

MEMORANDUM

TO: Board of Directors
Circle Oaks County Water District

FROM: ^{RF CFF} Richard Ingram; Cynthia Fox

SUBJECT: Utility Systems Upgrades Project – Estimated Costs for Project Alternatives
B&R File No. 3257

DATE: July 29, 2009

INTRODUCTION

Circle Oaks County Water District (District) retained Triad/Holmes Associates (Triad) to prepare a Preliminary Engineer's Report (PER) entitled, "Preliminary Engineer's Report for Circle Oaks County Water District", issued in January 2008. The PER assessed the District's drinking water and wastewater treatment systems and identified facility upgrades that would help the District to continue to provide adequate water and wastewater services to its existing customers and to meet anticipated future demands in conformance with State and local health and safety requirements.

The District requested Brelje and Race Consulting Engineers (B&R) to assist the District to obtain funding from the US Department of Agriculture, Rural Utility Services (RUS) for the utility system upgrades project. B&R met with the Water District Board and issued a memorandum on July 16, 2009, entitled, "Utility System Improvements" (B&R Memorandum) that included a summary of the District's water and wastewater system facilities and a project cost estimate for the proposed (Original) Upgrades Project. The B&R Memorandum also included suggestions for an alternative set of project upgrades (Alternative 1) that differed from the Original Project along with a cost estimate for the Alternative 1 upgrades.

PURPOSE AND SCOPE

The District has requested that B&R estimate the project costs for a second set of infrastructure upgrades for the project. This second combination of upgrades differ from the Original Project upgrades described in the PER and so is identified here as Alternative 2. The purpose of this memorandum is to clarify the set of infrastructure upgrades to be included in Alternative 2, and to provide a comparison of estimated project and funding costs required for each of the Upgrades Project alternatives.

PROPOSED UPGRADES PROJECT

ORIGINAL UPGRADES PROJECT

The Original Project upgrades proposed for the District's water and wastewater systems, were identified by Triad in the PER and include the following set of infrastructure upgrades:

Water System Upgrades

- **Source Water Well:** Insure water production is adequate; provide source water redundancy.

- **100 GPM Water Treatment Unit:** Insure District can continue to meet water demand; provide treatment equipment redundancy and allow maintenance.
- **200,000 Gal. Steel Tank for Clearwell at the Treatment Plant:** Provide adequate contact time and disinfection capacity for both new and existing water treatment units; replace deteriorating 100,000 gallon redwood Clearwell tank.
- **New 10,000 Raw Water Storage Tank:** Provide a second raw water storage and treatment tank to serve the new water treatment unit.
- **New Operations Office Building/Trailer:** Provide upgraded facilities for administrative work and District business; provide safe storage for documents and equipment.
- **141,000 Gal. Steel Water Storage Tank for Upper Zone:** Replace deteriorating 50,000 gallon redwood tank; provide additional storage capacity in Upper Zone.
- **250,000 Gal. Steel Water Storage Tank for Lower Zone:** Replace existing 200,000 gallon redwood tank; provide additional storage capacity in Lower Zone.
- **New 6-Inch Fire Hydrants to Replace 4-Inch Post Hydrants:** Upgrade fire suppression capability with 6-inch fire hydrants and laterals.

Wastewater System Upgrades

- **Repair or Replace Up to 2,000 Feet of Leaking Sewer Piping:** Reduce wet weather inflow/infiltration into collection system and treatment ponds.
- **Install Four Floating Aerators in Treatment Ponds:** Increase pond dissolved oxygen and improve treatment performance.

ALTERNATIVE 1 OF THE UPGRADES PROJECT

In the B&R Memorandum, B&R identified several alternatives to the upgrades described in the Original Project. Alternative 1 of the Upgrades Project would have the same set of upgrades as are listed above for the Original Project, except for the following changes:

Water System

- **Install a 17,000 Gal. Chlorine Contact Basin Instead of a New 200,000 Gal. Steel Tank at the Treatment Plant:** Provide efficient capacity for contact time and water disinfection for the maximum flow through both the new and existing filtration treatment unit. This alternative would delete the need for a new 200,000 gal. steel tank for a clearwell.
- **Repair and Use the Existing 100,000 Gal. Redwood Clearwell Tank for Storage:** If feasible, repair the existing tank to increase total storage by 100,000 gal. for the useful life of tank.
- **Eliminate the Proposed New 10,000 Raw Water Tank at the Treatment Plant:** Use the existing 10,000 gal. Raw Water Tank for both existing and new filtration units.
- **Install Two 125,000 Gal. Steel Water Storage Tanks at Upper Zone Site:** Provides upper zone storage with redundancy by installing two steel tanks at the upper site with a total storage capacity of approximately 250,000 gal. instead of one 141,000 gal. tank.
- **Install One 125,000 Gal. Steel Water Storage Tank at Lower Zone Site Next to the Existing Tank, and Repair the Existing 200,000 Gal. Redwood Tank:** Increases the lower zone storage and adds redundancy by providing a second tank with a total storage, in the near term, of 325,000 gal. In the future, a second storage tank could be installed at the

site to replace the redwood tank.

ALTERNATIVE 2 OF THE UPGRADES PROJECT

The District has requested that B&R estimate the costs for a second set of alternatives to the upgrades described in the original project. Alternative 2 would have the same set of upgrades as are listed above for the Original Project, except for the following changes:

Water System

- **Delete Installation of a New Well Source from the Upgrades Project:** The new well would be constructed under a different project.
- **Install 17,000 Gal. Chlorine Contact Basin Instead of a New Steel Tank at the Treatment Plant:** Provide efficient capacity for water disinfection for both existing and new filtration units; delete new 200,000 gal. Clearwell.
- **Repair and Use Existing 100,000 Gal. Redwood Clearwell for Storage:** If feasible, repair existing tank to increase total storage by 100,000 gal. for the useful life of tank; if not feasible, construct a 10,000 gal. Finished Water Storage Tank at the Treatment Plant site to serve the booster pumps.
- **Eliminate the Proposed New 10,000 Raw Water Tank at the Treatment Plant:** Use existing Raw Water Tank for both existing and new filtration units.
- **Install Two 125,000 Gal. Steel Water Storage Tanks at Upper Zone Site:** Provides upper zone storage with redundancy by installing two steel tanks at the upper site with a total storage capacity of approximately 250,000 gal. instead of one 141,000 gal. tank.
- **Demolish the Existing 200,000 Gal. Redwood Tank at Lower Zone Site and Install One 125,000 Gal. Steel Water Storage Tank in Its Place:** Replaces the redwood tank at lower zone storage site with a new steel tank that provides sufficient and dependable storage.

Wastewater System Upgrades

- **Delete the Installation of Four Floating Aerators in Treatment Ponds from the Upgrades Project:** The installation of aerators would be done under a different project.

PROJECT COSTS AND FINANCING

Construction and total project cost estimates for the set of upgrades identified as Alternative 2 are included in Tables B1 through B3 in Attachment B. Table B4 shows a financing scenario for the Alternative 2 Upgrades Project and lists the breakdown of costs and associated debt service, assuming that financing is obtained by a bond sale to USDA Rural Development. Table B5 shows a summary of the project costs for each of the three sets of infrastructure upgrades identified: 1) the Original Upgrades Project that was described in the PER, 2) the Alternative 1 Upgrades Project that was described in the B&R Memorandum dated July 16, 2009, and 3) the Alternative 2 Upgrades Project described in this memorandum.

Attachment B

Table B1: Alternative 2 Upgrades Project Water Construction Cost Estimate

Table B2: Alternative 2 Upgrades Project Wastewater Construction Cost Estimate

Table B3: Alternative 2 Upgrades Project Total Cost Estimate

Table B4: Alternative 2 Upgrades Project Funding Scenario

Table B5: Original & Alternative Upgrades Projects - Total Cost Summary

CIRCLE OAKS COUNTY WATER DISTRICT
 DRINKING WATER SYSTEM

TABLE B1: ALTERNATIVE 2 UPGRADES PROJECT WATER CONSTRUCTION COST ESTIMATE

Item	Amount	Unit	Unit Cost	Total
Supply				
Install Water Well (Not in Project)				\$ -
Water Treatment				
Water Treatment Plant Upgrades				
Mobilization, Treatment Plant	1	LS	\$ 43,500	\$ 43,500
Roberts Pacer II Filtration Unit (100 gpm)	1	LS	\$ 304,000	\$ 304,000
Treatment Plant Piping & Valves	1	LS	\$ 30,000	\$ 30,000
Treatment Building Addition	320	SF	\$ 300	\$ 96,000
Repair 100,000 gal Redwood Clearwell Tank	1	LS	\$ 10,000	\$ 10,000
Chlorine Contact Tank & Transfer Pump	1	LS	\$ 185,000	\$ 185,000
10,000 gal Tank - Finished Water Tank	1	LS	\$ 15,000	\$ 15,000
Office Building Clearing & Grading	100	CY	\$ 100	\$ 10,000
Office Building Retaining Wall	100	SF	\$ 100	\$ 10,000
Office Building	810	SF	\$ 130	\$ 105,300
Treatment Plant Site Elec. & Control Utilities	1	LS	\$ 35,000	\$ 35,000
Monitoring & Alarm System (SCADA)	1	LS	\$ 25,000	\$ 25,000
Environmental Mitigation/Tree Planting	5	EA	\$ 100	\$ 500
Subtotal				\$ 869,300
Contingency	15%			\$ 130,395
Subtotal				\$ 999,700
Water Storage				
Upper Storage Tank				
Mobilization, Upper Tank	1	LS	\$ 35,100	\$ 35,100
Upper Site Demolition & Salvage	1	LS	\$ 25,000	\$ 25,000
Upper Site Clearing & Grading	1	LS	\$ 100,000	\$ 100,000
Upper Tank Subexcavation	100	CY	\$ 100	\$ 10,000
Upper Site Retaining Wall	680	SF	\$ 100	\$ 68,000
125,000 gal Steel Tank	2	LS	\$ 212,000	\$ 424,000
Upper Site Piping & Valves	1	LS	\$ 25,000	\$ 25,000
Monitoring & Alarm System (SCADA)	1	LS	\$ 15,000	\$ 15,000
Subtotal				\$ 702,100
Contingency	15%			\$ 105,315
Subtotal				\$ 807,415

CIRCLE OAKS COUNTY WATER DISTRICT
 DRINKING WATER SYSTEM

TABLE B1: ALTERNATIVE 2 UPGRADES PROJECT WATER CONSTRUCTION COST ESTIMATE

Item	Amount	Unit	Unit Cost	Total
Lower Storage Tank				
Mobilization, Lower Tank	1	LS	\$ 17,100	\$ 17,100
Install 10,000 gal Standby Storage Tank	1	LS	\$ 15,000	\$ 15,000
Piping & Valves Standby Storage Tank	1	LS	\$ 12,000	\$ 12,000
Demolish 200,000 gal Redwood Tank	1	LS	\$ 15,000	\$ 15,000
Lower Tank Subexcavation	150	CY	\$ 100	\$ 15,000
125,000 gal Steel Tank	1	LS	\$ 212,000	\$ 212,000
Lower Site Piping & Valves	1	LS	\$ 25,000	\$ 25,000
Monitoring & Alarm System (SCADA)	1	LS	\$ 30,000	\$ 30,000
Subtotal				\$ 341,100
Contingency	15%			\$ 51,165
Subtotal				\$ 392,300
Water Distribution				
Water Distribution System Upgrades				
Mobilization, Hydrant Replacements	1	LS	\$ 11,100	\$ 11,100
Demolition & Disposal Existing Piping	30	EA	\$ 1,000	\$ 30,000
6" Fire Hydrants, Tee, Valve & Lateral	30	EA	\$ 6,000	\$ 180,000
Shoring & Bracing Excavations	1	LS	\$ 1,000	\$ 1,000
Subtotal				\$ 222,100
Contingency	15%			\$ 33,315
Subtotal				\$ 244,315
TOTAL CONSTRUCTION COST WATER ALTERNATIVE UPGRADES				\$ 2,443,700

CIRCLE OAKS COUNTY WATER DISTRICT
 WASTEWATER TREATMENT SYSTEM

TABLE B2: ALTERNATIVE 2 UPGRADES PROJECT WASTEWATER CONSTRUCTION COST ESTIMATE

Item	Amount	Unit	Unit Cost	Total
Wastewater Treatment System				
Sewer Collection System				
Sewer System Upgrades				
Mobilization, Sewer Collection System	1	LS	\$ 10,500	\$ 10,500
6" & 8" Sewer Pipe Replace/Repair	2000	LF	\$ 100	\$ 200,000
Trench Shoring & Bracing	1	LS	\$ 1,000	\$ 1,000
Subtotal				\$ 210,500
Contingency	15%			\$ 31,575
Subtotal				\$ 243,100
Wastewater Treatment System				
Wastewater Treatment System Upgrades (Not in Project)				\$ -
TOTAL CONSTRUCTION COST WASTEWATER UPGRADES				\$ 243,100

CIRCLE OAKS COUNTY WATER DISTRICT
 DRINKING WATER SYSTEM & WASTEWATER SYSTEM UPGRADES

TABLE B3: ALTERNATIVE 2 UPGRADES PROJECT TOTAL COST ESTIMATE

Item	Estimated Costs
Water Supply	
Install Water Well (Not in Project)	\$ -
Water Treatment	
Water Treatment Plant Upgrades	\$ 999,700
Water Storage	
Upper Storage Tank	\$ 807,415
Lower Storage Tank	\$ 392,300
Water Distribution	
Water Distribution System Upgrades	\$ 244,315
Subtotal	\$ 2,443,700
Wastewater Treatment System	
Sewer System Upgrades	\$ 243,100
Wastewater Treatment System Upgrades (Not in Project)	\$ -
Subtotal	\$ 243,100
TOTAL CONSTRUCTION	\$ 2,686,800
INCIDENTALS	
Preliminary Studies/Environ./Applications	\$ 130,000
Design Engineering	\$ 322,000
Surveys, Mapping and Geotechnical Study	\$ 105,000
Construction Inspection	\$ 185,000
Legal	\$ 25,000
Costs of Issuance (Assessment District)	\$ 40,000
Subtotal	\$ 807,000
R/W ACQUISITION	\$ -
INTERIM FINANCING	\$ 46,000
ALTERNATIVE UPGRADES PROJECT TOTAL COST	\$ 3,539,800
Notes:	
Estimated costs are based on the current prices for the listed system upgrades. All costs are preliminary. Detailed construction documents have not been prepared. Incidentals include engineering, legal and administrative expenses and reflect the assumption that all proposed water and wastewater upgrades would proceed as part of a common construction and financing package. Costs for temporary financing represent the interest charges that may be incurred in order to finance the early stages of the project pending receipt of permanent financing. A total temporary financing allowance has been estimate assuming that an interim loan for planning, design and acquisition expenses will be obtained for a combined project.	

CIRCLE OAKS COUNTY WATER DISTRICT
 DRINKING WATER SYSTEM & WASTEWATER SYSTEM UPGRADES

TABLE B4: ALTERNATIVE 2 UPGRADES PROJECT FUNDING SCENARIO

Description	
Estimated Project Costs	
Project Costs	\$ 3,539,800
Capitalization Interest (6 months) ⁽¹⁾	\$ 81,000
Total Costs	\$ 3,620,800
Debt Service	
Annual Loan Payment ⁽²⁾	\$ 198,621
Annual Assessment Per Residential Lot ⁽³⁾	\$ 588
Notes:	
(1) USDA required reserve funds equal to 6 months of capitalization interest	
(2) Based on an interest rate of 4.5% with a repayment period of 39 years.	
(3) Based on 338 residential parcels assessed by the Circle Oaks County Water District	

CIRCLE OAKS COUNTY WATER DISTRICT
 DRINKING WATER SYSTEM & WASTEWATER SYSTEM UPGRADES

TABLE B5: ORIGINAL & ALTERNATIVE UPGRADES PROJECTS - TOTAL COST SUMMARY

Item	Original Upgrades Project Cost Estimate	Alternative 1 Upgrades Project Cost Estimate	Alternative 2 Upgrades Project Cost Estimate
Water Supply			
Install Water Well	\$ 207,000	\$ 207,000	\$ -
Water Treatment			
Water Treatment Plant Upgrades	\$ 1,335,955	\$ 999,695	\$ 999,700
Water Storage			
Upper Storage Tanks	\$ 582,245	\$ 807,415	\$ 807,415
Lower Storage Tank	\$ 928,095	\$ 609,660	\$ 392,300
Water Distribution			
Water Distribution System Upgrades	\$ 244,315	\$ 244,315	\$ 244,315
Subtotal	\$ 3,297,600	\$ 2,868,100	\$ 2,443,700
Wastewater Treatment System			
Sewer System Upgrades	\$ 243,075	\$ 243,075	\$ 243,100
Wastewater Treatment System Upgrades	\$ 181,585	\$ 181,585	\$ -
Subtotal	\$ 424,660	\$ 424,660	\$ 243,100
TOTAL CONSTRUCTION	\$ 3,722,300	\$ 3,292,800	\$ 2,686,800
INCIDENTALS			
Preliminary Studies/Environ./Applications	\$ 125,000	\$ 130,000	\$ 130,000
Design Engineering	\$ 447,000	\$ 395,000	\$ 322,000
Surveys, Mapping and Geotechnical Study	\$ 145,000	\$ 128,000	\$ 105,000
Construction Inspection	\$ 257,000	\$ 227,000	\$ 185,000
Legal	\$ 25,000	\$ 25,000	\$ 25,000
Costs of Issuance (Assessment District)	\$ 40,000	\$ 40,000	\$ 40,000
Subtotal	\$ 1,039,000	\$ 945,000	\$ 807,000
R/W ACQUISITION	\$ -	\$ -	\$ -
INTERIM FINANCING	\$ 63,000	\$ 56,000	\$ 46,000
TOTAL PROJECT COST	\$ 4,824,300	\$ 4,293,800	\$ 3,539,800

Notes:

Estimated costs are based on the current prices for the listed system upgrades. All costs are preliminary. Detailed construction documents have not been prepared. Incidentals include engineering, legal and administrative expenses and reflect the assumption that all proposed water and wastewater upgrades would proceed as part of a common construction and financing package. Costs for temporary financing represent the interest charges that may be incurred in order to finance the early stages of the project pending receipt of permanent financing. A total temporary financing allowance has been estimate assuming that an interim loan for planning, design and acquisition expenses will be obtained for a combined project.