Chamber, Carnegie Forum, 305 West Pine Street.

This item is on the consent calendar and is usually not discussed unless a Council Member requests discussion. The public is given an opportunity to address items on the consent calendar at the appropriate time.

If you wish to write to the City Council, please address your letter to City Council, City of Lodi, P. O. Box 3006, Lodi, California, 95241-1910. Be sure to allow time for the mail. Or, you may hand-deliver the letter to City Hall, 221 West Pine Street.

If you wish to address the Council at the Council Meeting, be sure to fill out a speaker's card (available at the Carnegie Forum immediately prior to the start of the meeting) and give it to the City Clerk. If you have any questions about communicating with the Council, please contact Susan Blackston, City Clerk, at (209) 333-6702.

If you have any questions about the item itself, please call me at (209) 333-6759.

P. Farris

Richard C. Prima, Jr.
for: Public Works Director

RCP/pmf

Enclosure

cc: City Clerk