APPENDIX F

WEST YOST ASSOCIATES
Consulting Engineers

TECHNICAL MEMORANDUM

DATE: July 12, 2016 Project No.: 686-18-16-01.006
SENT VIA: EMAIL

TO: Daniel Kramer, President, Petralogix Engineering

CC: Charlie Swimley, Public Works Director, City of Lodi
Karen Honer, Wastewater Superintendent, City of Lodi

FROM: Dave Anderson, PE, RCE #27659
Charles Hardy, PE, RCE #71015

REVIEWED BY: Kathryn Gies, PE, RCE #65022

SUBJECT: Preliminary Design of the White Slough Water Pollution Control Facility Storage Expansion and Surface, Agricultural, and Groundwater Supply Improvement Project

This Technical Memorandum (TM) includes descriptions, conceptual drawings, and cost estimates for storage and conveyance improvements associated with the subject project. This information is intended to provide the basis for discussion and refinement of these improvements before detailed design is initiated.

PROJECT DESCRIPTION

During non-irrigation months (generally October through mid-April), the City of Lodi (City) White Slough Water Pollution Control Facility (WPCF) discharges an average of about 3.5 million gallons per day (MGD) of tertiary treated wastewater to Dredger Cut, a dead end slough of the Sacramento-San Joaquin Delta (Delta). During the irrigation months (generally mid-April through the end of September), the City discharges a similar amount of recycled water (about 3.5 MGD) to existing onsite storage ponds and/or the 790-acre City-owned agricultural fields that surround the WPCF. Irrigation water demands for the City-owned properties are also met by groundwater pumping from one onsite well. In addition to these discharges, the City provides approximately 1.2 MGD of recycled water year-round to the San Joaquin County Mosquito and Vector Control District and two Northern California Power Agency power generation plants.

The City of intends to construct improvements necessary to capture and store a portion of the flow that is current discharged in the non-irrigation months and use this water to reduce, or eliminate, the amount of groundwater used for irrigation on City properties. The City also plans to expand the existing City-owned recycled water irrigation system to include an additional 90 acres of City-owned land that is currently irrigated with groundwater from a dedicated well.

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TERTIARY WATER STORAGE PONDS

This Project will enable the City to divert up to 1,700 gallons per minute (GPM) (2.4 MGD) of the tertiary-treated wastewater and to store this water in new storage ponds. The proposed site of the new ponds is shown on Figure 1 (Figures are in Appendix A to this TM). This site currently contains three agricultural fields (Fields 2A, 2B, and 2C) which occupy about 88 acres. The new storage ponds will occupy about 70 acres of this site, the remainder of the site contains a runoff/agricultural tail water ditch that must remain in service and will serve as a buffer between the ponds and an existing Giant Garter Snake habitat easement. Advantages of this site include:

- It is near the WPCF's main irrigation distribution box; which will minimize the cost of conveying tertiary treated wastewater to agricultural fields;
- Fields 2A, 2B and 2C are at the end of an irrigation distribution system, therefore construction of ponds at this site will have negligible impacts on the City's existing irrigation water delivery system;
- The distance between this site and the Kingdon Airport is such that it appears unlikely that birds attracted to these ponds will impact air traffic.

Figures 2 and 3 show historical groundwater elevations in two groundwater monitoring wells in the vicinity of the new ponds. Monitoring well locations are shown on Figure 1. This historical data indicates that groundwater levels in this area are generally 2 or more feet below the existing ground surface. (Elevations shown on these figures are based on the NAVD88 vertical datum. Plans for the WPCF are based on a plant vertical datum which is 1.9 feet lower than the NAVD88 datum. Elevations shown elsewhere in the TM are based on the plant vertical datum.) This relatively shallow depth to groundwater is a limiting factor for the allowable depth of the storage ponds.

Figure 4 is a conceptual grading plan for the new tertiary water storage ponds. The following criteria and assumptions were used to develop this plan:

- A 100-foot wide buffer will be maintained between the pond levees and the Giant Garter Snake habitat easement that is located along the western boundary of the City's properties
- Useable excavated material and in-place fill material will balance
- To the extent practical the depth of excavation will be less than two feet
- The top 6 inches of existing material will be unsuitable for as fill material and will be removed and disposed of outside the pond construction site
- Excavated material will decrease 15 percent in volume when it is compacted to create levees
- Pond levees will have a 12-foot top width and 2:1 side slopes
- When full, the average depth of water in the ponds will be six feet
- Two feet of freeboard will be maintained in the ponds

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- A 12-inch thick layer of rock rip-rap will be placed on pond interior slopes
- A 4-inch thick layer of fiber-reinforced shotcrete will be placed on pond exterior slopes

The conceptual grading plan shown on Figure 4 would provide about 307 acre-feet of storage capacity. This is the approximate storage capacity of the City's existing ponds. Ignoring net precipitation/evaporation/infiltration gains and losses, these ponds could be filled in about 40 days at an inflow rate of 1,700 GPM.

Figure 5 shows the approximate depths of excavation required to construct the conceptual grading plan shown on Figure 4. While groundwater should generally be below the depth of the excavations, saturated soils may have low bearing capacities and may not support the weight of the heavy equipment (such as scrapers and dozers) that would typically be used to construct this type of project. This issue should be investigated by a geotechnical engineer prior to final design. Assumptions regarding the practical the depth of excavation, shrinkage of excavated materials, and appropriate pond cross-section should also be verified by a geotechnical engineer prior to final design. Furthermore, the plan shown on Figure 4 is based on publically available Light Detection and Ranging (LiDAR) topographic data. This accuracy of this data should be verified prior to final design.

DIVERSION TO TERTIARY WATER STORAGE

The City intends to divert filtered, disinfected recycled water to the new storage ponds. However, the diversion facilities that direct treated effluent to the existing storage ponds convey un-disinfected secondary-treated wastewater. Therefore, the Project also needs to include new facilities that allow for diversion of tertiary flows separately from the existing effluent diversion facilities.

WPCF discharges tertiary treated wastewater to Dredger Cut through a 48-inch diameter reinforced concrete pipe outfall. Figure 4 shows the approximate alignment of this pipeline. The option of using this pipe to convey wastewater to the new storage ponds was investigated, but rejected because:

- The tidal activity of the Delta causes daily fluctuations in water of about three feet, which results in water from the Delta entering the outfall pipeline and mixing with wastewater in the outfall pipe, and;
- If water were diverted from the outfall pipe and pumped into the new storage ponds, this water could, at times, include water from the Delta, in addition to wastewater.

Instead of using the existing outfall to convey tertiary water to the new storage ponds, tertiary treated wastewater will be diverted from the effluent control chamber of the WPCF's existing Filter Pump Station structure and conveyed to the new storage ponds through a new 18-inch diameter pipeline. Figure 4 shows the approximate alignment of this pipeline. This pipeline will also be used to convey water from the new storage ponds to the WPCF's irrigation system, as described under the heading Tertiary Water Delivery System.

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Water surface elevations in the effluent flow control chamber are controlled by an existing weir structure that surrounds the overflow to the 48-inch diameter outfall, and are expected to range between about 5.0 feet (corresponding to no flow over the existing weir) to 6.6 feet (corresponding to a flow of 16.3 MGD over the existing weir.)

A modulating V-notch weir slide gate will be used to measure and control the rate at which water is diverted from the Filter Pump Station structure to the new ponds. The location of the V-notch weir slide gate is shown on Figure 6. This slide gate will operate between a water surface elevation of 5.2 feet and 6.6 feet to maintain a consistent flow of 1,700 GPM, where an upstream water level measurement will be used to control the height of the V-notch weir to maintain a relatively constant depth of flow over the weir. A downstream water level measurement will also be used to determine if the weir is flooded. In the event that the weir does flood, the weir gate will raise cutting off the water supply to the new ponds until the source of flooding can be identified and mitigated.

Since water surface elevations in the effluent control chamber of the Filter Pump Station structure higher than bottom elevations of the new ponds (shown on Figure 4), the ponds could be partially filled by gravity (i.e. without pumping.) The water surface elevation in the new ponds will determine the rate at which flow could be conveyed to the ponds by gravity. Figure 7 provides a graphical representation of the flow rate from the filter pump station to the ponds as a function of the water surface elevation in the ponds. As shown, gravity flow would drop below 1,700 GPM when the water surface elevation of the ponds reaches about 2.2 feet, and would gradually decline to zero at a water surface elevation of about five feet. (Flow rates less than 1,700 GPM could be avoided until the pond water surface elevation reaches about 3.2 feet by installing a 20-inch diameter conveyance pipeline. This approach could be evaluated further in final design). As shown on Figure 4, full water surface elevations of the new ponds will range from about 7.6 to 9.1 feet, therefore pumping will be required to completely fill the ponds.

Finally, it should be noted that the purpose of directing filtered, disinfected recycled water to the storage ponds is to provide the highest quality of water to the new storage ponds (as possible) to help protect groundwater quality. However, the proposed use of the diverted tertiary flows is irrigation of fodder crops (the same use as the existing diverted flows). This type crop does not require irrigation with "Disinfected Tertiary Recycled Water" as defined by the State's recycled water regulations. Therefore, the new diversion facilities will not be designed to stop diversion if the formal "Disinfected Tertiary Recycled Water" standards are not satisfied. In the event that the City wishes to implement a recycled water project that required "Disinfected Tertiary Recycled Water," such improvements can be made to the diversion facilities at that time.

TERTIARY WATER PUMP STATION

As noted above, pumping will be required to completely fill the ponds. In addition, a pump station will be required to deliver water from the ponds to the City's irrigation water distribution system. Figure 8 shows preliminary plan and section views of a new pump station that will both: (a) lift water into the tertiary water storage ponds; and (b) pump water from the storage ponds into the WPCF's irrigation distribution system. The pump station will contain two constant-speed, 7½-horsepower, 850 GPM vertical turbine pumps.

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As shown on Figure 8, the 18-inch diameter pipeline from the Filter Pump Station will terminate at the Tertiary Water Pump Station. When ponds are being filled, water entering the Tertiary Water Pump Station through this pipeline may:

- Flow by gravity directly to Pond D
- Flow by gravity through the 16-inch diameter pond inlet/outlet pipe to Pond A, B, and C
- Be pumped directly to Pond D
- Be pumped through the 16-inch diameter pond inlet/outlet pipe to Pond A, B, and C

Figure 9 shows preliminary plan and section views of structures that will be used to control flow in and out of ponds A, B, and C.

Since Pond D is the lowest pond, water can be pumped into Ponds A and B, then overflow to Pond C, which will then overflow to Pond D. A high water alarm will also be located in Pond D to alert the City when all of the ponds have been filled. If the alarm is triggered, the pumps will be deactivated and the control gate in the tertiary water diversion facility will raise to eliminate flow of water to the tertiary ponds. Because Pond D will be the last pond that is filled by pumping, the gravity inlet from the Tertiary Water Pump Station to this pond should remain open while other ponds are filled. This will allow Pond D to act as a large pump wet-well and thereby maximize pump cycle times.

TERTIARY WATER DELIVERY SYSTEM

During irrigation months (generally late April through September) the Tertiary Water Pump Station will pump stored water to the WPCF's existing main irrigation distribution box, shown on Figure 4. Figure 10 is a preliminary plan view of the connection to the irrigation distribution box. From this location the WPCF's existing irrigation distribution system can deliver this water to various City-owned agricultural fields.

IRRIGATION SITE EXPANSION

As noted above, the new tertiary storage ponds will remove approximately 88 acres of existing City-owned fields from the crop irrigation area. To compensate for this loss, the WPCF's irrigation distribution system could be expanded so that it is capable of delivering reclaimed wastewater to the area labelled "expanded wastewater irrigation site" on Figure 1. This area contains three fields (Fields 6EA, 6F, and 6G) that occupy 90 acres. These fields are currently irrigated with groundwater pumped from a well near the southeast corner of these fields. This well discharges to a supply channel on the south side of Thornton Road. This channel drains from south to north and distributes water to the individual fields.

Figure 11 shows improvements necessary to expand the WPCF's irrigation distribution system and deliver reclaimed wastewater to Fields 6EA, 6F, and 6G. A new pump station will withdraw water from an existing supply channel and deliver water to the existing groundwater supply channel on the south side of Thornton Road. Figure 12 shows preliminary plan and section views of this pump station.

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WATER BALANCE ANALYSIS

A water balance analysis has been performed to evaluate the benefits of the new ponds with respect to increasing the City's irrigation water supplies and reducing surface water discharges. The following scenarios were evaluated:

1. Average rainfall conditions, current average dry weather flow (4.6 MGD), without new storage
2. Average rainfall conditions, current average dry weather flow, with new storage and corresponding reduced irrigated acreage
3. Average rainfall conditions, current average dry weather flow, with new storage and addition of 90 acres of alfalfa/grass crop irrigated with recycled water
4. Average rainfall, future average dry weather flow, with new storage and addition of 90 acres of alfalfa/grass crop irrigated with recycled water

The first scenario is used to establish the typical volume of supplemental water supply and surface water discharge for the existing facilities. The second scenario is used to evaluate the impact on supplemental water supply needs and surface water discharges associated adding the new ponds, without expanding the irrigation area. The third scenario evaluates the additional impacts of expanding the irrigable acreage to the 90-acre City-owned parcel that is currently irrigated with groundwater. The fourth scenario is used to determine the future influent flow that would favor expansion of the City's existing irrigation system to the 90-acre parcel.

For all of the scenarios, it is assumed that water would be diverted to the new storage ponds starting on February 1 of each year, and diversions will continue until the ponds are full, and the ponds would be maintained each month near their capacity as long water supplies are available. In addition, it is assumed that the long-term percolation rate from the new ponds will be approximately 4 inches per month, half of the observed percolation rate for the existing ponds.

Important results from the water balances include the amount of surface water discharged (in millions of gallons per year (MGY)), as well as the annual amount of supplemental irrigation required (if any), and the additional irrigable area needed to balance the inputs and outputs. The results of these water balances are summarized in Table 1.

Table 1. Summary of Water Balance Results

Scenario	Surface Water Discharge, MGY	Supplemental Irrigation Required, MGY	Total Acreage Irrigated, acres	Additional Alfalfa/Grass Crop Area Needed, acres
Current Conditions (4.6 MGD)	590	60	790	0
4.6 MGD + New Storage	580	0	702	0
4.6 MGD + New Storage + 90 acres	490	20	792	90
5.0 MGD + New Storage + 90 acres	610	0	792	90

These results lead to the following conclusions:

- With the addition of the new storage under current average conditions (4.6 MGD average dry weather flow), there is no need for supplemental irrigation water if the irrigation area is *not* expanded by 90 acres. However, there may be a potential for excess water to remain in the ponds at the end of the irrigation season because all of the stored water may not be used.
- If the additional 90 acres were irrigated, some supplemental irrigation would be required, but the supplemental volume is minimal.
- When the average dry weather flow reaches 5.0 MGD, the City could irrigate the additional 90 acres without requiring supplemental irrigation water.
- The actual volume of surface water discharge would only be marginally reduced if new storage is constructed, but the additional 90 acres is not brought online immediately.

Based on the information presented above, the City could postpone expansion of the irrigation area at this time. However, the water balance analysis should be revisited after the new pond facility is online to confirm the results presented herein. For example, if the percolation rate from the new pond is similar to the existing pond, then the results could be significantly different from this analysis.

Finally, as noted above, if the City does not bring the additional 90 acres online the total volume of surface water discharge does not change significantly. Therefore, this raises the question as to whether the City will need to file a petition with the State Water Board for a reduction in wastewater flows. The City's current permit states:

> *For publicly owned treatment works, prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a permanent decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. (Water Code section 1211).*

Table 2 summarizes the changes in average daily discharge flows predicted by the water balance analysis. As shown, the analysis predicts that the volume of discharge would decrease in February and March, but that the City would need to discharge in April (and possibly September) where discharges do not currently occur in these months. Moreover, because the water balance analysis can only provide a theoretical assessment of the water needs for the City's properties and actual water use could vary from the predicted amounts, it is recommended that the City move forward with the change petition process based on the assumption that flows will be reduced in February and March (as shown).

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Table 2. Summary of Water Balance Results

Month	Current Conditions (4.6 MGD)	4.6 MGD + New Storage	4.6 MGD + New Storage + 90 acres	5.0 MGD + New Storage + 90 acres
January	3.5	3.5	3.5	3.9
February	3.5	1.0	1.0	1.4
March	3.5	2.9	2.3	3.2
April	0.0	0.6	0.0	0.5
May	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0
September	0.0	0.8	0.0	0.0
October	1.9	3.0	2.3	3.1
November	3.7	3.6	3.6	4.0
December	3.4	3.4	3.4	3.7

OPINION OF CONSTRUCTION COSTS

The conceptual drawings presented in this TM were the basis for the opinion of construction cost shown in Table 3. A more detailed version of this opinion of cost is contained in Appendix A. The construction cost estimate included in the grant funding application submitted to the California Department of Water Resources is also shown in Table 3.

Table 3. Opinion of Construction Cost

Project Element	Contingency			Cost Estimate in Grant Application, dollars
	Estimated Construction Cost, dollars	Contingency (15%), dollars	Estimated Construction Cost with Contingency, dollars	
Tertiary Storage Ponds	3,321,000	499,000	3,820,000	3,472,444
Shotcrete Lining of Exterior Pond Levee Slopes	549,000	83,000	632,000	0
Irrigation Improvements	980,000	148,000	1,128,000	0
Total	**$4,850,000**	**$730,000**	**$5,580,000**	**$3,472,444**

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APPENDIX A

Figures

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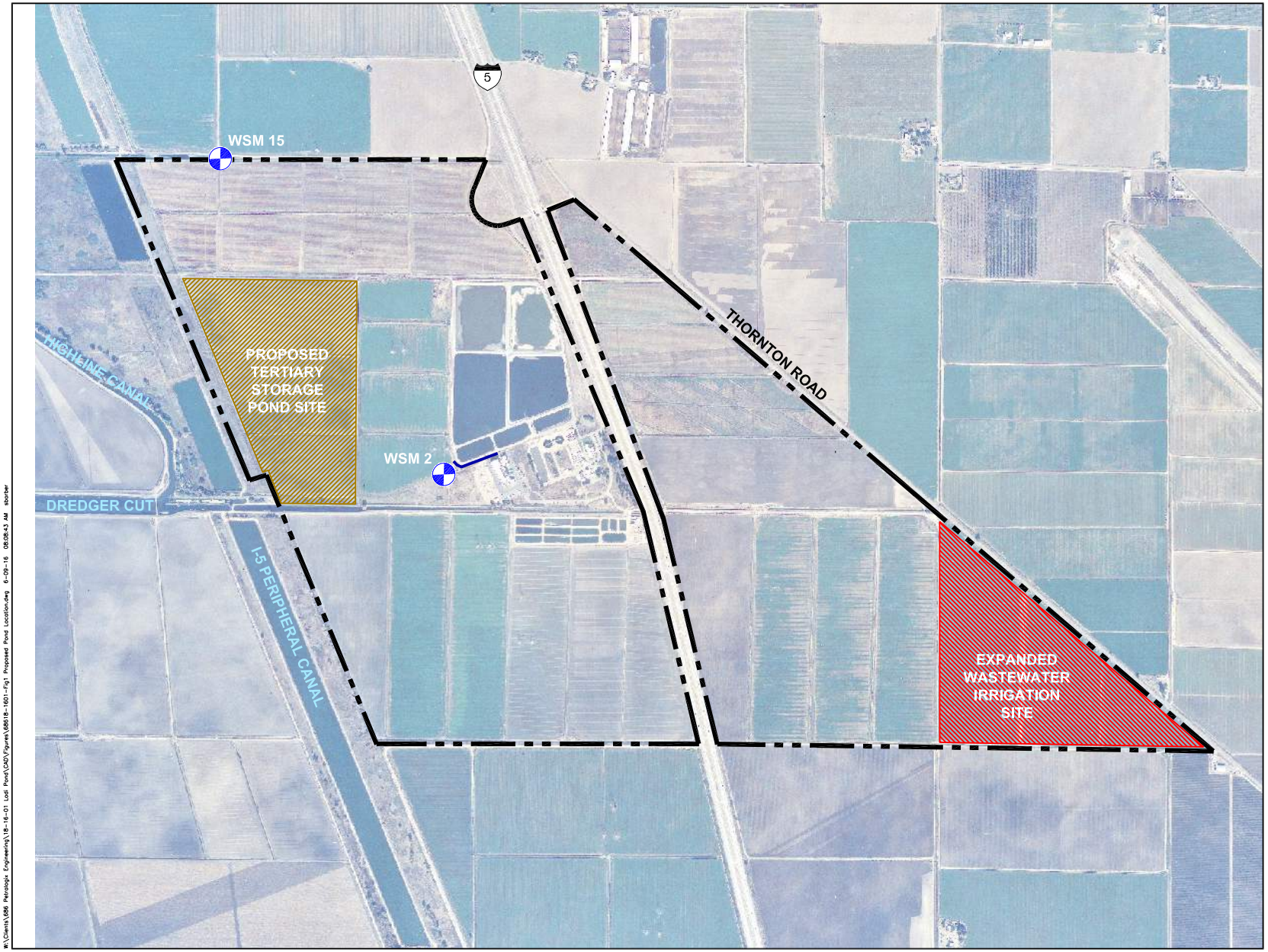

NOT TO SCALE

LEGEND

- CITY PROPERTY
- PROPOSED TERTIARY STORAGE POND SITE
- EXPANDED WASTEWATER IRRIGATION SITE
- GROUNDWATER MONITORING WELL

CITY OF LODI CALIFORNIA

WEST YOST ASSOCIATES Consulting Engineers

Figure 1

Proposed Tertiary Storage and Expanded Wastewater Irrigation Pond Sites

City of Lodi
White Slough Water Pollution Control Facility

W:\Clients\686 Petrologic Engineering\18-16-01 Lodi Pond\CAD\Figures\686B-1601-Fig1 Proposed Pond Location.dwg 6-09-16 08:08:43 AM sborher

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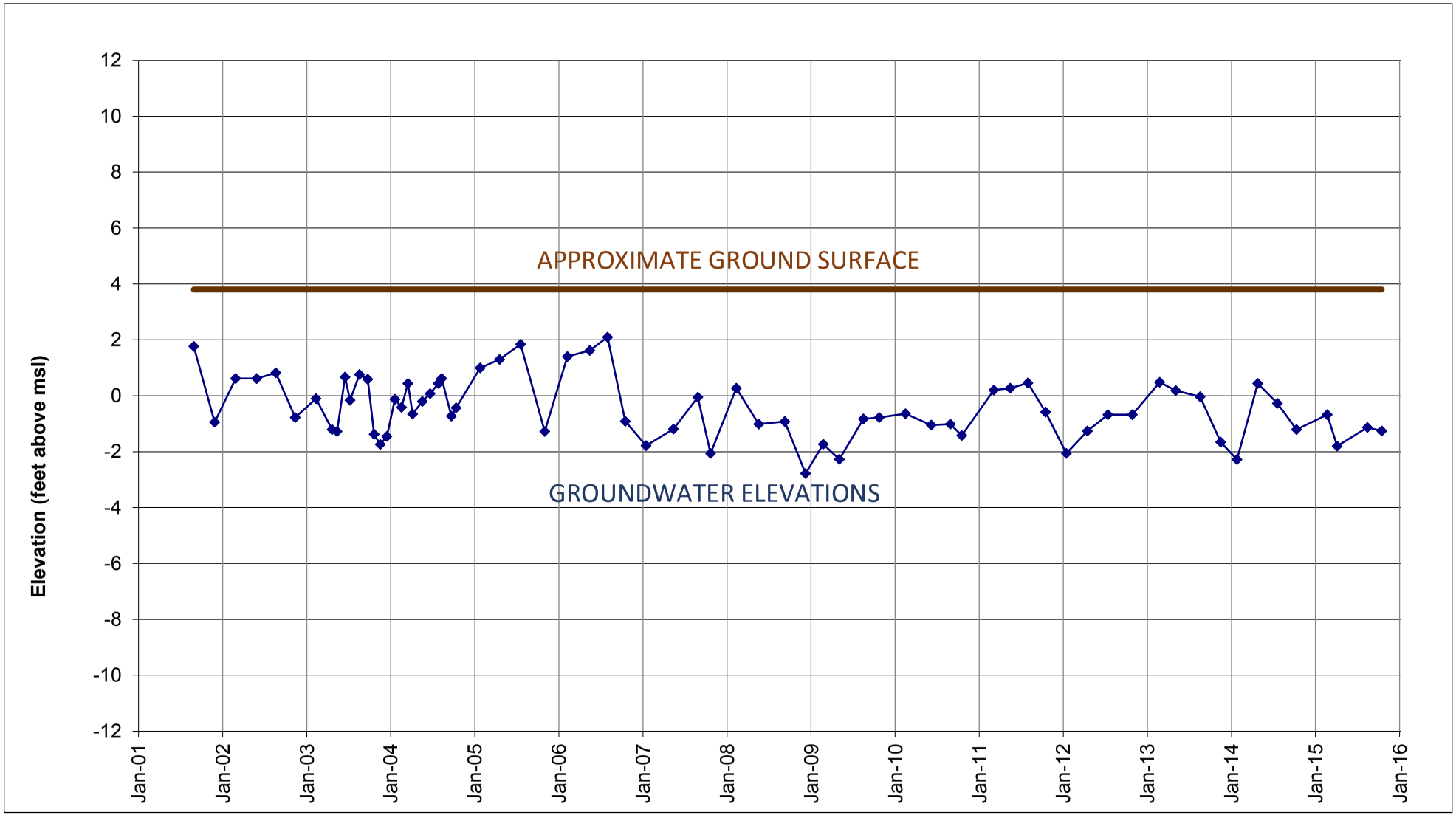

Notes:

1. Elevations shown on this chart are based on the NAVD88 vertical datum, which is about 1.9 feet higher than the WPCF plant vertical datum.

Figure 2

Groundwater Elevations Measured in WSM-15 Groundwater Monitoring Well

City of Lodi
White Slough WPCF Storage Expansion and Surface, Agricultural, and Groundwater Supply Improvement Project

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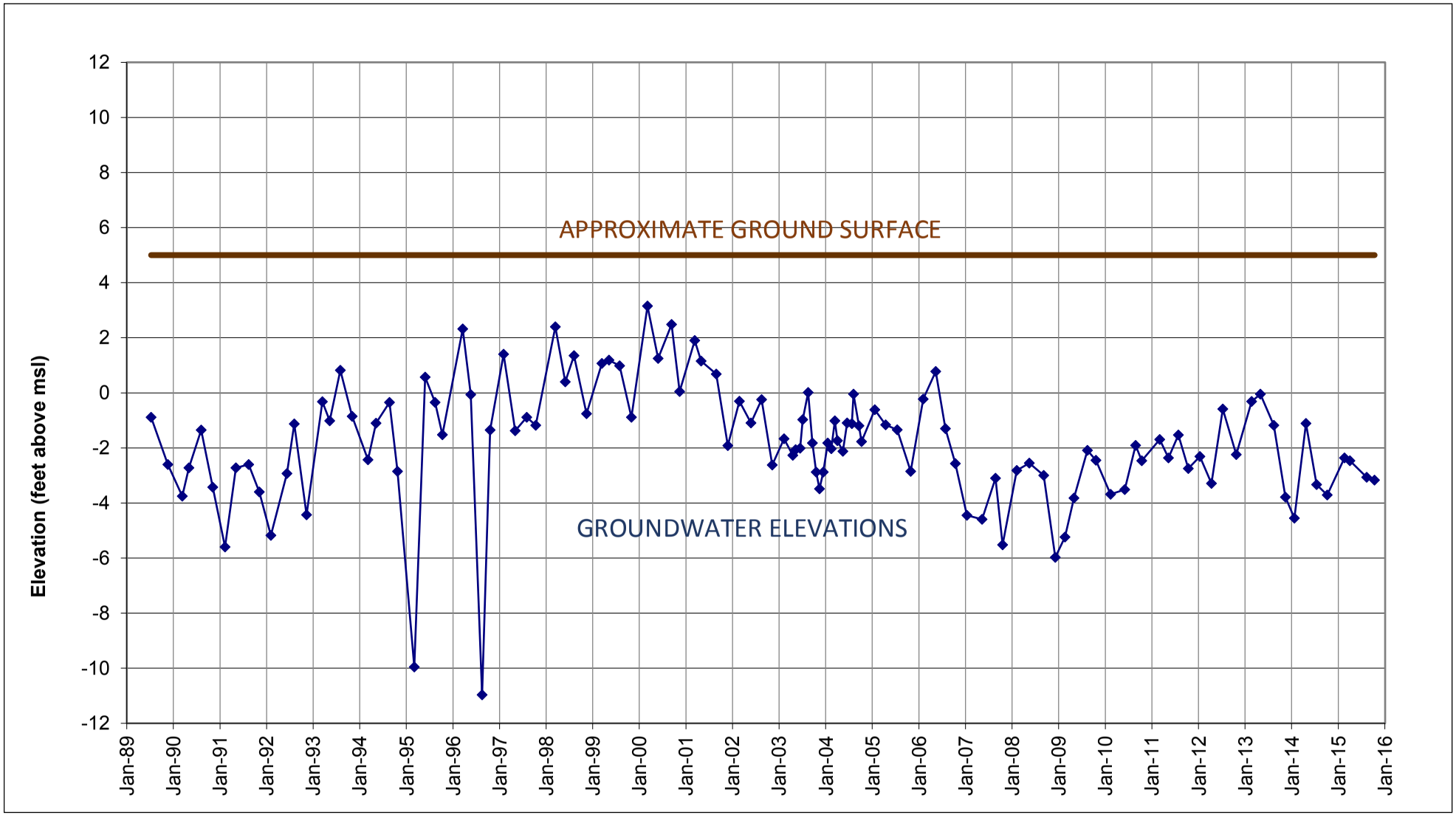


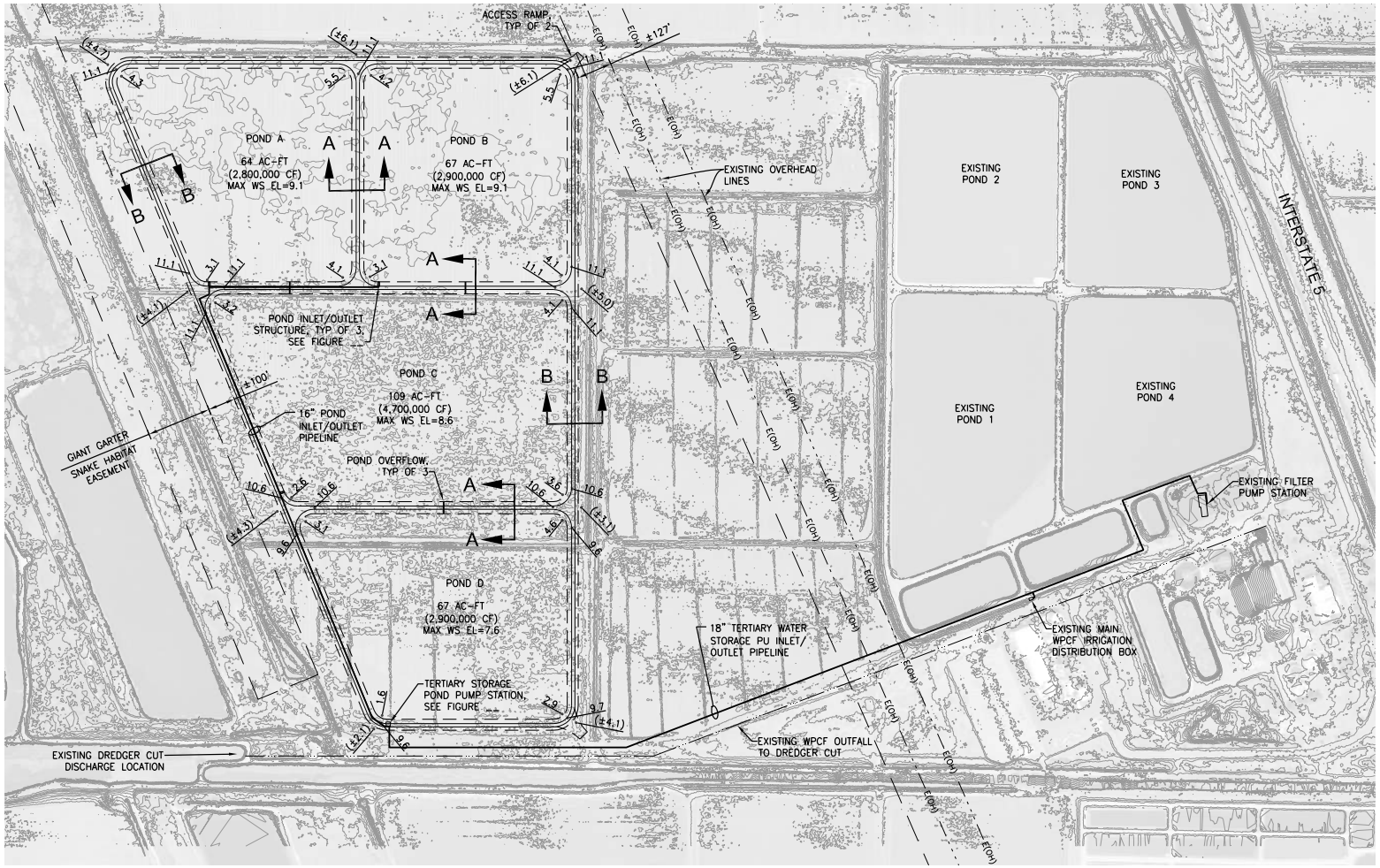
Notes:

1. Elevations shown on this chart are based on the NAVD88 vertical datum, which is about 1.9 feet higher than the WPCF plant vertical datum.

Figure 3

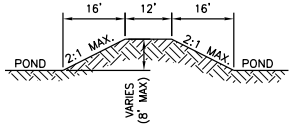
Groundwater Evelations Measured in WSM-02 Groundwater Monitoring Well

City of Lodi
White Slough WPCF Storage Expansion and Surface, Agricultural, and Groundwater Supply Improvement Project



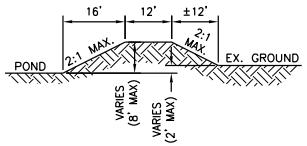
LEGEND

(±7.0)	EXISTING SPOT ELEVATION
5.5	PROPOSED SPOT ELEVATION
	TOE OF LEVEE
	TOP OF LEVEE
E(OH)	EXISTING OVERHEAD LINES
	EXISTING EASEMENT



SECTION A

NTS



SECTION B

NTS

NOTE: "MAX WS" IS MAXIMUM WATER SURFACE ELEVATION WHILE MAINTAINING 2' OF FREEBOARD.

N

0 200' 400'

SCALE IN FEET

QA/QC REVIEW: _____

DATE: _____

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : AS SHOWN
DRAWN BY : ALB
DESIGNED BY : ALB
PROJ. MGR. : MLY

No.	ZONE	REVISIONS	BY	DATE

BASIS OF ELEVATIONS:

LOCAL PLANT DATUM =

NAV88 - 1.9' = NGVD27 + 0.4'

(NGVD27 = NAVD88 - 2.3')

WEST YOST ASSOCIATES
2020 Research Park Drive
Suite 100
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CITY OF LODI CALIFORNIA

WHITE SLOUGH WPCF
STORAGE EXPANSION IMPROVEMENTS

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FIGURE 4

TERTIARY STORAGE POND IMPROVEMENTS

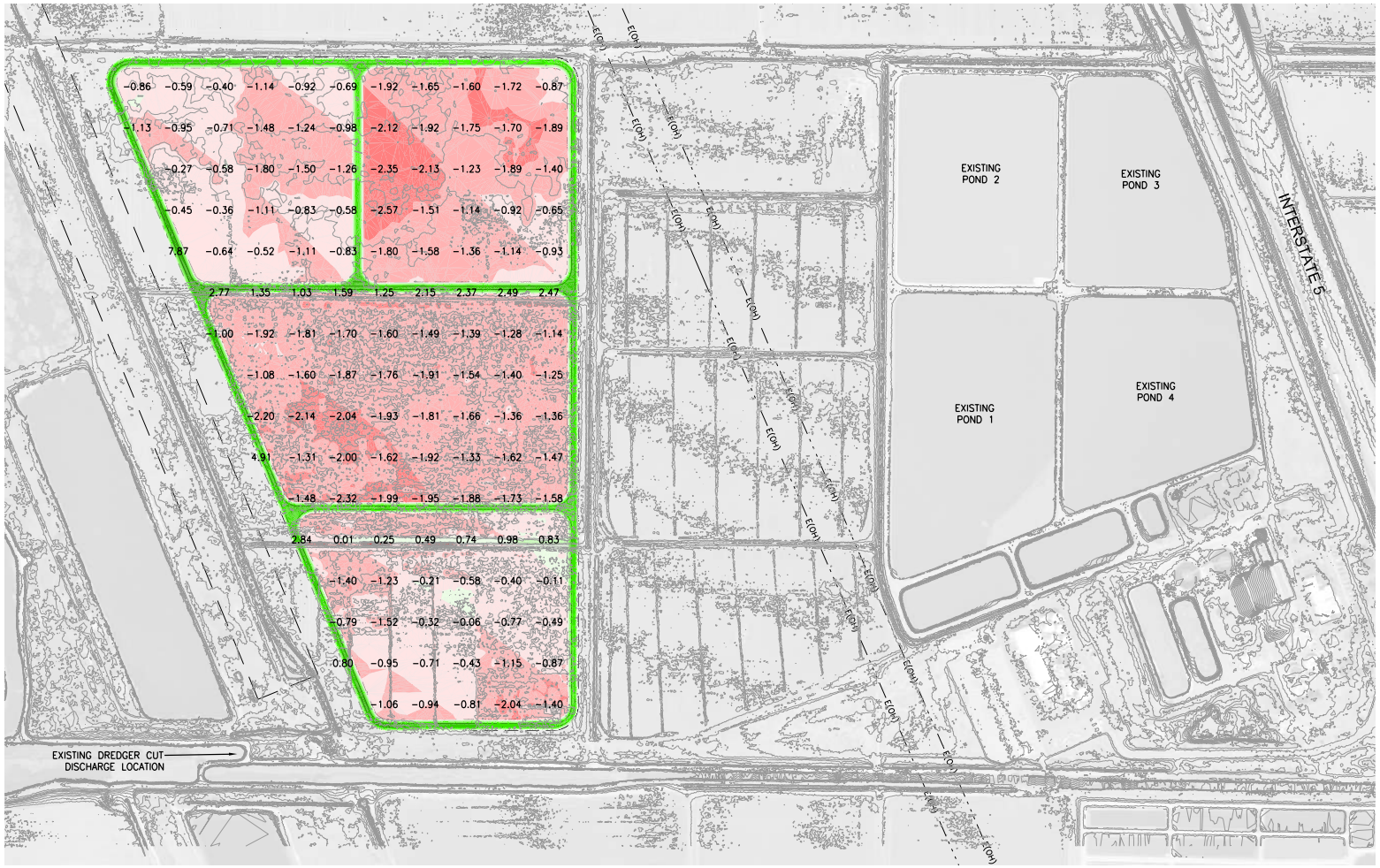
JOB NUMBER 686-18-16-01

DRAWING NUMBER

SHEET NUMBER OF

REVISION

W:\Clients\686 Petrologic Engineering\18-16-01 Lodi Pond\CAD\Figures\68618-1601-Fig4 Tertiary Storage Pond Improvements.dwg 6/8/2016 3:34 PM sborber



CUT/FILL LEGEND			
RANGE	MIN.	MAX.	Color
1	-6.0	-5.0	
2	-5.0	-4.0	
3	-4.0	-3.0	
4	-3.0	-2.0	
5	-2.0	-1.0	
6	-1.0	0.0	
7	0.0	1.0	
8	1.0	2.0	
9	2.0	3.0	
10	3.0	4.0	
11	4.0	5.0	
12	5.0	6.0	
13	6.0	7.0	
14	7.0	8.0	

EARTHWORK SUMMARY

TOTAL EARTH TO BE STRIPPED AND DISPOSED OF	57,500 CY
TOTAL EARTH TO BE MOVED AFTER STRIPPING	80,000 CY

NOTES:

1. CONTOURS REPRESENT PUBLICLY AVAILABLE LIDAR TOPOGRAPHIC DATA. A TOPOGRAPHIC SURVEY SHOULD BE PERFORMED PRIOR TO FINAL DESIGN.
2. IT IS ASSUMED THAT THE TOP 6" OF EXISTING GRADE WILL BE STRIPPED AND DISPOSED OF PRIOR TO CONSTRUCTION. THE REMAINING EARTHWORK IS ESTIMATED TO BE BALANCED.
3. AN ASSUMED SHRINKAGE VALUE OF 15% HAS BEEN APPLIED TO ALL FILL VOLUMES. ACTUAL EXPECTED SHRINKAGE SHOULD BE VERIFIED BY A GEOTECHNICAL ENGINEER PRIOR TO FINAL DESIGN.
4. POTENTIAL SUBSIDENCE DUE TO EQUIPMENT LOADING AND MOBILIZATION HAS NOT BEEN INCLUDED IN THIS EARTHWORK ESTIMATE.
5. DEPTHS OF CUT EXCEEDING 2.5' BELOW EXISTING GRADE APPEAR TO ONLY OCCUR AT FEW LOCATIONS ALONG EXISTING LEVEES.

LEGEND

-1.22	CUT DEPTH (FEET)
0.65	FILL DEPTH (FEET)

N

0 200' 400'
SCALE IN FEET

DRAFT

QA/QC REVIEW: _____
DATE: _____

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : AS SHOWN
DRAWN BY : ALB
DESIGNED BY : ALB
PROJ. MGR. : MLY

No.	ZONE	REVISIONS	BY	DATE

BASIS OF ELEVATIONS:

LOCAL PLANT DATUM =

NAV88 - 1.9' = NGVD27 + 0.4'

(NGVD27 = NAVD88 - 2.3')

WEST YOST ASSOCIATES
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CITY OF LODI CALIFORNIA

WHITE SLOUGH WPCF
STORAGE EXPANSION IMPROVEMENTS

FIGURE 5
TERTIARY STORAGE POND
EARTHWORK ESTIMATE

JOB NUMBER 686-18-16-01
DRAWING NUMBER
SHEET NUMBER OF
REVISION

W:\Clients\686 Petrologic Engineering\18-16-01 Lodi Pond\CAD\Figures\686618-1601-Fig5 Tertiary Storage Pond Earthwork.dwg 6/8/2016 4:23 PM
sbarber

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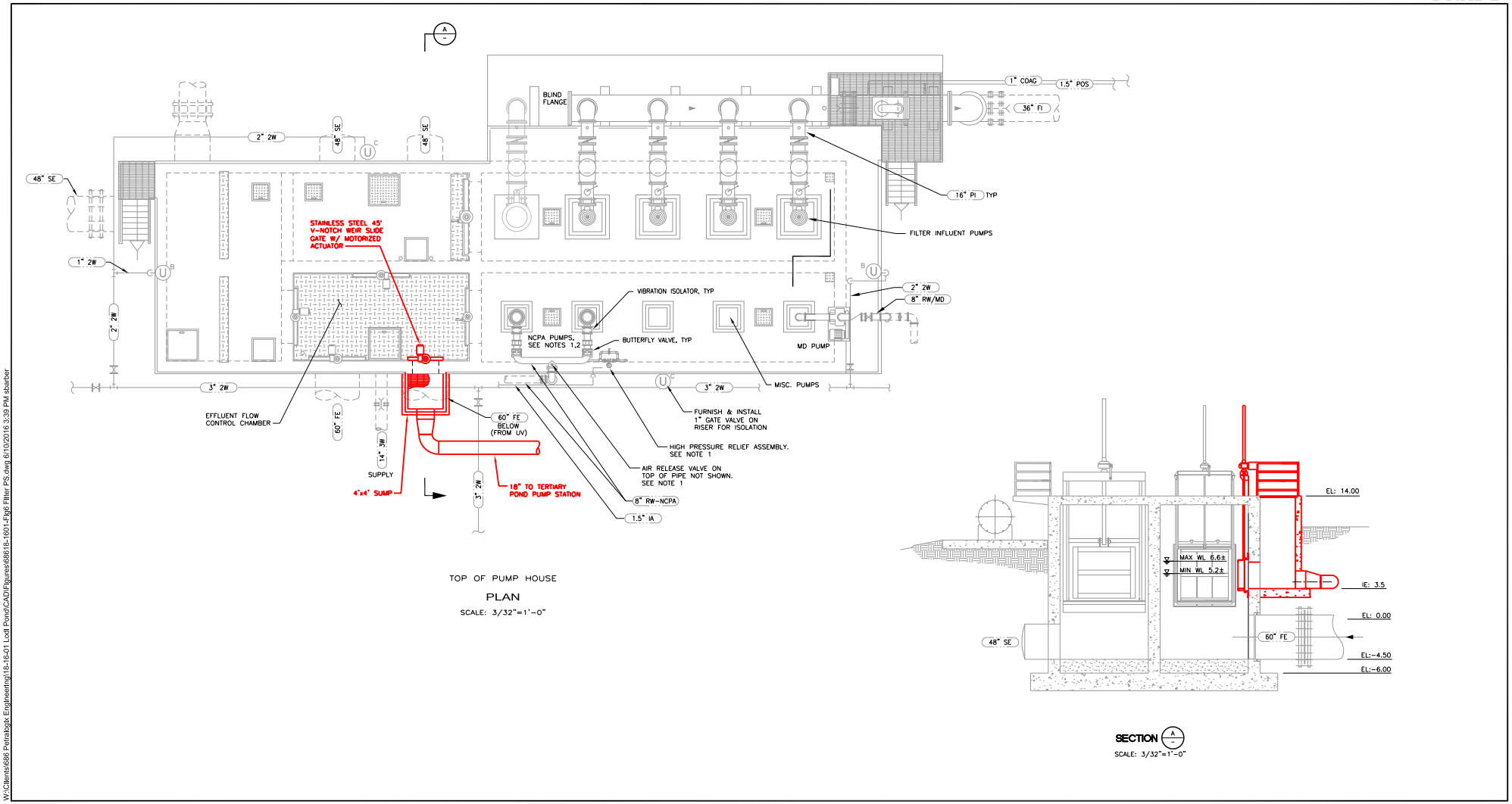

W:\Clients\686 Petralogix Engineering\18-16-01 Lodi Pond\CAD\Figures\686\18-1601-Fig6 Filter PS.dwg 6/10/2016 3:39 PM sbarber

LEGEND

Existing

Proposed

Figure 6

Tertiary Diversion At Filter Pump Station Plan and Section

City of Lodi
White Slough WPCF
Storage Expansion Improvements

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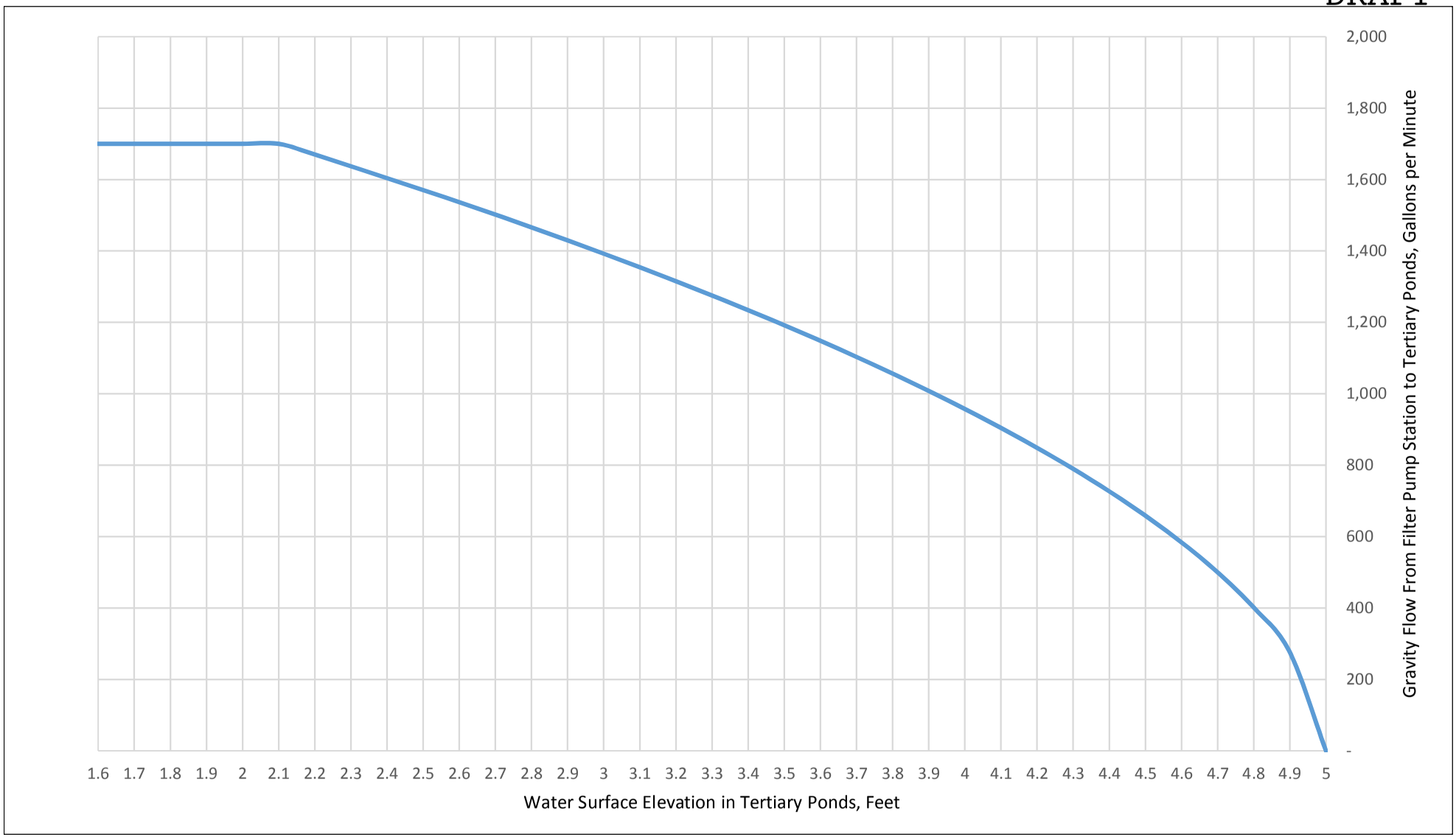

Notes:

1. This chart is based on the assumption that flow to tertiary ponds will be controlled so that maximum flow rate does not exceed 1,700 gpm.
2. The Tertiary Storage Pond Pump Station will be capable of filling storage ponds at a rate of 1,700 gpm, regardless of pond water depth.

Figure 7

Estimated Flow from Filter Pump Station to Tertiary Ponds by Gravity (i.e. without pumping).

City of Lodi
White Slough WPCF Storage Expansion and Surface, Agricultural, and Groundwater Supply Improvement Project

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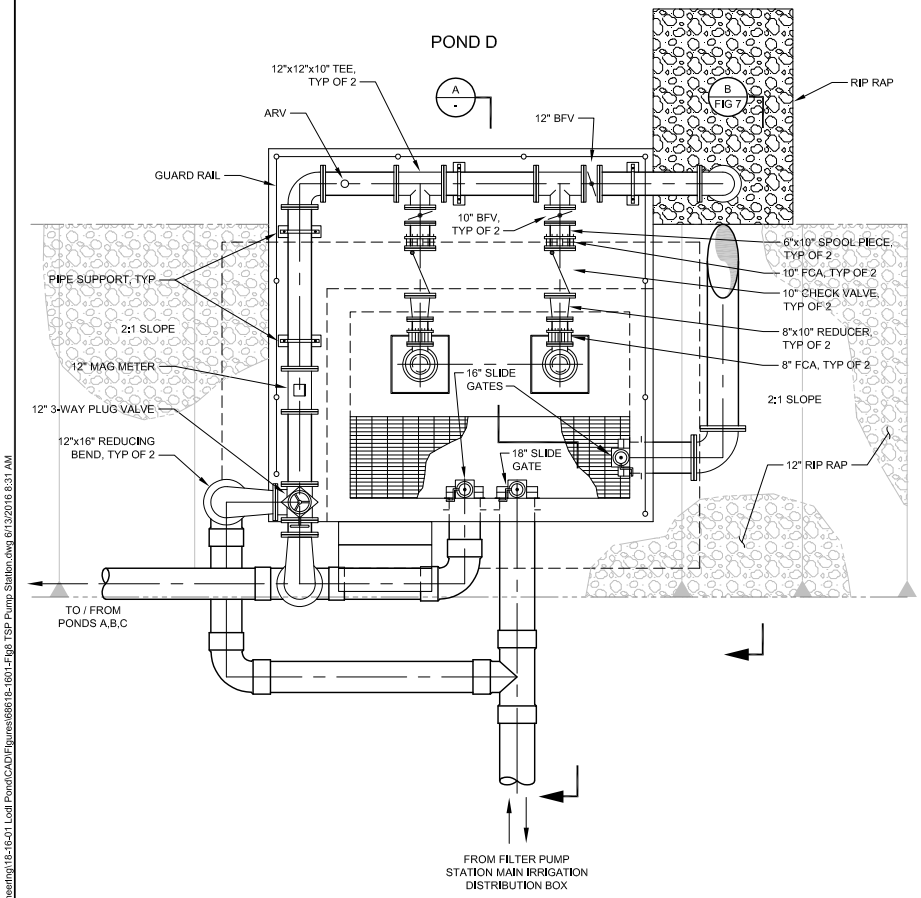
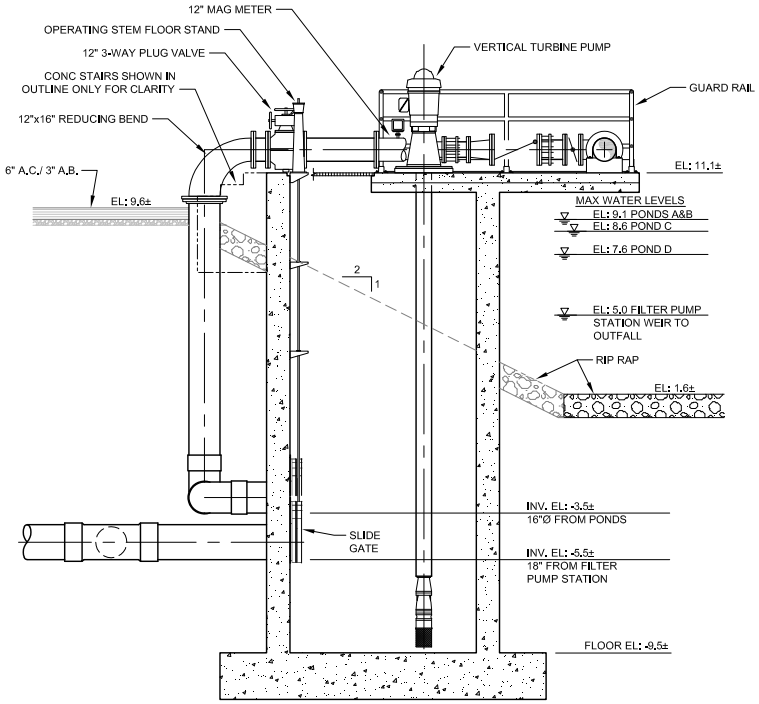


PLAN

SCALE: 3/16"=1'-0"



SECTION A

SCALE: 3/16"=1'-0"

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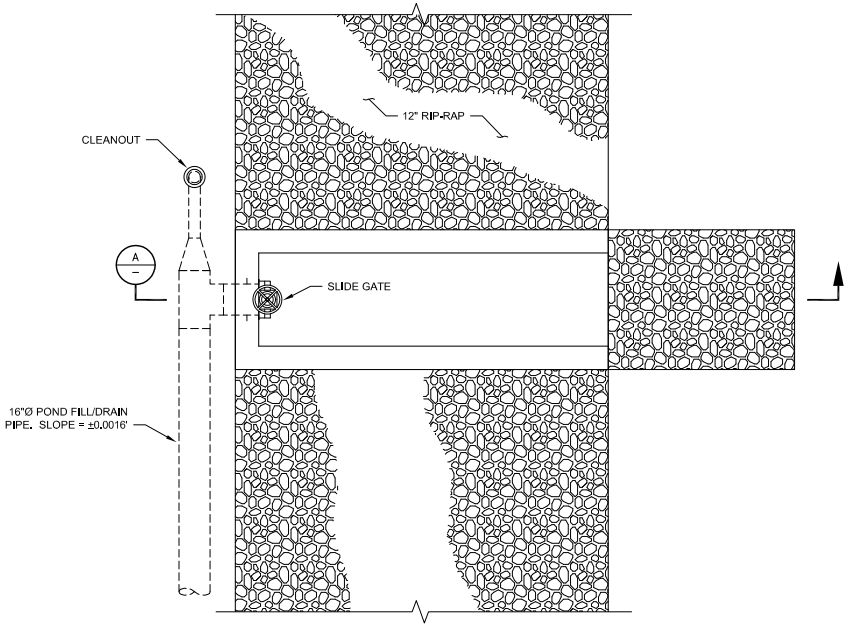
sbarber

Figure 8

Tertiary Storage Pond Pump Station Plan and Section

City of Lodi
White Slough WPCF
Storage Expansion Improvements

DRAFT



PLAN

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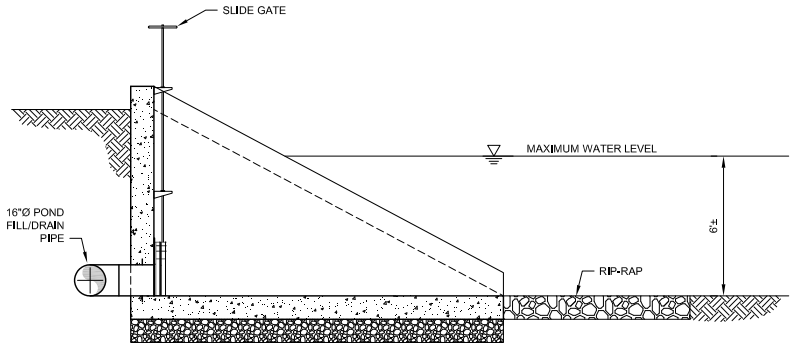


SECTION A

SCALE: 3/16"=1'-0"

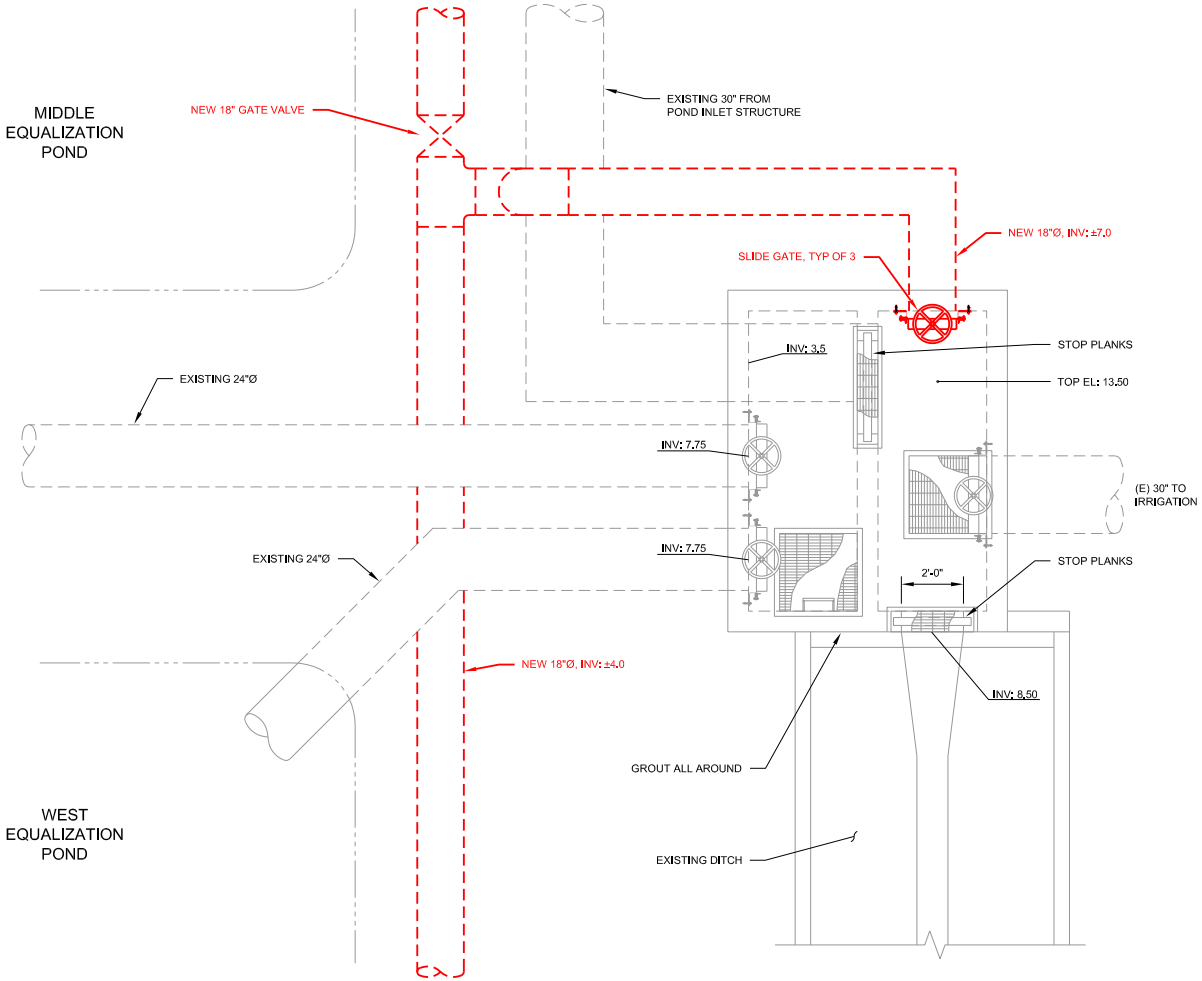
W:\Clients\686 Petralogix Engineering\18-16-01 Lodi Pond\CAD\Figures\686818-1601-Fig 9 Pond Inlet-Outlet Struc.dwg 6/10/2016 12:54 PM sbarber

Figure 9

Pond Inlet/Outlet Structure Plan

City of Lodi
White Slough Water Pollution Control Facility

DRAFT



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LEGEND

Existing

Proposed

N

SCALE: 1/4"=1'-0"

CITY OF LODI CALIFORNIA

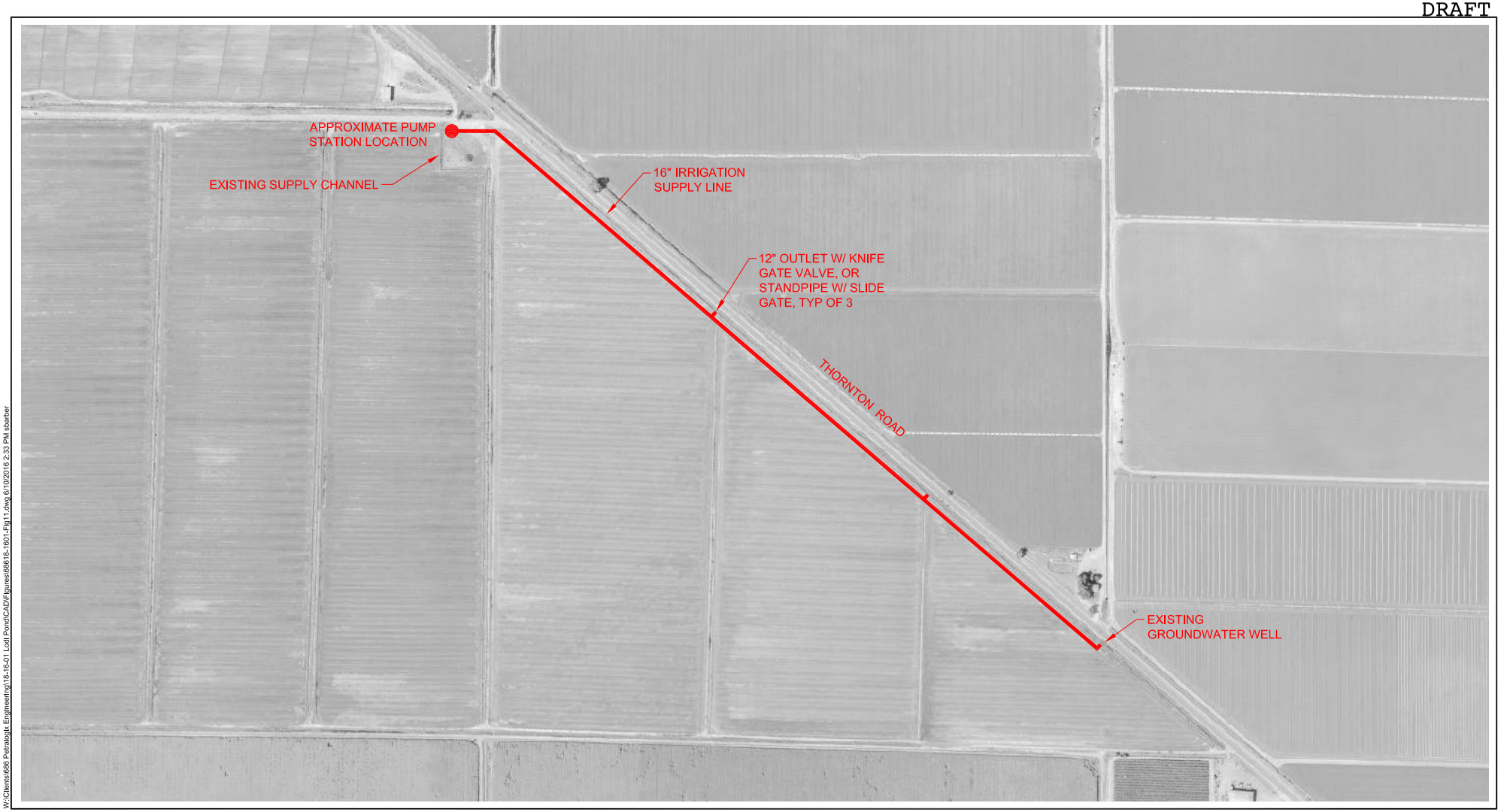
WEST YOST ASSOCIATES

Figure 10

Irrigation Distribution Box

City of Lodi
White Slough WPCF
Storage Expansion Improvements

DRAFT



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SCALE IN FEET

CITY OF LODI CALIFORNIA

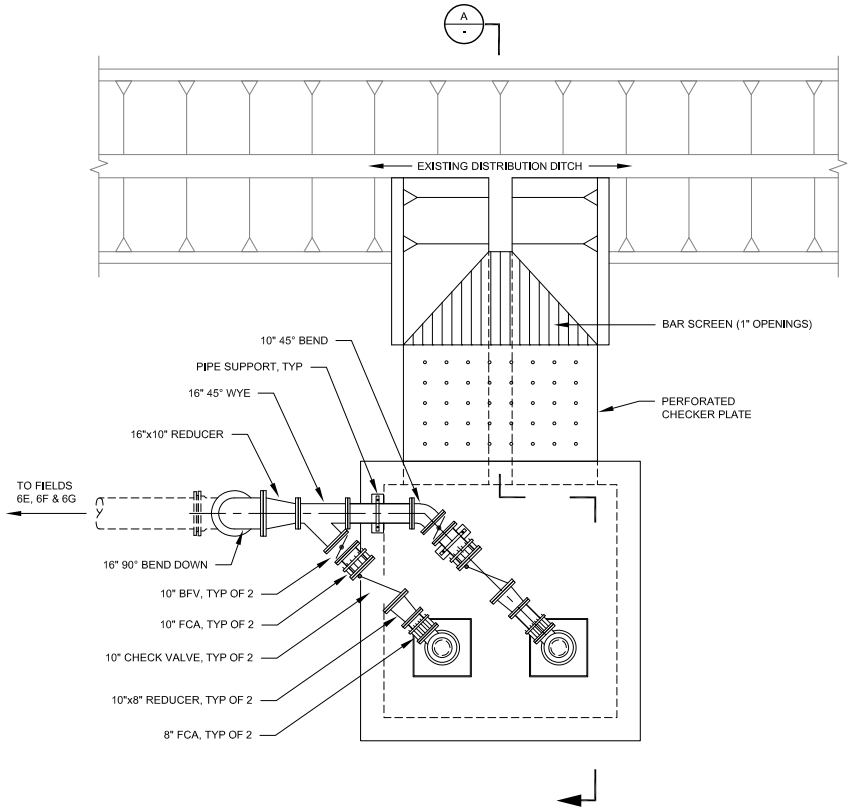
WEST YOST ASSOCIATES

Figure 11

Expanded Wastewater Irrigation site

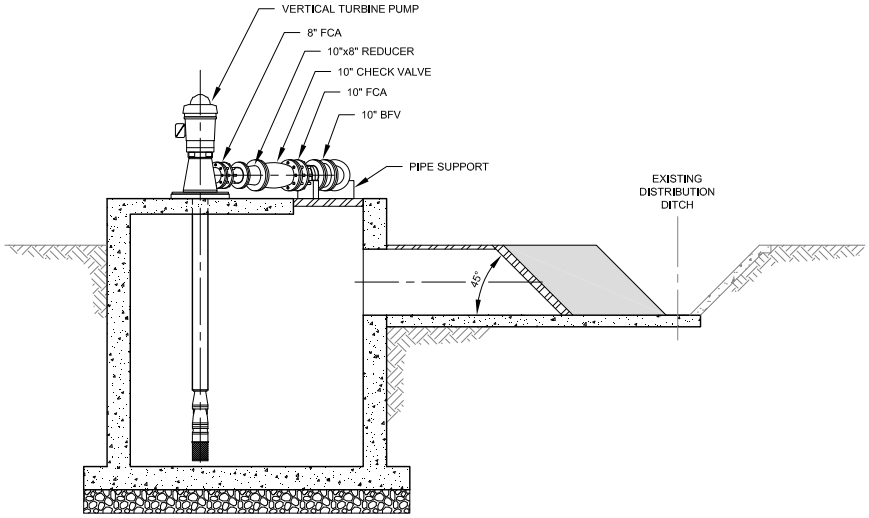
City of Lodi
White Slough WPCF
Storage Expansion Improvements

DRAFT



PLAN

SCALE: 3/16"=1'-0"



SECTION A

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LEGEND

Line 1

Notes:
1. XXXXXXX

Figure 12

Irrigation Pump Station Plan and Section

City of Lodi
White Slough WPCF
Storage Expansion Improvements

APPENDIX B

City of Lodi White Slough WPCF
Storage Expansion and Irrigation Improvements
Opinion of Construction Cost at Preliminary Design Submission

City of Lodi White Slough WPCF
Storage Expansion and Irrigation Improvements
Opinion of Construction Cost at Preliminary Design Submission
June 2016

#	PROJECT ELEMENTS	ELEMENT COST	ELEMENT COST CONTINGENCY %	ELEMENT COST WITH CONTINGENCY
1	Tertiary Storage Ponds	$3,321,419	15%	$3,819,632
1a	Shotcrete at Tertiary Storage Ponds	$549,303	15%	$631,699
2	Irrigation Improvements	$980,477	15%	$1,127,549
			OVERALL ↓↓CONTINGENCY↓↓	
	TOTAL WWTP CONSTRUCTION COST	**$4,851,200**	**15.00%**	**$5,578,880**

Disclaimer:

This estimate is an opinion of the cost of construction based on the Preliminary Design Submittal which includes estimates by third parties and from typical subbidders for a project such as this. Obviously, with the limited amount of time allowed this estimate and the lack of control over third party estimates, West Yost Associates cannot guarantee that bids or actual construction costs will not vary from its opinion of the construction cost at this time. West Yost Associates also does not have control over labor costs, material costs, equipment costs, award timing, competitive bidding, or market conditions at the time of bid or during construction.

City of Lodi White Slough WPCF
Storage Expansion and Irrigation Improvements

Opinion of Construction Cost at Preliminary Design Submission
Jun-16

#	WWTP PROJECT ELEMENTS	MANHOURS	LABOR	EQUIPMENT	EXPENDABLE MATERIALS	PERMANENT MATERIALS	SUBS	SUBTOTAL	SUPERVISION	JOB OVERHEAD (w/standby equip)	SUBTOTAL	MARK-UP	BONDS/ INSURANCE	GRAND TOTAL
1	Tertiary Storage Ponds	8,940	176,790	176,790	29,250	501,179	1,917,332	2,801,341	99,003	94,715	2,995,059	260,469	65,891	3,321,419
1a	Shotcrete at Tertiary Strorage Ponds	328	24,375	5,234	2,940	0	465,724	498,273	8,290		506,563	31,596	11,144	549,303
2	Irrigation Improvements	3,357	248,424	65,933	8,406	284,930	90,571	698,265	88,020	23,609	809,893	152,766	17,818	980,477
	TOTAL WWTP PROJECT ELEMENTS ESTIMATE	**12,625**	**$449,589**	**$247,957**	**$40,596**	**$786,109**	**$2,473,627**	**$3,997,878**	**$195,313**	**$118,324**	**$4,311,515**	**$444,831**	**$94,853**	**$4,851,200**
													Math Check	*4,851,200*
	Average # Workers Each Day	**10.9**												

Disclaimer:

This estimate is an opinion of the cost of construction based on the Preliminary Design Submittal which includes estimates by third parties and from typical subbidders for a project such as this. Obviously, with the limited amount of time allowed for this estimate and the lack of control over third party estimates, West Yost Associates cannot guarantee that bids or actual construction costs will not vary from its opinion of the construction cost at this time. West Yost Associates also does not have control over labor costs, material costs, equipment costs, award timing, competitive bidding, or market conditions at the time of bid or during construction.

BASE PROJECT ELEMENTS KEY PERCENTAGES:

MARK-UP / BID AMOUNT	9.17%
MARK-UP / LABOR & EQUIPMENT	63.77%
SUPERVISION / LABOR & EQUIPMENT	28.00%
SUBS & SUPPLIERS / TOTAL	67.19%
PRIME L&E COST/TOTAL	14.38%
SUPERVISION/TOTAL	4.03%
JOB OVERHEAD/TOTAL	2.44%
GC Self-Performance %	49.01%

City of Lodi White Slough WPCF

Storage Expansion Improvements

Opinion of Construction Cost at Preliminary Design Submission

DESCRIPTION	QTY	UNIT	UNIT MHRS	TOTAL MHRS	COM-POSITE MH COST	UNIT LABOR COST	TOTAL LABOR COST	UNIT EQUIP. COST	TOTAL EQUIP COST	TOTAL L&E UNIT COST	UNIT EXPEND MAT'LS COST	TOTAL EXPEND MAT'LS COST	UNIT PERM MATL COST	TOTAL PERM MATERIAL COST	UNIT COSTS SUBS	TOTAL SUBS	TOTAL COST
DIVISION 1- GENERAL REQUIREMENTS																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
SWWP plan and BMP's	120	MH	1.00	120.0	75.10	75.10	$9,012	21.33	$2,560	$96.43		$1,500		$0		$3,500	$16,572
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 1				**120**			**$9,012**		**$2,560**			**$1,500**		**$0**		**$3,500**	**$16,572**
																Math Check	***$16,572***
DIVISION 2- SITE WORK & DEMOLITION																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Pothole	24	MH	1.00	24.0	75.10	75.10	$1,802	21.33	$512	$96.43		$0		$0		$0	$2,314
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Survey	32	MH	1.00	32.0	75.10	75.10	$2,403	21.33	$683	$96.43		$0		$0		$9,120	$12,206
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
New Ponds Earthwork				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Mobilization/Demobilization	1	LS		0.0		0.00	$0		$0	$0.00		$0		$0		$123,400	$123,400
Clear top 6" and stockpile strippings adjacent to Site	57,500	CY		0.0		0.00	$0		$0	$0.00		$0		$0	2.15	$123,625	$123,625
Cut/Fill to Construct New Ponds A thru D	76,500	CY		0.0		0.00	$0		$0	$0.00		$0		$0	4.10	$313,650	$313,650
Import Borrow from Local Source	12,130	CY		0.0		0.00	$0		$0	$0.00		$0		$0	11.10	$134,643	$134,643
Install 12" thick Rip-Rap on interior Slopes	233,800	SF		0.0		0.00	$0		$0	$0.00		$0		$0	2.40	$561,120	$561,120
Construct Roads on New Levees- 3"AC over 6" AB	139,170	SF		0.0		0.00	$0		$0	$0.00		$0		$0	3.20	$445,344	$445,344
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Misc Structures Excavation/Backfill				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Lower Groundwater (allowance)	1	SUB		0.0		0.00	$0		$0	$0.00		$0		$0		$20,000	$20,000
Structure Excavaton	1462	CY	0.15	219.3	75.10	11.26	$16,469	3.20	$4,678	$14.46		$0		$0		$0	$21,147
Structure Backfill	1237	CY	0.30	371.1	71.19	21.36	$26,420	6.30	$7,793	$27.66		$0		$0		$0	$34,213
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Pipelines Excavation/Backfill				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Excavate Pipe >5ft	13,088	CY	0.12	1,570.6	75.18	9.02	$118,085	2.56	$33,506	$11.58		$0		$0		$0	$151,591
Backfill Pipe	13,088	CY	0.25	3,272.1	71.26	17.81	$233,161	5.56	$72,804	$23.38		$0		$0		$0	$305,965
Furnish Pipe Zone Import Material	3,096	TN		0.0		0.00	$0		$0	$0.00		$0	21.00	$65,007		$0	$65,007
Restore Pavement	500	SF		0.0		0.00	$0		$0	$0.00		$0		$0	15.00	$7,500	$7,500
Restore Gravel Surfaces	1,620	SF		0.0		0.00	$0		$0	$0.00		$0		$0	1.75	$2,835	$2,835
Restore Concrete Sidewalk	32	MH	1.00	32.0	74.93	74.93	$2,398	14.67	$469	$89.60		$125		$500		$0	$3,492
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Concrete Demolition				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Isolate Filter Feed Pump Station for Concrete Demo and New Work	32	MH	1	32.0	73.61	73.61	$2,355	16.80	$538	$90.41		$1,000		$0		$0	$3,893
Saw-Cut New Opening at Filter Pump Station	24	MH	1	24.0	73.61	73.61	$1,767	16.80	$403	$90.41		$0		$0		$1,500	$3,670
Core New Hole at Existing Irrigation Distribution Box	12	MH	1	12.0	73.61	73.61	$883	16.80	$202	$90.41		$0		$0		$550	$1,635
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 2				**5,589**			**$405,743**		**$121,588**			**$1,125**		**$65,507**		**$1,743,287**	**$2,337,250**
																Math Check	***$2,337,250***
DIVISION 3- CONCRETE																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Pump Station				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Layout	8	MH	1.00	8.0	74.93	74.93	$599	14.67	$117	$89.60		$0		$0		$0	$717
Install Underslab Gravel	79	TN	0.25	19.8	71.19	17.80	$1,406	5.25	$415	$23.05		$0	21.00	$1,659		$0	$3,480
Fine Grade	916	SF	0.02	18.3	74.93	1.50	$1,373	0.29	$269	$1.79		$0		$0		$0	$1,641
Form Footing	510	SF	0.19	96.9	74.93	14.24	$7,261	2.79	$1,421	$17.02		$0		$0		$0	$8,682

DESCRIPTION	QTY	UNIT	UNIT MHRS	TOTAL MHRS	COM-POSITE MH COST	UNIT LABOR COST	TOTAL LABOR COST	UNIT EQUIP. COST	TOTAL EQUIP COST	TOTAL L&E UNIT COST	UNIT EXPEND MAT'LS COST	TOTAL EXPEND MAT'LS COST	UNIT PERM MATL COST	TOTAL PERM MATERIAL COST	UNIT COSTS SUBS	TOTAL SUBS	TOTAL COST
Form Wall	5,048	SF	0.09	454.3	73.61	6.62	$33,443	1.51	$7,633	$8.14		$0		$0		$0	$41,076
Form Deck	282	SF	0.25	70.5	73.61	18.40	$5,189	4.20	$1,184	$22.60	8.00	$2,256		$0		$0	$8,630
Install PVC Waterstop	88	LF	0.06	5.3	74.93	4.50	$396	0.88	$77	$5.38		$0	5.00	$440		$0	$913
Sandblast Joints	254	SF	0.04	10.2	74.93	3.00	$762	0.59	$149	$3.58		$0		$0		$0	$912
Install Expanison Joint	44	LF	0.04	1.8	74.93	3.00	$132	0.59	$26	$3.58		$0	2.75	$121		$0	$279
Pour Concrete	146	CY	0.80	117.1	73.61	58.89	$8,616	13.44	$1,967	$72.33		$0	115.00	$16,828	25.00	$3,658	$31,069
Washout	24	LD	1.00	24.4	74.93	74.93	$1,827	14.67	$358	$89.60		$0		$0		$0	$2,185
Strip/Patch	5,840	SF	0.04	233.6	73.61	2.94	$17,195	0.67	$3,925	$3.62		$0		$0		$0	$21,120
Sacking	2,672	SF	0.04	106.9	73.61	2.94	$7,867	0.67	$1,796	$3.62		$0		$0		$0	$9,663
JFM/CFM Materials	5,840			0.0		0.00	$0		$0	$0.00	3.00	$17,521		$0		$0	$17,521
Rebar	8	MH	1.00	8.0	74.93	74.93	$599	14.67	$117	$89.60		$0		$0		$34,387	$35,103
Drill and Set Rebar Dowels at Filter Feed Pump Station	30	EA	0.35	10.5	74.93	26.23	$787	5.13	$154	$31.36	5.00	$150	18.00	$540		$0	$1,631
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
MANHOURS/CY	**7.79**			0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
COST/CY	**1,222**			0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Watertest Structures	40	MH	1.00	40.0	74.93	74.93	$2,997	14.67	$587	$89.60		$0		$750		$0	$4,334
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 3				**1,225**			**$90,451**		**$20,194**			**$19,927**		**$20,338**		**$38,045**	**$188,954**
																Math Check	***$188,954***
DIVISION 4- MASONRY																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 4				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 5- METALS																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Receive Misc. Metals	9	MH	1.00	9.0	0.00	0.00	$0	0.00	$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Install Grating Embeds	57	LF	0.08	4.6	74.93	5.99	$342	1.17	$67	$7.17		$0	22.00	$1,254		$0	$1,663
Install Grating and Supports	42	SF	0.35	14.7	74.93	26.23	$1,101	5.13	$216	$31.36		$0	85.00	$3,570		$0	$4,887
Install Grating	42	SF	0.15	6.3	74.93	11.24	$472	2.20	$92	$13.44		$0	35.00	$1,470		$0	$2,034
Install Handrail	44	LF	0.15	6.6	74.93	11.24	$495	2.20	$97	$13.44		$0	85.00	$3,740		$0	$4,331
Install SS V-Notch Weir at Filter Feed Pump Station	1	EA	12.00	12.0	74.93	899.16	$899	176.00	$176	$1,075.16		$0	1750.00	$1,750		$0	$2,825
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 5				**53**			**$3,309**		**$648**			**$0**		**$11,784**		**$0**	**$15,741**
																Math Check	***$15,741***
DIVISION 6- WOOD & PLASTICS																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 6				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 7- THERMAL & MOISTURE PROTECTION																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 7				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 8- DOORS & WINDOWS																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0

DESCRIPTION	QTY	UNIT	UNIT MHRS	TOTAL MHRS	COM-POSITE MH COST	UNIT LABOR COST	TOTAL LABOR COST	UNIT EQUIP. COST	TOTAL EQUIP COST	TOTAL L&E UNIT COST	UNIT EXPEND MAT'LS COST	TOTAL EXPEND MAT'LS COST	UNIT PERM MATL COST	TOTAL PERM MATERIAL COST	UNIT COSTS SUBS	TOTAL SUBS	TOTAL COST
Subtotal Division 8				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 9- FINISHES																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Painting		SUB		0.0		0.00	$0		$0	$0.00		$0		$0		$7,500	$7,500
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 9				**0**			**$0**		**$0**			**$0**		**$0**		**$7,500**	**$7,500**
																Math Check	***$7,500***
DIVISION 10- SPECIALTIES																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Install Warning Signs	4	MH	1.00	4.0	78.67	78.67	$315	10.00	$40	$88.67		$0		$350		$0	$705
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 10				**4**			**$315**		**$40**			**$0**		**$350**		**$0**	**$705**
																Math Check	***$705***
DIVISION 11- EQUIPMENT																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Receive and Store Equipment	6	MH	1.00	6.0	77.57	77.57	$465	15.51	$93	$93.08		$0		$0		$0	$558
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Install Vertical Turbine Pumps	2	EA	38.00	76.0	77.57	2,947.58	$5,895	589.52	$1,179	$3,537.10		$0		$0		$0	$7,074
Furnish Vertical Turbine Pumps	2	EA		0.0		0.00	$0		$0	$0.00		$0	21,879	$43,758		$0	$43,758
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Install 16" and 18" Slide Gates	7	EA	12.00	84.0	77.17	925.99	$6,482	231.50	$1,620	$1,157.49		$0	3,750	$26,250		$0	$34,352
Install Motorized Slide Gate at Filter Pump Station	1	EA	20.00	20.0	77.17	1,543.32	$1,543	385.83	$386	$1,929.14		$0	13,500	$13,500		$0	$15,429
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Start-up & Test New Facility	40	MH	1.00	40.0	77.17	77.17	$3,087	19.29	$772	$96.46		$0		$0		$0	$3,858
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 11				**226**			**$17,472**		**$4,050**			**$0**		**$83,508**		**$0**	**$105,031**
																Math Check	***$105,031***
DIVISION 13- SPECIAL CONSTRUCTION																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 13				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 14- CONVEYING SYSTEMS																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 14				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 15- MECHANICAL																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Receive Pipe Materials	134	MH	1.00	134.0	77.57	77.57	$10,391	15.51	$2,078	$93.08		$0		$0		$0	$12,469
Layout	24	MH	1.00	24.0	80.64	80.64	$1,935	14.00	$336	$94.64		$0		$0		$0	$2,271
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Install MJ/FL	1,780	IDS	0.35	623.0	77.57	27.15	$48,325	5.43	$9,665	$32.58		$0		$0		$0	$57,990
Install C905 PVC pipe	4,918	IDS	0.12	590.2	77.57	9.31	$45,777	1.86	$9,155	$11.17		$0		$0		$0	$54,933
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Test Pipe	6,698	IDS	0.03	200.9	77.17	2.31	$15,506	0.58	$3,876	$2.89	1.00	$6,698		$0		$0	$26,080
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0

DESCRIPTION	QTY	UNIT	UNIT MHRS	TOTAL MHRS	COM-POSITE MH COST	UNIT LABOR COST	TOTAL LABOR COST	UNIT EQUIP. COST	TOTAL EQUIP COST	TOTAL L&E UNIT COST	UNIT EXPEND MAT'LS COST	TOTAL EXPEND MAT'LS COST	UNIT PERM MATL COST	TOTAL PERM MATERIAL COST	UNIT COSTS SUBS	TOTAL SUBS	TOTAL COST
Install Butterfly Valves	2	EA	6.00	12.0	77.57	465.41	$931	93.08	$186	$558.49		$0		$0		$0	$1,117
Install Check Valves	2	EA	4.00	8.0	77.57	310.27	$621	62.05	$124	$372.33		$0		$0		$0	$745
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Install Wall Sleeves & Link Seals	9	EA	6.00	54.0	77.57	465.41	$4,189	93.08	$838	$558.49		$0		$0		$0	$5,026
Install Medium Pipe Supports	8	EA	4.00	32.0	77.17	308.66	$2,469	77.17	$617	$385.83		$0	275.00	$2,200		$0	$5,287
Install Clean-out and Valve boxes	2	EA	2.00	4.0	77.57	155.14	$310	31.03	$62	$186.16		$0		$0		$0	$372
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Assist Electrician with Instruments	40	MH	1.00	40.0	77.17	77.17	$3,087	19.29	$772	$96.46		$0		$750		$0	$4,608
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Furnish Pipe, Ftgs, Valves	1	LS		0.0		0.00	$0		$0	$0.00		$0		$316,742		$0	$316,742
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 15				**1,722**			**$133,541**		**$27,710**			**$6,698**		**$319,692**		**$0**	**$487,641**
																Math Check	***$487,641***
DIVISION 16- ELECTRICAL																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Pond Pump Station	1	LS		0.0		0.00	$0		$0	$0.00		$0		$0		$95,000	$95,000
Tertiary Diversion Box	1	LS		0.0		0.00	$0		$0	$0.00		$0		$0		$12,500	$12,500
Filter Feed Pump Station	1	LS		0.0		0.00	$0		$0	$0.00		$0		$0		$17,500	$17,500
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 16				**0**			**$0**		**$0**			**$0**		**$0**		**$125,000**	**$125,000**
																Math Check	***$125,000***
Element Grand Total				**8,940**			**$659,842**		**$176,790**			**$29,250**		**$501,179**		**$1,917,332**	**$3,284,393**

City of Lodi White Slough WPCF

Storage Expansion Improvements

Opinion of Construction Cost at Preliminary Design Submission

DESCRIPTION	QTY	UNIT	UNIT MHRS	TOTAL MHRS	COM-POSITE MH COST	UNIT LABOR COST	TOTAL LABOR COST	UNIT EQUIP. COST	TOTAL EQUIP COST	TOTAL L&E UNIT COST	UNIT EXPEND MAT'LS COST	TOTAL EXPEND MAT'LS COST	UNIT PERM MATL COST	TOTAL PERM MATERIAL COST	UNIT COSTS SUBS	TOTAL SUBS	TOTAL COST
DIVISION 1- GENERAL REQUIREMENTS																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
SWWP plan and BMP's	16	MH	1.00	16.0	75.10	75.10	$1,202	21.33	$341	$96.43		$750		$0		$1,000	$3,293
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 1				**16**			**$1,202**		**$341**			**$750**		**$0**		**$1,000**	**$3,293**
																Math Check	***$3,293***
DIVISION 2- SITE WORK & DEMOLITION																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
New Ponds Earthwork				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Fine Grade for 4" thick Shotcrete (+/- 0.05 ft.)	99,300	SF		0.0		0.00	$0		$0	$0.00		$0		$0	0.18	$17,874	$17,874
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 2				**0**			**$0**		**$0**			**$0**		**$0**		**$17,874**	**$17,874**
																Math Check	***$17,874***
DIVISION 3- CONCRETE																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Shotcrete				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Layout	24	MH	1.00	24.0	74.93	74.93	$1,798	14.67	$352	$89.60		$0		$0		$0	$2,150
Form Footing	730	SF	0.19	138.7	74.93	14.24	$10,393	2.79	$2,034	$17.02		$0		$0		$0	$12,427
Clean Up Shotcrete Rebound	120	MH	1.00	120.0	73.61	73.61	$8,833	16.80	$2,016	$90.41		$0		$0		$0	$10,849
Strip/Patch	730	SF	0.04	29.2	73.61	2.94	$2,149	0.67	$491	$3.62		$0		$0		$0	$2,640
JFM/CFM Materials	730			0.0		0.00	$0		$0	$0.00	3.00	$2,190		$0		$0	$2,190
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Synthetic Fiber Shotcrete Outer Slopes of Ponds A thru D- 99,300 SF- 4" thick	99,300	SF		0.0		0.00	$0		$0	$0.00		$0		$0	4.50	$446,850	$446,850
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 3				**312**			**$23,173**		**$4,893**			**$2,190**		**$0**		**$446,850**	**$477,106**
																Math Check	***$477,106***
DIVISION 4- MASONRY																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 4				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 5- METALS																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 5				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 6- WOOD & PLASTICS																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 6				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 7- THERMAL & MOISTURE PROTECTION																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 7				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 8- DOORS & WINDOWS																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0

	0.0	0.00	$0	$0	$0.00	$0	$0	$0	$0
Subtotal Division 8	**0**		**$0**	**$0**		**$0**	**$0**	**$0**	**$0**
								Math Check	***$0***
DIVISION 9- FINISHES									
	0.0	0.00	$0	$0	$0.00	$0	$0	$0	$0
	0.0	0.00	$0	$0	$0.00	$0	$0	$0	$0
Subtotal Division 9	**0**		**$0**	**$0**		**$0**	**$0**	**$0**	**$0**
								Math Check	***$0***
DIVISION 10- SPECIALTIES									
	0.0	0.00	$0	$0	$0.00	$0	$0	$0	$0
	0.0	0.00	$0	$0	$0.00	$0	$0	$0	$0
Subtotal Division 10	**0**		**$0**	**$0**		**$0**	**$0**	**$0**	**$0**
								Math Check	***$0***
DIVISION 11- EQUIPMENT									
	0.0	0.00	$0	$0	$0.00	$0	$0	$0	$0
	0.0	0.00	$0	$0	$0.00	$0	$0	$0	$0
Subtotal Division 11	**0**		**$0**	**$0**		**$0**	**$0**	**$0**	**$0**
								Math Check	***$0***
DIVISION 13- SPECIAL CONSTRUCTION									
	0.0	0.00	$0	$0	$0.00	$0	$0	$0	$0
	0.0	0.00	$0	$0	$0.00	$0	$0	$0	$0
Subtotal Division 13	**0**		**$0**	**$0**		**$0**	**$0**	**$0**	**$0**
								Math Check	***$0***
DIVISION 14- CONVEYING SYSTEMS									
	0.0	0.00	$0	$0	$0.00	$0	$0	$0	$0
	0.0	0.00	$0	$0	$0.00	$0	$0	$0	$0
Subtotal Division 14	**0**		**$0**	**$0**		**$0**	**$0**	**$0**	**$0**
								Math Check	***$0***
DIVISION 15- MECHANICAL									
	0.0	0.00	$0	$0	$0.00	$0	$0	$0	$0
	0.0	0.00	$0	$0	$0.00	$0	$0	$0	$0
Subtotal Division 15	**0**		**$0**	**$0**		**$0**	**$0**	**$0**	**$0**
								Math Check	***$0***
DIVISION 16- ELECTRICAL									
	0.0	0.00	$0	$0	$0.00	$0	$0	$0	$0
	0.0	0.00	$0	$0	$0.00	$0	$0	$0	$0
Subtotal Division 16	**0**		**$0**	**$0**		**$0**	**$0**	**$0**	**$0**
								Math Check	***$0***
Element Grand Total	**328**		**$24,375**	**$5,234**		**$2,940**	**$0**	**$465,724**	**$498,273**
								Math Check	***$498,273***

City of Lodi White Slough WPCF

Storage Expansion Improvements

Opinion of Construction Cost at Preliminary Design Submission

DESCRIPTION	QTY	UNIT	UNIT MHRS	TOTAL MHRS	COM-POSITE MH COST	UNIT LABOR COST	TOTAL LABOR COST	UNIT EQUIP. COST	TOTAL EQUIP COST	TOTAL L&E UNIT COST	UNIT EXPEND MAT'LS COST	TOTAL EXPEND MAT'LS COST	UNIT PERM MATL COST	TOTAL PERM MATERIAL COST	UNIT COSTS SUBS	TOTAL SUBS	TOTAL COST
DIVISION 1- GENERAL REQUIREMENTS																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
SWWP plan and BMP's	40	MH	1.00	40.0	75.10	75.10	$3,004	21.33	$853	$96.43		$750		$0		$2,000	$6,607
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 1				**40**			**$3,004**		**$853**			**$750**		**$0**		**$2,000**	**$6,607**
																Math Check	***$6,607***
DIVISION 2- SITE WORK & DEMOLITION																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Pothole	12	MH	1.00	12.0	75.10	75.10	$901	21.33	$256	$96.43		$0		$0		$0	$1,157
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Survey	12	MH	1.00	12.0	75.10	75.10	$901	21.33	$256	$96.43		$0		$0		$2,280	$3,437
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Misc Structures Excavation/Backfill				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Lower Groundwater (allowance)	1	SUB		0.0		0.00	$0		$0	$0.00		$0		$0		$10,000	$10,000
Structure Excavaton	308	CY	0.15	46.2	75.10	11.26	$3,470	3.20	$986	$14.46		$0		$0		$0	$4,455
Structure Backfill	249	CY	0.30	74.7	71.19	21.36	$5,318	6.30	$1,569	$27.66		$0		$0		$0	$6,887
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Pipelines Excavation/Backfill				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Excavate Pipe >5ft	5,079	CY	0.12	609.5	75.18	9.02	$45,828	2.56	$13,003	$11.58		$0		$0		$0	$58,831
Backfill Pipe	5,079	CY	0.25	1,269.9	71.26	17.81	$90,487	5.56	$28,254	$23.38		$0		$0		$0	$118,742
Furnish Pipe Zone Import Material	2,347	TN		0.0		0.00	$0		$0	$0.00		$0	21.00	$49,289		$0	$49,289
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 2				**2,024**			**$146,905**		**$44,324**			**$0**		**$49,289**		**$12,280**	**$252,798**
																Math Check	***$252,798***
DIVISION 3- CONCRETE																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Pump Station				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Layout	8	MH	1.00	8.0	74.93	74.93	$599	14.67	$117	$89.60		$0		$0		$0	$717
Install Underslab Gravel	40	TN	0.25	9.9	71.19	17.80	$708	5.25	$209	$23.05		$0	21.00	$835		$0	$1,752
Fine Grade	416	SF	0.02	8.3	74.93	1.50	$623	0.29	$122	$1.79		$0		$0		$0	$745
Form Footing	228	SF	0.19	43.3	74.93	14.24	$3,246	2.79	$635	$17.02		$0		$0		$0	$3,881
Form Wall	990	SF	0.09	89.1	73.61	6.62	$6,558	1.51	$1,497	$8.14		$0		$0		$0	$8,055
Install PVC Waterstop	44	LF	0.06	2.6	74.93	4.50	$198	0.88	$39	$5.38		$0	5.00	$220		$0	$457
Sandblast Joints	44	SF	0.04	1.8	74.93	3.00	$132	0.59	$26	$3.58		$0		$0		$0	$158
Install Expanison Joint	6	LF	0.04	0.2	74.93	3.00	$18	0.59	$4	$3.58		$0	2.75	$17		$0	$38
Pour Concrete	45	CY	0.80	35.6	73.61	58.89	$2,621	13.44	$598	$72.33		$0	115.00	$5,119	25.00	$1,113	$9,450
Washout	7	LD	1.00	7.4	74.93	74.93	$556	14.67	$109	$89.60		$0		$0		$0	$665
Strip/Patch	1,218	SF	0.04	48.7	73.61	2.94	$3,586	0.67	$818	$3.62		$0		$0		$0	$4,405
Sacking	575	SF	0.04	23.0	73.61	2.94	$1,693	0.67	$386	$3.62		$0		$0		$0	$2,079
JFM/CFM Materials	1,218			0.0		0.00	$0		$0	$0.00	3.00	$3,654		$0		$0	$3,654
Rebar	8	MH	1.00	8.0	74.93	74.93	$599	14.67	$117	$89.60		$0		$0		$10,460	$11,176
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
MANHOURS/CY	**5.84**			0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
COST/CY	**1,006**			0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Watertest Structures	16	MH	1.00	16.0	74.93	74.93	$1,199	14.67	$235	$89.60		$0		$450		$0	$1,884
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 3				**302**			**$22,337**		**$4,912**			**$3,654**		**$6,640**		**$11,572**	**$49,116**
																Math Check	***$49,116***
DIVISION 4- MASONRY																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0

DESCRIPTION	QTY	UNIT	UNIT MHRS	TOTAL MHRS	COM-POSITE MH COST	UNIT LABOR COST	TOTAL LABOR COST	UNIT EQUIP. COST	TOTAL EQUIP COST	TOTAL L&E UNIT COST	UNIT EXPEND MAT'LS COST	TOTAL EXPEND MAT'LS COST	UNIT PERM MATL COST	TOTAL PERM MATERIAL COST	UNIT COSTS SUBS	TOTAL SUBS	TOTAL COST
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 4				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 5- METALS																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Receive Misc. Metals	6	MH	1.00	6.0	0.00	0.00	$0	0.00	$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Install Bar Screen	1	EA	12.00	12.0	74.93	899.16	$899	176.00	$176	$1,075.16		$0	4,500.00	$4,500		$0	$5,575
Install Checkered Plate	1	EA	12.00	12.0	74.93	899.16	$899	176.00	$176	$1,075.16		$0	3,000.00	$3,000		$0	$4,075
Install Handrail	46	LF	0.15	6.9	74.93	11.24	$517	2.20	$101	$13.44		$0	85.00	$3,910		$0	$4,528
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 5				**37**			**$2,315**		**$453**			**$0**		**$11,410**		**$0**	**$14,179**
																Math Check	***$14,179***
DIVISION 6- WOOD & PLASTICS																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 6				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 7- THERMAL & MOISTURE PROTECTION																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 7				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 8- DOORS & WINDOWS																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 8				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 9- FINISHES																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Painting		SUB		0.0		0.00	$0		$0	$0.00		$0		$0		$7,500	$7,500
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 9				**0**			**$0**		**$0**			**$0**		**$0**		**$7,500**	**$7,500**
																Math Check	***$7,500***
DIVISION 10- SPECIALTIES																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Install Warning Signs	2	MH	1.00	2.0	0.00	0.00	$0	10.00	$20	$10.00		$0		$225		$0	$245
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 10				**2**			**$0**		**$20**			**$0**		**$225**		**$0**	**$245**
																Math Check	***$245***
DIVISION 11- EQUIPMENT																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Receive and Store Equipment	4	MH	1.00	4.0	77.57	77.57	$310	15.51	$62	$93.08		$0		$0		$0	$372
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Install Vertical Turbine Pumps	2	EA	38.00	76.0	77.57	2,947.58	$5,895	589.52	$1,179	$3,537.10		$0		$0		$0	$7,074
Furnish Vertical Turbine Pumps	2	EA		0.0		0.00	$0		$0	$0.00		$0	21,879	$43,758		$0	$43,758
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Start-up & Test New Facility	16	MH	1.00	16.0	77.17	77.17	$1,235	19.29	$309	$96.46		$0		$0		$0	$1,543
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 11				**96**			**$7,440**		**$1,550**			**$0**		**$43,758**		**$0**	**$52,748**
																Math Check	***$52,748***
DIVISION 13- SPECIAL CONSTRUCTION																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0

DESCRIPTION	QTY	UNIT	UNIT MHRS	TOTAL MHRS	COM-POSITE MH COST	UNIT LABOR COST	TOTAL LABOR COST	UNIT EQUIP. COST	TOTAL EQUIP COST	TOTAL L&E UNIT COST	UNIT EXPEND MAT'LS COST	TOTAL EXPEND MAT'LS COST	UNIT PERM MATL COST	TOTAL PERM MATERIAL COST	UNIT COSTS SUBS	TOTAL SUBS	TOTAL COST
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 13				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 14- CONVEYING SYSTEMS																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 14				**0**			**$0**		**$0**			**$0**		**$0**		**$0**	**$0**
																Math Check	***$0***
DIVISION 15- MECHANICAL																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Receive Pipe Materials	80	MH	1.00	80.0	77.57	77.57	$6,209	15.51	$1,242	$93.08		$0		$0		$0	$7,450
Layout	24	MH	1.00	24.0	80.64	80.64	$1,935	14.00	$336	$94.64		$0		$0		$0	$2,271
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Install MJ/FL	434	IDS	0.35	151.9	77.57	27.15	$11,783	5.43	$2,357	$32.58		$0		$0		$0	$14,139
Install C905 PVC pipe	3,568	IDS	0.12	428.2	77.57	9.31	$33,211	1.86	$6,642	$11.17		$0		$0		$0	$39,854
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Test Pipe	4,002	IDS	0.03	120.1	77.17	2.31	$9,265	0.58	$2,316	$2.89	1.00	$4,002		$0		$0	$15,583
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Install Butterfly Valves	2	EA	6.00	12.0	77.57	465.41	$931	93.08	$186	$558.49		$0		$0		$0	$1,117
Install Check Valves	2	EA	4.00	8.0	77.57	310.27	$621	62.05	$124	$372.33		$0		$0		$0	$745
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Install Medium Pipe Supports	4	EA	4.00	16.0	77.17	308.66	$1,235	77.17	$309	$385.83		$0	275.00	$1,100		$0	$2,643
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Assist Electrician with Instruments	16	MH	1.00	16.0	77.17	77.17	$1,235	19.29	$309	$96.46		$0		$0		$0	$1,543
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Furnish Pipe, Ftgs, Valves	1	LS		0.0		0.00	$0		$0	$0.00		$0		$172,507		$0	$172,507
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 15				**856**			**$66,423**		**$13,820**			**$4,002**		**$173,607**		**$0**	**$257,853**
																Math Check	***$257,853***
DIVISION 16- ELECTRICAL																	
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Irrigation Pump Station	1	LS		0.0		0.00	$0		$0	$0.00		$0		$0		$57,219	$57,219
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 16				**0**			**$0**		**$0**			**$0**		**$0**		**$57,219**	**$57,219**
																Math Check	***$57,219***
Element Grand Total				**3,357**			**$248,424**		**$65,933**			**$8,406**		**$284,930**		**$90,571**	**$698,265**
																Math Check	***$698,265***

City of Lodi White Slough WPCF

Storage Expansion Improvements

Opinion of Construction Cost at Preliminary Design Submission

DESCRIPTION	QTY	UNIT	UNIT MHRS	TOTAL MHRS	COM-POSITE MH COST	UNIT LABOR COST	TOTAL LABOR COST	UNIT EQUIP. COST	TOTAL EQUIP COST	TOTAL L&E UNIT COST	UNIT EXPEND MAT'LS COST	TOTAL EXPEND MAT'LS COST	UNIT PERM MATL COST	TOTAL PERM MATERIAL COST	UNIT COSTS SUBS	TOTAL SUBS	TOTAL COST
DIVISION 1- GENERAL REQUIREMENTS																	
License & Permits	1	LS		0.0		0.00	$0		$0	$0.00		$500		$0		$0	$500
Set-Up/Remove Yard	80	MH	1.00	80.0	75.10	75.10	$6,008	21.33	$1,707	$96.43		$0		$0		$0	$7,715
Fence Protection of Yard and Trailers	500	LF		0.0		0.00	$0		$0	$0.00	7.50	$3,750		$0		$0	$3,750
Move On/Off Materials	4.0	MV	4.00	16.0	75.10	300.39	$1,202	85.33	$341	$385.73		$0		$0	175	$700	$2,243
Move On/Off Trailers	2.0	MV		0.0		0.00	$0		$0	$0.00		$0		$0	450	$900	$900
Move On/Off Vans	2.0	MV		0.0		0.00	$0		$0	$0.00		$0		$0	125	$250	$250
Office Trailer- 1 each	8.0	MO		0.0		0.00	$0		$0	$0.00	350.00	$2,800		$0		$0	$2,800
Trailer Furnishings and Office Equipment	1.0	LS		0.0		0.00	$0		$0	$0.00		$500		$0		$0	$500
Vans	1.0	VANS		0.0		0.00	$0		$0	$0.00	150.00	$150		$0		$0	$150
Chemical Toilets	8.0	MO		0.0		0.00	$0		$0	$0.00	150.00	$1,200		$0		$0	$1,200
Dumpsters	8.0	MO		0.0		0.00	$0		$0	$0.00	750.00	$6,000		$0		$0	$6,000
Construction Water	8.0	MO		0.0		0.00	$0		$0	$0.00	125.00	$1,000		$0		$0	$1,000
Establish Power	1.0	LS		0.0		0.00	$0		$0	$0.00		$0		$0		$7,500	$7,500
Monthly Power Cost	8.0	MO		0.0		0.00	$0		$0	$0.00	225.00	$1,800		$0		$0	$1,800
Establish Telephone	1.0	LS		0.0		0.00	$0		$0	$0.00		$0		$0		$250	$250
Monthly Phone Cost	8.0	MO		0.0		0.00	$0		$0	$0.00	125.00	$1,000		$0		$0	$1,000
Establish Internet	1.0	LS		0.0		0.00	$0		$0	$0.00		$0		$0		$250	$250
Monthly ISP Service	8.0	MO		0.0		0.00	$0		$0	$0.00	75.00	$600		$0		$0	$600
Project Signage	8.0	MH	1.00	8.0	74.93	74.93	$599	14.67	$117	$89.60		$500		$0		$0	$1,217
Construction Photos	8.0	MO		0.0		0.00	$0		$0	$0.00	75.00	$600		$0		$0	$600
Small Tools	1.0	LS		0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Safety	1.0	LS		0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Misc. Job Overhead	8.0	MO		0.0		0.00	$0		$0	$0.00	350.00	$2,800		$0		$0	$2,800
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Backhoe/Loader	6.0	MO		0.0		0.00	$0	7,200.00	$43,200	$7,200.00		$0		$0		$0	$43,200
Boomtruck	6.0	MO		0.0		0.00	$0	4,750.00	$28,500	$4,750.00		$0		$0		$0	$28,500
Delviery/Pick Up Charges-Rental Equipment	9	MV		0.0		0.00	$0		$0	$0.00		$0		$0	400	$3,600	$3,600
				0.0		0.00	$0		$0	$0.00		$0		$0		$0	$0
Subtotal Division 1				**104**			**$7,809**		**$73,865**			**$23,200**		**$0**		**$13,450**	**$118,324**