

WATER AND SEWER BOARD

Tuesday, September 27, 2016
Operations & Maintenance Facility
1725 South Church Street
3:30 PM

AGENDA

-
1. Consent Agenda:
 - A. Consider Final Change Order for South Church Street Sanitary Sewer..... 2
 - B. Consider contingency allocations for Sinking Creek WWTP Phase 4D..... 5
 - C. Consider an amendment to SSR Engineering Work Order 11-47-017.0, Wastewater Pump Station Arc Flash Study..... 11
 - D. Consider SSR Engineering Work Order 15-41-029.0, Auxiliary Raw Water Intake Generator Construction Administration..... 16
 - E. Consider an engineering services proposal from Neel Schaffer for water and sewer design in conjunction with Bradyville Pike Improvements 21
 - F. Consider an engineering services proposal from Wisner Consultants for Sanitary Sewer Master Planning along Cherry Lane extension..... 30
 2. Consider minutes from the August 23, 2016 meeting 37
 3. Consider Department participation for sewer main extension for Springfield Luxury Apts. 48
 4. Consider a request for use of reserve funds for Bar Screen, Pipe Gallery Leaks, and Actuator Access at the Stones River Water Treatment Plant 52
 5. Consider water chiller replacement at Stones River Water Treatment Plant 54
 6. Review Comments on Draft 2016 State of Tennessee 303(d) List..... 64
 7. Consider an amendment to SSR Engineering Work Order 09-47-001.2 for E. coli and Fecal Coliform sampling on the West Fork Stones River and Sinking Creek 73
 8. Dashboard
 9. Other business
 10. Adjourn



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MEMORANDUM

DATE: September 19, 2016
TO: Water and Sewer Board
FROM: Valerie Smith
SUBJECT: S. Church Street Sanitary Sewer
Final Balancing Change Order (#1)

Background

At the December 2014 Water & Sewer Board meeting it was recommended and approved for Wisser Consultants (Wisser) to design the sewer extension to an area of interest, approximately 32.6 acres in size on the west side of S. Church St. (US-231) at the intersection of the newly constructed Joe B Jackson Pkwy. The design was completed, bids received February 9th and the project was awarded to Charles Deweese Construction, Inc. at the February Board meeting in the amount of \$287,887.65.

The project is now completed and attached is the final balancing change order. The final change increases the original contract amount by \$9,386.47 due mainly to an increase in the amount of asphalt paving necessary to repair the roadway and paved drives. This is more than anticipated and originally estimated by Wisser Company. The increase brings the final contract amount to \$297,274.12.

Recommendation

It is recommended the Board recommend to the City Council approval of the Final Balancing Change Order for a total of \$297,274.12.

Fiscal Impact

Funding was approved to come from the Department's working capital reserves with repayment through the assessment district. This construction project has been programmed into the Department's 5-year capital improvement plan.

Attachments

Final Change Order (#1)



CHANGE ORDER NO. 1

City of Murfreesboro
Water and Sewer Department
220 NW Broad Street
Murfreesboro, TN 37130

Project South Church Street Sanitary Sewer
Wiser Proj. No. 14-11-0210

DESCRIPTION OF CHANGE:

Charles Deweese Construction, Inc. (CDCI) has completed the South Church Street Sanitary Sewer project. The project was a quantity and unit price contract. During construction, several items overran and others underran. The items that overran contributing to the additional contract cost were:
• Item No. 6 - An additional 90 LF of 2.5" SDR 21 PVC Class 200 Force Main
• Item No. 27 - Additional Asphalt Pavement Repair - Driveways

Attachments (List documents supporting change):

Requested By: MURFREESBORO WATER AND SEWER (MWSD)
This Document is a: FINAL CHANGE ORDER
Drawing Reference: Final Pay Application (attached)

WORK CHANGE ORDER

We propose to perform the Work or make the Claim described above for the following change in Contract Cost and Contract Times:

- No Change in Contract Amount is required.
A Change in Contract Amount is required: \$9,386.47
No Change in Contract Time is required.
A Change in Contract Time is required: 0 days

Table with 2 columns: Description, Amount. Rows include Original Contract Sum, Net Change, Contract Sum prior, Contract Sum will be (Changed), and The New Contract Sum.

You are directed to proceed to make the changes to the Work described in this Work Change Order. Any change in Contract Price or Contract Time will be determined in accordance with the General Conditions.

Table with 2 columns: Signature/Role, Date. Rows include Recommended by Engineer, Authorized by Owner, and Acceptance by Contractor.

FIELD ORDER

This Field Order issued in accordance with the General Conditions for minor changes in the Work without change in the Contract Price or Contract Time. If you consider that a change in Contract Price or Contract Times is required, notify the Project Manager immediately and before proceeding with the Work.

Table with 2 columns: Signature/Role, Date. Rows include Recommended by Engineer, Authorized by Owner, and Acceptance by Contractor.



City of Murfreesboro Water & Sewer Department - South Church Street Sanitary Sewer
Payment Summary No. 4 , Pay Period: FINAL, Wiser Project No. 14-11-0210

Item No.	Description	Unit	Estimated Quantity	Unit Price	Current Quantity Used	Previous Quantity Used	To-Date Quantity Used	Current Cost	Previous Cost	Cost to Date	Total Estimated Contract Cost
1	MOBILIZATION	LS	1	\$3,812.50		1.000	1.000	\$ -	\$ 3,812.50	\$ 3,812.50	\$ 3,812.50
2	CONSTRUCTION STAKES, LINES AND GRADES	LS	1	\$2,668.75		1.00	1.00	\$ -	\$ 2,668.75	\$ 2,668.75	\$ 2,668.75
3	CLEARING AND GRUBBING	LS	1	\$3,050.00		1.00	1.00	\$ -	\$ 3,050.00	\$ 3,050.00	\$ 3,050.00
4	8IN DIP 6FT-12FT DEPTH (OUTSIDE TRAVEL WAY)	LF	200	\$131.35		200.00	200.00	\$ -	\$ 26,270.00	\$ 26,270.00	\$ 26,270.00
5	4IN C900 PVC (FORCE MAIN)	LF	208	\$42.26		200.00	200.00	\$ -	\$ 8,452.00	\$ 8,452.00	\$ 8,790.08
6	2 1/2IN SDR21 PVC CLASS 200 (FORCE MAIN)	LF	2414	\$52.61		2504.00	2504.00	\$ -	\$ 131,735.44	\$ 131,735.44	\$ 127,000.54
7	48IN MANHOLE 8FT-10FT DEPTH	EACH	1	\$2,842.60		1.00	1.00	\$ -	\$ 2,842.60	\$ 2,842.60	\$ 2,842.60
8	8IN X 6IN D.I.P. WYE	EACH	4				0.00	\$ -	\$ -	\$ -	\$ -
9	6IN -45 DEG. D.I.P. BEND	EACH	4				0.00	\$ -	\$ -	\$ -	\$ -
10	6IN DIP SERVICE LATERAL	LF	44				0.00	\$ -	\$ -	\$ -	\$ -
11	BORE/JACK 12IN STEEL CASING PIPE	LF	160	\$263.68		160.00	160.00	\$ -	\$ 42,188.80	\$ 42,188.80	\$ 42,188.80
12	BORE/JACK 6IN STEEL CASING PIPE (CONC DRIVEWAY)	LF	20	\$274.39		20.00	20.00	\$ -	\$ 5,487.80	\$ 5,487.80	\$ 5,487.80
13	4IN X 4IN X 2 1/2IN X 2 1/2" CROSS	EACH	1	\$208.05		1.00	1.00	\$ -	\$ 208.05	\$ 208.05	\$ 208.05
14	2 1/2IN X 2 1/2IN TEE	EACH	9	\$61.92		9.00	9.00	\$ -	\$ 557.28	\$ 557.28	\$ 557.28
15	2 1/2IN BALL VALVE	EACH	11	\$783.84		11.00	11.00	\$ -	\$ 8,622.24	\$ 8,622.24	\$ 8,622.24
16	2 1/2IN DIP CHECK VALVE (CLASS 150)	EACH	11	\$794.36		11.00	11.00	\$ -	\$ 8,737.96	\$ 8,737.96	\$ 8,737.96
17	2 1/2IN COMBO AIR RELEASE VALVE ASSEMBLY	EACH	2	\$3,952.07		2.00	2.00	\$ -	\$ 7,904.14	\$ 7,904.14	\$ 7,904.14
18	4IN TERMINAL FLUSHING CONNECTION	EACH	1	\$2,204.40		1.00	1.00	\$ -	\$ 2,204.40	\$ 2,204.40	\$ 2,204.40
19	2 1/2IN TERMINAL FLUSHING CONNECTION	EACH	2	\$1,791.76		2.00	2.00	\$ -	\$ 3,583.52	\$ 3,583.52	\$ 3,583.52
20	2 1/2IN INLINE FLUSHING CONNECTION	EACH	7	\$1,224.40		7.00	7.00	\$ -	\$ 8,570.80	\$ 8,570.80	\$ 8,570.80
21	CONNECT 8IN SEWER TO EXIST MANHOLE	EACH	1	\$1,696.29		1.00	1.00	\$ -	\$ 1,696.29	\$ 1,696.29	\$ 1,696.29
22	TV INSPECTION 8IN SEWER	LF	200	\$5.26		200.00	200.00	\$ -	\$ 1,052.00	\$ 1,052.00	\$ 1,052.00
23	SEEDING (PROPERTY RESTORATION W/8IN TOPSOIL, ROCK FREE)	SY	4510	\$1.07		4510.00	4510.00	\$ -	\$ 4,825.70	\$ 4,825.70	\$ 4,825.70
24	TYPE "B" SILT FENCE (W/O BACKING)	LF	2290	\$2.77		2195.00	2195.00	\$ -	\$ 6,080.15	\$ 6,080.15	\$ 6,343.30
25	SAW CUTTING ASPHALT PAVEMENT	LF	236	\$4.74		290.00	290.00	\$ -	\$ 1,374.60	\$ 1,374.60	\$ 1,118.64
26	ASPHALT PAVEMENT REPAIR -VOLUNTEER RD (8IN STONE, 8IN BINDER, 1 1/2IN TOPPING)	SF	129	\$26.84		90.00	90.00	\$ -	\$ 2,415.60	\$ 2,415.60	\$ 3,462.36
27	ASPHALT PAVEMENT REPAIR-DRIVEWAYS (2IN ASPHALT TOPPING, 4IN STONE)	SF	127	\$19.47		553.25	553.25	\$ -	\$ 10,771.78	\$ 10,771.78	\$ 2,472.69
28	REMOVAL OF ASPHALT PAVEMENT	SY	28	\$29.47		56.00	56.00	\$ -	\$ 1,650.32	\$ 1,650.32	\$ 825.16
29	R.O.W. PERMIT	EACH	1	\$305.00		1.00	1.00	\$ -	\$ 305.00	\$ 305.00	\$ 305.00
	SUBTOTAL						0.00	\$ -	\$ 297,067.72	\$ 297,067.72	\$ 284,600.60
	SUPPLEMENTAL UNITS										
SU1	CRUSHED STONE PLACED AS DIRECTOR BY ENGINEER	TONS	25	\$31.73			0.00	\$ -	\$ -	\$ -	\$ 793.25
SU2	UNCLASSIFIED EXCAVATION 0FT-10FT VERTICAL DEPTH	CY	10	\$169.70			0.00	\$ -	\$ -	\$ -	\$ 1,697.00
SU3	HIGH VISIBILITY CONSTRUCTION FENCE	LF	80	\$2.58		80.00	80.00	\$ -	\$ 206.40	\$ 206.40	\$ 206.40
SU4	TEMPORARY SEDIMENT TUBE 12IN	LF	60	\$9.84			0.00	\$ -	\$ -	\$ -	\$ 590.40
	SUPPLEMENTAL UNITS SUBTOTAL						0.00	\$ -	\$ 206.40	\$ 206.40	\$ 3,287.05
	CHANGE ORDER ITEMS							\$ -	\$ -	\$ -	\$ -
	STORED MATERIALS							\$ -	\$ -	\$ -	\$ -
	STORED MATERIALS SUBTOTAL							\$ -	\$ -	\$ -	\$ -
	Total Completed & Stored							\$ -	\$ 297,274.12	\$ 297,274.12	\$ 287,887.65
	5% Retainage							\$ -	\$ 14,863.72	\$ 14,863.72	
	Total of Previous Payments / Cost to Date Minus Retainage							\$ -	\$ 282,410.40	\$ 282,410.40	
	Current Payment Due									\$	14,863.72



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MEMORANDUM

DATE: September 19, 2016
TO: Water and Sewer Board
FROM: Valerie Smith
SUBJECT: Contingency Allowance Allocations for Sinking Creek WWTP Phase 4D

Background

The Department received bids for the Sinking Creek Plant Expansion – Phase 4D on January 8, 2015. At that meeting the Board approved to award the project to 3D Enterprises the contract in the amount of \$30,472,000. As part of the referenced project, Item #4 within Schedule C of the Construction Contract is a contingency allowance of \$500,000.

The attached change control log which identifies the recent allowance allocation issued through field work change directives. Note that these work change directives do not change the contract price, only adjust the remaining balance of the contingency allowance. The final contract price will be adjusted accordingly in a future change order or a final balancing change order at the end of the project.

The following table is provided to update the Board on the current field work change directives and the remaining contingency allowances.

Project	Contingency Allowance	Prior Contingency Allocations	Current Contingency Allocations	Remaining Contingency Allowance
Phase 4D Expansion	\$500,000	\$213,387.00**	\$ 18,130 *	\$268,483.00

*CCF # – 27-29 (Current)

**CCF #'s (1 Rev. 2, 2, 5-9, 11-13, 17-26 (previously approved)(cumulative)

Recommendation

Staff recommends the referenced contingency allocation for the Phase 4D Expansion be authorized. A final contract amount accounting for all contingency items will be brought to the Board and City Council for approval in a final balancing change order.

Fiscal Impact

There is no fiscal impact at this time to the Department’s State Revolving Fund (SRF) loan, as the contingency allowance has been approved within the contract and the contract amount remains unaffected.

Attachments

SSR Recommendation Letters & CCF Log



September 20, 2016

Mrs. Valerie Smith
Assistant Director, Murfreesboro Water and Sewer Department
P.O. Box 1477
Murfreesboro, TN 37133-1477

**RE: Sinking Creek WWTP Phase 4D Expansion
Murfreesboro, TN
Proposed CCF No. 27 – Final Cost
CG2 2014-338; SRF 2014-339**

Dear Mrs. Smith:

Attached are four (4) copies of proposed Change Item No. 27 including a Summary Log of all proposed changes to date. The following summarizes the change item and provides recommendation for its approval.

Recall that Change Item No. 27 was previously approved as a time and materials change order with final pricing to be determined upon completion of the work. 3D Enterprises has now successfully completed the work and submitted a final cost proposal that is attached to this letter. Change Item No. 27 was requested by MWSD staff to relocate the existing UV Transmittance (UVT) sensor and transmitter. Due to the increased water level and turbulence associated with the new UV disinfection equipment, the UVT sensor did not function properly in its previous location and needed to be relocated. SSR has reviewed this proposed change and recommends that MWSD approve it. If approved, Change Item No. 27 will result in a \$2,830.00 decrease to the Construction Contingency Allowance. There will be no increase in the contract time as a result of this change item.

As stated, SSR has reviewed the proposed change and recommends it be approved and the contingency allowance be adjusted accordingly. Note that the total contract price will not be adjusted, only the contingency amount. Please review the enclosures and if acceptable to you, execute and forward one (1) signed copy to me.

If you have any questions, please contact me.

Sincerely,

SMITH SECKMAN REID, INC.

A handwritten signature in blue ink, appearing to read "Brentley D. Fowler", is written over the company name.

Brentley D. Fowler, PE
BDF/bdf
Enclosures

cc: Darren Gore (w/encl) – MWSD
MDF, RBH (w/encl) – SSR
File (1) (w/encl) – 12-41-019.0
File (12) (w/encl) – 12-41-019.0

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August 24, 2016

Mrs. Valerie Smith
Assistant Director, Murfreesboro Water and Sewer Department
P.O. Box 1477
Murfreesboro, TN 37133-1477

**RE: Sinking Creek WWTP Phase 4D – Expansion
Murfreesboro, TN
Proposed CCF No. 28
CG2 2014-338; SRF 2014-339**

Dear Mrs. Smith:

Attached are four (4) copies of proposed Change Item No. 28 including a Summary Log of all proposed changes to date. The following summarizes the change item and provides recommendation for its approval.

Change Item No. 28 was requested by MWSD staff to increase the number of Hach WIMS licenses from six to ten and decrease the number of facility databases from two to one. SSR has reviewed this proposed change and recommends that MWSD approve it. If approved, this change item would result in a \$10,500.00 decrease to the Construction Contingency Allowance. There will be no increase in the contract time as a result of this change item if 3D Enterprises receives written authorization to proceed on or before September 2, 2016.

As stated, SSR has reviewed these proposed change and recommend it be approved and the contingency allowance be adjusted at a later date based on a time and materials basis. Note that the total contract price will not be adjusted, only the contingency amount. Please review the enclosures and if acceptable to you, execute and forward one (1) signed copy to me.

If you have any questions, please contact me.

Sincerely,

SMITH SECKMAN REID, INC.

A handwritten signature in black ink, appearing to read "Brentley D. Fowler", is written over the company name.

Brentley D. Fowler, PE
BDF/bdf
Enclosures

cc: Darren Gore (w/encl) – MWSD
MDF (w/encl) – SSR
RBH (w/encl) – SSR
File (1) (w/encl) – 12-41-019.0
File (12) (w/encl) – 12-41-019.0

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August 24, 2016

Mrs. Valerie Smith
Assistant Director, Murfreesboro Water and Sewer Department
P.O. Box 1477
Murfreesboro, TN 37133-1477

RE: **Sinking Creek WWTP Phase 4D – Expansion**
Murfreesboro, TN
Proposed CCF No. 29
CG2 2014-338; SRF 2014-339

Dear Mrs. Smith:

Attached are four (4) copies of proposed Change Item No. 29 including a Summary Log of all proposed changes to date. The following summarizes the change item and provides recommendation for its approval.

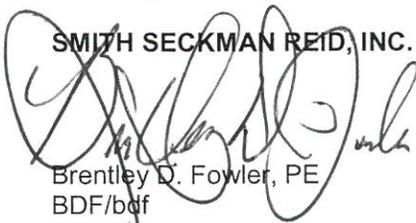
Change Item No. 29 was requested by SSR to provide additional air lines required at the new screening equipment and heat tracing and insulation at 4-inch grit piping. SSR has reviewed this proposed change and recommends that MWSD approve it. If approved, this change item would result in a \$4,800.00 decrease to the Construction Contingency Allowance. There will be no increase in the contract time as a result of this change item if 3D Enterprises receives written authorization to proceed on or before September 2, 2016.

As stated, SSR has reviewed these proposed change and recommend it be approved and the contingency allowance be adjusted accordingly. Note that the total contract price will not be adjusted, only the contingency amount. Please review the enclosures and if acceptable to you, execute and forward one (1) signed copy to me.

If you have any questions, please contact me.

Sincerely,

SMITH SECKMAN REID, INC.



Brentley D. Fowler, PE
BDF/bdf
Enclosures

cc: Darren Gore (w/encl) – MWSD
MDF (w/encl) – SSR
RBH (w/encl) – SSR
File (1) (w/encl) – 12-41-019.0
File (12) (w/encl) – 12-41-019.0

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CHANGE CONTROL LOG

Owner: Murfreesboro Water & Sewer Department
Project Name: Sinking Creek WWTP Phase 4D Expansion
Contract No.: N/A
Engineer: Smith Seckman Reid, Inc.
Contractor: 3D Enterprises Contracting Corporation

Original Contract Amount: \$ 30,472,000.00

Contingency Allowance Amount: \$ 500,000.00

Adjusted Contingency Allowance Amount: \$ 268,483.00

Rejected/Withdrawn
Under Review
Approved
Pending

SSR No.	CCF No.	3D No.	COP No.	Change Order No.	Change Type	Brief Description of Change Item	Status (Pending/Under Review/Approved/Rejected)	Date From/To Contractor	Date Submitted to Owner	Date Approved/Rejected by Owner	Add/Deduct (+/-) Amount	Cumulative Add/Deduct Amount	Adjusted Contingency Amount	Adjusted Contract Amount
1				N/A	RFP	Add Headworks paving, irrigation-piping and landscaping to Phase 4D scope	Withdrawn	4/16/2015	Withdrawn	Withdrawn	\$ -	\$ -	\$ 500,000.00	\$ 30,472,000.00
1-REV				N/A	RFP	Add Headworks paving partial-landscaping to Phase 4D scope	Withdrawn	6/11/2015	Withdrawn	Withdrawn	\$ -	\$ -	\$ 500,000.00	\$ 30,472,000.00
1-REV2				TBD	RFP	Delete landscaping and irrigation	Approved	8/5/2015	10/17/2015	Approved	\$ (25,800.00)	\$ (25,800.00)	\$ 525,800.00	\$ 30,472,000.00
2				2	RFP	Delete diffusers from Post Aeration equipment	Approved	9/1/2015	9/2/2015	9/15/2015	\$ (11,200.00)	\$ (37,000.00)	\$ 537,000.00	\$ 30,472,000.00
3				N/A	FP	Change stairs platform from galv to alum.	Approved	4/23/2015	N/A	N/A	\$ -	\$ (37,000.00)	\$ 537,000.00	\$ 30,472,000.00
4				N/A	RFP	Add signal wiring for Main PS pump-discharge valves	Withdrawn	5/28/2015	7/28/2015	8/5/2015	\$ -	\$ (37,000.00)	\$ 537,000.00	\$ 30,472,000.00
5				TBD	RFP	Revise electrical service per MED	Withdrawn	6/18/2015	Withdrawn	Withdrawn	\$ -	\$ (37,000.00)	\$ 537,000.00	\$ 30,472,000.00
5-REV				TBD	RFP	Revise electrical service per MED	Approved	8/10/2015	1/14/2016	2/5/2016	\$ 82,856.00	\$ 45,856.00	\$ 454,144.00	\$ 30,472,000.00
6				TBD	RFP	Algae Cleaning System attachment arm	Approved	7/20/2015	7/28/2015	9/3/2015	\$ 7,600.00	\$ 53,456.00	\$ 446,544.00	\$ 30,472,000.00
7				TBD	RFP	Tertiary Filter embed conduit	Approved	7/24/2015	7/28/2015	9/3/2015	\$ 2,500.00	\$ 55,956.00	\$ 444,044.00	\$ 30,472,000.00
8				TBD	RFP	HVAC upgrade in Post Aeration Control Room	Approved	9/9/2015	1/8/2016	2/5/2016	\$ 52,740.00	\$ 108,696.00	\$ 391,304.00	\$ 30,472,000.00
9				TBD	RFP	Revise Final Clarifier EDI type	Approved	9/24/2015	10/6/2015	11/5/2015	\$ 3,300.00	\$ 111,996.00	\$ 388,004.00	\$ 30,472,000.00
10				TBD	RFP	Provide sleeves under roadway for future irrigation piping.	Pending	9/1/1939	Pending	Pending	\$ -	\$ 111,996.00	\$ 388,004.00	\$ 30,472,000.00
14				TBD	FO	Electrical changes to MCC and control room layouts	Withdrawn	10/7/2015	Pending	Pending	\$ -	\$ 111,996.00	\$ 388,004.00	\$ 30,472,000.00
11-REV1				TBD	RFP	Various electrical changes	Approved	10/20/2015	2/10/2015	4/7/2016	\$ 7,900.00	\$ 119,896.00	\$ 380,104.00	\$ 30,472,000.00
12				TBD	RFP	Headworks Facility electrical revisions/clarifications	Approved	10/20/2015	2/10/2015	4/7/2016	\$ 2,600.00	\$ 122,496.00	\$ 377,504.00	\$ 30,472,000.00
13				TBD	WCD	Replacement of existing Filter backwash flow meter	Approved	11/9/2015	3/15/2016	4/7/2016	\$ 20,533.00	\$ 143,029.00	\$ 356,971.00	\$ 30,472,000.00
14				TBD	RFP	Knockout wall at gate opening for future Ox-Ditch	Withdrawn	12/16/2015			\$ -	\$ 143,029.00	\$ 356,971.00	\$ 30,472,000.00
15				TBD	FO	UV power feed relocation	Approved	1/18/2016	N/A	N/A	\$ -	\$ 143,029.00	\$ 356,971.00	\$ 30,472,000.00
16				TBD	RFP	Additional generator/ATS signals	Pending	1/26/2016			\$ -	\$ 143,029.00	\$ 356,971.00	\$ 30,472,000.00
17				TBD	RFP	Add ultrasonic flow meter at Main PS	Approved	2/4/2016	3/15/2016	4/7/2016	\$ 11,120.00	\$ 154,149.00	\$ 345,851.00	\$ 30,472,000.00
18		14		TBD	RFP	Installation of the Allen-Bradley Power Monitors into the Eaton switchgear	Approved	5/4/2016	5/17/2016	?????	\$ 17,080.00	\$ 171,229.00	\$ 328,771.00	\$ 30,472,000.00
19		13		TBD	CCR	60" TRE Junction Box in lieu of tapping sleeve	Approved	2/22/2016	3/24/2016	5/11/2016	\$ (10,000.00)	\$ 161,229.00	\$ 338,771.00	\$ 30,472,000.00
20		15		TBD	RFP	Addition of area lights and receptacles at clarifiers. Photocell and lighting control.	Approved	5/18/2016	6/8/2016	8/1/2016	\$ 30,240.00	\$ 191,469.00	\$ 308,531.00	\$ 30,472,000.00
21		12		TBD	RFP	Replace building architectural precast fascia panels with brick	Pending	3/18/2016	3/18/2016	8/1/2016	\$ (20,000.00)	\$ 171,469.00	\$ 328,531.00	\$ 30,472,000.00

CHANGE CONTROL LOG

Owner: Murfreesboro Water & Sewer Department
Project Name: Sinking Creek WWTP Phase 4D Expansion
Contract No.: N/A
Engineer: Smith Seckman Reid, Inc.
Contractor: 3D Enterprises Contracting Corporation

Original Contract Amount: \$ 30,472,000.00

Contingency Allowance Amount: \$ 500,000.00

Adjusted Contingency Allowance Amount: \$ 268,483.00

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22		16		TBD	RFP	Item 2 on RFI 33 Counter-flashing @ UV basin for building/canopy joint	Under Review	4/19/2016	5/12/2016		\$ 912.00	\$ 172,381.00	\$ 327,619.00	\$ 30,472,000.00
23		16		TBD	RFP	Provide steel beams & additional reinforcing steel for pipe supports per revised drawings S 1.3-05 & S5.4-05	Under Review	5/3/2016	5/12/2016		\$ 28,392.00	\$ 200,773.00	\$ 299,227.00	\$ 30,472,000.00
24		16		TBD	RFP	Provide FRP door, frame and hardware at FCPR south entrance. Modify door 8-3 from hollow metal to FRP with 90 mn fire rating	Under Review	5/3/2016	5/12/2016		\$ 6,696.00	\$ 207,469.00	\$ 292,531.00	\$ 30,472,000.00
25		17		TBD	RFP	Provide factory applied epoxy coating on coils	Under Review	5/9/2016	6/8/2016		\$ 3,160.00	\$ 210,629.00	\$ 289,371.00	\$ 30,472,000.00
26		18		TBD	RFP	Provide new bucket in available space within MCC-N5A with 2 15 A tandem breakers	Approved	5/27/2016	6/2/2016	8/1/2016	\$ 2,758.00	\$ 213,387.00	\$ 286,613.00	\$ 30,472,000.00
27		21		TBD	RFP	Relocate UVT sensor and transmitter	Pending	8/17/2016	8/19/2016	9/20/2016	\$ 2,830.00	\$ 216,217.00	\$ 283,783.00	\$ 30,472,000.00
28		19		TBD	RFP	Additional Hach WIMS licenses	Pending	8/23/2016	8/24/2016	9/1/2016	\$ 10,500.00	\$ 226,717.00	\$ 273,283.00	\$ 30,472,000.00
29		20		TBD	RFP	Air Tubing at Screens and Heat Tracing/Insulation at Grit Piping	Pending	8/23/2016	8/24/2016	9/1/2016	\$ 4,800.00	\$ 231,517.00	\$ 268,483.00	\$ 30,472,000.00
30		TBD		TBD	RFP	Support column at Tertiary Filter Door ID 8-3	Pending	9/13/2016						
Totals											\$ 231,517.00	\$ 268,483.00	\$ 30,472,000.00	

- Notes:**
1. CCR - Contractor change request.
 2. CL - Claim.
 3. FO - Field Order.
 4. RFP - Request for proposal.
 5. WCD - Work change directive.



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MEMORANDUM

DATE: September 20, 2016
TO: Water and Sewer Board
FROM: Darren Gore
SUBJECT: Wastewater Pump Station and Wastewater Treatment Plant Arc Flash Study
Smith Seckman Reid Engineering Work Order 11-47-017.0 Amendment 2

Background

The recommendation of staff is to approve a second amendment to the referenced work order to include an arc flash study for an additional twelve (12) sanitary sewer lift stations as well as inclusion of the electrical panels at the Stones River Water Treatment plant. The engineering work order amendment covers the assessment, documentation, reporting and recommendations for remedial action for the additional 12 sewage pumping stations and electrical panels at the Stones River WTP.

The NFPA 70E Arc Flash standard outlines the specific practices and standards to be followed in protecting a workplace from arc flash and other electrical hazards. OSHA has referenced compliance to NFPA 70E using Section 5(a) (1) of the Occupational Safety and Health Act of 1970, commonly referred to as the “general duty clause,” as their basis for implementation. NFPA 70E requires an assessment to be conducted of all electrical installations that are accessed by employees.

An assessment over twelve (12) sanitary sewer lift stations was approved in September 2011 by the Board and City Council in an amount of \$19,865. The Board approved amendment #1 of this task order in August of 2013 in the amount of \$62,675 for an additional twelve (12) sanitary sewer lift stations as well as inclusion of the electrical panels at the Sinking Creek Wastewater Treatment plant.

Actions resulting from the assessments will be Hazard Risk Labeling, arc flash clothing and personal protective equipment for employees, arc flash training and assessment updates every five years.

Attached is an overview of the steps for NFPA 70E Arc Flash compliance for your information.

Recommendation

Staff recommends the Board recommend to the City Council approval to execute Smith Seckman Reid, Engineering Work Order 11-47-017.0 Amendment 2.

Fiscal Impact

Compensation for the services outlined in the Agreement is an additional lump sum of \$62,675 to the revised contracted amount of \$82,540. Funding is recommended to come from FY17 budget operating accounts for professional services.

Attachments

Amendment 2 to SSR Task Order 11-47-017.0
NFPA 70E Arc Flash Compliance Overview

AMENDMENT TO OWNER-ENGINEER AGREEMENT
Engineering Work Order 11-47-017.0
Amendment No. 2

1. *Background Data:*

- a. Effective Date of Owner-Engineer Agreement: November 1, 2011
- b. Owner: Murfreesboro Water and Sewer Department
- c. Engineer: Smith Seckman Reid, Inc
- d. Project: Wastewater Pump Station Arc Flash Study

2. *Description of Modifications:*

- a. Addition of twelve (12) lift stations to the current scope of supply (\$19,865.00)
- b. Addition of existing panels at Stones River WTP to the current scope of supply. (\$42,810)

3. Agreement Summary (Reference only)

a. Original Agreement amount:	\$ <u>19,865.00</u>
b. Net change for prior amendments:	\$ <u>62,675.00</u>
c. This amendment amount:	\$ <u>62,675.00</u>
d. Adjusted Agreement amount:	\$ <u>145,305.00</u>

The foregoing Agreement Summary is for reference only and does not alter the terms of the Agreement.

Owner and Engineer hereby agree to modify the above-referenced Agreement as set forth in this Amendment. All provisions of the Agreement not modified by this or previous Amendments remain in effect. The Effective Date of this Amendment is _____.

OWNER:

ENGINEER:

By: _____

By: 

Title: _____

Title: Principal

Date Signed: _____

Date Signed: 9/2/10

Arc Flash Compliance

Overview

Many companies in North America are coming to grips with a new electrical safety consideration – Arc Flash Safety. Often, the initial question that is raised by management is – does this even apply to our facility? In short, the answer is a resounding **YES!**

In the United States, the Occupational Safety & Health Administration (OSHA) can and does site companies who do not provide protection for their employees against arc flash/blast hazards. Although the OSHA 1910 standard does not specifically define all of the procedures and PPE necessary for a sufficient arc flash safety program, it does recognize the NFPA 70E standard as the best practices for implementation of a comprehensive electrical safety program.

Arc Flash Assessment

The arc flash assessment is the process that is undertaken to determine the level of hazard that exists at each electrical enclosure. Electrical equipment, such as switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centers, that are likely to require examination, adjustment, servicing, or maintenance while energized. There are several steps required to complete the assessment.

Step 1 - Data Collection

There is a variety of information which is required in order to correctly document the power distribution system. This information includes data on circuit breakers, fuses, cabling, and end loads. At first glance, the data collection step sounds straightforward; however, most clients do not want to de-energize in order to collect this data. Therefore, this task requires an experienced, skilled and qualified individual or team. However, due to the level of skill required to do this work effectively and safely, this activity is costly. Often the data collection phase accounts for 40-55% of the overall project cost.

Step 2 - Arc Flash Analysis

Most engineers/consultants conduct the arc flash analysis by utilizing specialized software such as SKM PowerTools. In this phase, the engineer models the power distribution system based on the data collected. From this model, Hazard Risk Category (HRC) levels, incident energy levels (calories/cm²), and the arc flash boundaries for the electrical distribution system are determined.

From the study results, most reputable consultants will analyze points in the system where the Hazard Risk Category is Category 3 or above and make recommendations for possible system changes which would reduce the HRC to an acceptable level.

Step 3 - One-Line Diagrams

Once the data collection is completed, one line diagrams are generated for use by the facilities' maintenance and engineering staff. Software generates a one-line, but it is not especially useful on a day to day basis. AutoCAD can be used to create separate, detailed one-lines and include them as a project deliverable.

Step 4 - HRC Labeling

From these results, it should be expected that the engineer/consultant return to the facility and install the appropriate arc flash labeling. Although it might be inviting to simply return the labeling and reports to the client's maintenance staff to save a site visit by the consultant, many find the reports confusing, which has led to the mislabeling of electrical enclosures. The problem is that if enclosures are incorrectly labeled, electrical personnel could be put into situations where the PPE that they are wearing is inadequate for the level of arc flash exposure.

Step 5 - Arc Flash Clothing & PPE

Once the hazard assessment and labeling is complete, your consultant should provide direction as to the best clothing and PPE options which are based on the results of your study, the frequency that your maintenance personnel work in energized enclosures and other plant considerations. A competent consultant can lay out these options for you and make recommendations as to the best choices for your facility.

NPFA 70E-2009 mandates that you update your assessment at least every five years. However, it is much easier, once the initial work has been performed, to conduct on-going documentation management. This means that periodically, monthly, semi-annually or annually, you review, document and update your one-lines and arc flash study. The cost of making minor changes to both the one-lines and SKM model on a regular basis is miniscule when compared to a major re-evaluation every five years.

Step 6 - Arc Flash Training

Arc flash hazard & electrical safety training is based on requirements by OSHA and NFPA 70E standards for worker protection. In addition to core electrical safety training, the arc flash training teaches those subject to arc flash hazards how to recognize the hazards, avoid accidents, read the arc flash hazard labels and to use and care for personal protective equipment and other protection devices.



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MEMORANDUM

DATE: September 21, 2016
TO: Water and Sewer Board
FROM: Darren Gore
RE: SSR Engineering Work Order 15-41-029.0
Construction Administration for the Murfreesboro Auxiliary Raw Water Intake Generator

Background

In February of 2014, staff solicited quotes from Thompson Power to purchase standby generators for the raw water pump intake. At the time, staff believed the work may be done “in-house”. However, based on the size and complexity of the project, staff recommended and the Board approved Smith Seckman and Reid (SSR) the design this installation in December of 2015. Bids were received in August of 2016; the low bid being awarded to John Bouchard & Sons in the amount of \$480,000.

The project timeline is 300 days, which will require multiple progress meetings, review of construction progress and processing of pay applications, as well as shop drawing review and limited coordination with integration, controls and telemetry at the raw water intake. Therefore, staff has requested construction administration services from Smith Seckman Reid for the duration of the project.

SSR’s scope of services will include conducting a pre-construction conference, issuing a Notice-to-Proceed, reviewing all shop drawings, reviewing all monthly payment requests and change order requests from the contractor, answering questions regarding the Construction Drawings and Contract Documents, providing Record drawings, and making a final inspection for the project close-out. Record drawing information will be provided to the OWNER based on mark-ups provided by the Contractor or the Resident Project Representative. Their scope also includes limited integration support to the Contractor and to Owner.

Recommendation

Staff recommends the Board recommend to City Council approving SSR Engineering Work Order 15-41-029.0 for Engineering Consulting Services for the Murfreesboro Auxiliary Raw Water Intake Generator.

Fiscal Impact

The costs for these services are hourly not to exceed \$20,760. Funding of the project was included in the Department’s 5-yr capital improvements plan for \$600,000. The low bid amount of \$480,000 allows for these construction administration services costs to be incorporated into the originally budget.

Attachments

SSR Engineering Work Order 15-41-029.0
Project Estimation Worksheet

**ENGINEERING WORK ORDER 15-41-029.0
AGREEMENT FOR ENGINEERING CONSULTING SERVICES
FOR THE
MURFREESBORO AUXILIARY RAW WATER INTAKE GENERATOR**

This Work Order, made and entered into by and between the Murfreesboro Water and Sewer Department (MWSD), hereinafter called the "OWNER" and Smith Seckman Reid, Inc., hereinafter called the "ENGINEER", shall be in accordance with our Master Services Agreement and as described herein.

Purpose

This Work Order authorizes and directs the ENGINEER to proceed in providing to the OWNER Construction Phase services for **the addition of emergency power generation at the Auxiliary Raw Water Intake.**

Project Understanding

The OWNER recently took bids for the addition of emergency power generation at the Auxiliary Raw Water Intake. This project is for the Construction Administration services associated with the installation of this generator.

Engineer's Scope of Services

The Construction Administration functions will include conducting a pre-construction conference, issuing a Notice-to-Proceed, reviewing all shop drawings, reviewing all monthly payment requests and change order requests from the contractor, answering questions regarding the Construction Drawings and Contract Documents, providing Record drawings, and making a final inspection for the project close-out. Record drawing information will be provided to the OWNER based on mark-ups provided by the Contractor or the Resident Project Representative.

This scope also includes limited integration support to the Contractor and to Owner. It is understood that Engineer will coordinate with Contractor to ensure that sufficient wiring is provided to relay applicable signals from the generator and transfer switch into the building, but that Owner's personnel will make all terminations and integrate the data into the existing SCADA system.

Time of Completion

The Contract Documents indicate that the project will be complete 300 days from Notice to Proceed. It is understood that our services will be complete within 30 days of Final Completion for the construction project.

Resident Project Representative

Should the OWNER require resident project representative services for this project, ENGINEER will provide a representative under the terms established in the Master Services Agreement. OWNER will authorize use of resident project representative services in writing before any work is performed.

Deliverables

ENGINEER will deliver to the OWNER the following:

- One (1) compact disc copy of the Record drawings.

Compensation

The Compensation will be in accordance with the attached Engineering Cost Breakdown and has been broken down as follows for the various services:

Design and Construction Administration:	Hourly with a Not-to-Exceed Price of \$20,760.00
Resident Project Representative:	At current rate in Master Services Agreement – currently \$85 per hour (if authorized). RPR estimated hours have not been included in the Not-to-Exceed Price.
Outside Plotting and Printing:	Reimbursable at cost
Out of Town Travel:	Reimbursable at cost

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on this, the

_____ day of _____ 2016.

SMITH SECKMAN REID, INC.

WITNESS

By: _____

By: _____

Title: Principal _____

Title: _____

CITY OF MURFREESBORO

WITNESS

By: _____

By: _____

Title: _____

Title: _____

APPROVED AS TO FORM:

City of Murfreesboro Legal Department

Hourly Rate			TOTAL	Summary								
				Project Director	Project Manager	Senior Engineer	Registered Engineer	Engineer Intern	Sr. Designer	Designer	Technician	Admin/ Clerical
				200	160	140	115	90	125	100	90	65
Task 5- Construction Oversight and Administration												
SubTask 5.1	Pre-Construction Conference		12	4	0	0	4	0	4	0	0	0
SubTask 5.2	Submittal Review		29	2	0	0	11	0	16	0	0	0
SubTask 5.3	Address Requests for Information		35	2	0	0	13	0	20	0	0	0
SubTask 5.4	Periodic Site Visits		9	0	0	0	9	0	0	0	0	0
SubTask 5.5	Monthly Meeting Attendance		40	8	0	0	16	0	16	0	0	0
SubTask 5.6	Monthly Project Management/ Pay Requests		4	0	0	0	4	0	0	0	0	0
SubTask 5.7	Evaluate/Coordinate Change Order Requests		4	0	0	0	4	0	0	0	0	0
SubTask 5.8	Resident Project Representative		0	0	0	0	0	0	0	0	0	0
Task 5 Subtotal Hours			133	16	0	0	61	0	56	0	0	0
Task5 Subtotal Cost			\$17,215	\$3,200	\$0	\$0	\$7,015	\$0	\$7,000	\$0	\$0	\$0
Task 6- Project Startup and Commissioning												
SubTask 6.1	Operation and Maintenance Manuals		0	0	0	0	0	0	0	0	0	0
SubTask 6.2	Standard Operating Procedure Development		0	0	0	0	0	0	0	0	0	0
SubTask 6.3	System Commissioning and Acceptance		12	4	0	0	4	0	4	0	0	0
SubTask 6.4	Efficiency Monitoring and Documentation		0	0	0	0	0	0	0	0	0	0
SubTask 6.5	Contract Closeout		6	0	0	0	6	0	0	0	0	0
SubTask 6.6	One Year Warranty Inspection		0	0	0	0	0	0	0	0	0	0
SubTask 6.7	Record Drawings		9	0	0	0	3	0	6	0	0	0
Task 6 Subtotal Hours			27	4	0	0	13	0	10	0	0	0
Task 6 Subtotal Cost			\$3,545	\$800	\$0	\$0	\$1,495	\$0	\$1,250	\$0	\$0	\$0
LABOR HOURS			160	20	0	0	74	0	66	0	0	0
LABOR COST			\$20,760	\$4,000	\$0	\$0	\$8,510	\$0	\$8,250	\$0	\$0	\$0



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MEMORANDUM

DATE: September 21, 2016
TO: Water and Sewer Board
FROM: Valerie Smith
SUBJECT: TDOT – Bradyville Pike
Roadway Widening
S.E. Broad Street to Rutherford Boulevard

Background

In 2013 the Department received Preliminary Field Review plans and notice that the Tennessee Department of Transportation (TDOT) was going to be re-constructing a large portion of Bradyville Pike. The limits of construction are from S.E. Broad Street to Rutherford Boulevard. The project is now in the final design stage and right of way acquisition should begin soon.

As with all roadway improvements staff considers these projects as ideal opportunities for making improvements to the water and sewer systems. We intend to replace all and upsize portions the existing water mains within the project limits as they are cast iron and were installed between 1960 and 1974. With regard to the sewer mains, there is an existing 18” interceptor along this stretch as well as smaller collector sewer mains. Staff will be reviewing the integrity of the interceptor as well as the collector lines to determine whether they should be completely reconstructed within the project limits or rehabilitated. There may also be some conflicts with proposed storm drainage that may require relocation.

Currently Neel Schaffer, Inc. (N/S) is the design engineer for the roadway and is contracted with the City. The Department would like for N/S to design the above mentioned improvements, because of their familiarity with the project and with fulfilling TDOT requirements. It is anticipated that this work would be included in TDOT’s project for bid and constructed through their contract. Attached is the proposal from N/S for the design, permitting and bidding assistance in the amount of \$62,000. Construction Administration scope of services hasn’t been determined and will be brought back before the Board for approval. Also, once the construction scope is determined and a construction cost estimate prepared, the estimate will be brought back to the Board for their information.

Recommendation

Staff would request the Water and Sewer Board recommend to Council approval of the engineering design, contingent upon the Legal Department’s approval of the contract, to N/S in an amount not to exceed \$62,000.

Fiscal Impact

This project was included in the Department's FY16-20 Capital Improvement Plan (CIP). \$500,000 was programmed in for each year of 2016/2017 & 2017/2018. Based on the Board approved recommendations of the 2007 Financial Conditions Assessment prepared by Smith Seckman Reid, all water and sewer improvements associated with new roadway or roadway improvements in the City would be funded from the Department's working capital reserves account. It is therefore recommended that the design costs for this project come from working capital account. The future fiscal impact associated with the construction costs associated with utility improvements at this intersection will be brought back before the Board for approval.

Attachments

Engineering Proposal from Neel Schaffer
GIS Exhibit

**Engineering Services Proposal
for
BRADYVILLE PIKE
WATER AND SEWER IMPROVEMENTS
City of Murfreesboro, Tennessee**

September 20, 2016

PROJECT DESCRIPTION

Design will consist of replacing the existing water main located on Bradyville Pike between Southeast Broad Street and South Rutherford Drive and the relocation of existing sewer line where conflicts occur with the proposed storm sewer. Specific connections, valves, hydrants, and quantities of sewer pipe relocations will be determined during a review of proposed road widening plans.

SCOPE OF SERVICES

The proposed engineering services for the project described above will include the following:

- Prepare construction plans for the proposed improvements;
- Coordinate the preparation of permitting packages for submittal to the necessary regulatory agencies and authorities with jurisdiction over the project area;
- Coordinate with preparation of documents required for a TDOT Move-in-State Contract.
- Providing bidding and awarding assistance for the proposed improvements;

The aforementioned tasks are described in further detail below. A preliminary water and wastewater improvements project schedule is attached to this proposal.

Task 1: Preliminary Design

Neel-Schaffer will utilize the existing topographic and utility location survey performed by Adams and Company, LLC, on January 24, 2013 for the design of the Bradyville Pike (SR-99) road widening project. The survey will be used for the purpose of establishing controls and preparing a map to be used as the basis of design for the proposed improvements. The survey includes the location of all elements usual and customary for a topographical survey. Horizontal control will be NAD83(1995) coordinate system and the vertical control will be NAVD88.

Neel-Schaffer will review existing record drawing information and the field survey for use in developing a preliminary layout of the proposed improvements. Following the preparation of the preliminary layout, representatives from Neel-Schaffer will attend preliminary planning meetings to discuss any desired changes.

Task 2: Design

Neel-Schaffer will prepare construction plans for the proposed improvements required to connect to the existing system. Construction plans will consist of a Cover Sheet, Existing Site Conditions, Plan and Profiles, and Erosion Control Plan and Details (if required) in accordance with the regulatory requirements established by the City of Murfreesboro and Tennessee Department of Environment and Conservation (TDEC). Neel-Schaffer will coordinate with the City of Murfreesboro to provide the required documents to TDOT for a move-in-State Contract. Documents include:

- TDOT Form 2013-16XLS Utility Estimate Spreadsheet
- Rainbow Drawings of Project
- Utility Item Spreadsheet
- Detailed Relocation Plans

Preliminary plans will be submitted to the City for review and approval at the following intervals:

- Preliminary Design (30%) Completion
- Intermediate Design (60%) Completion
- Substantial Design (90%) Completion
- Final Design (100%) Completion

Task 3: Permitting

Neel-Schaffer will coordinate the preparation of permitting packages for submittal to the necessary regulatory agencies and authorities with jurisdiction over the project area. Any required fees associated with the permitting of the project will be the responsibility of the City of Murfreesboro, but will be coordinated by Neel-Schaffer. Anticipated permits required are:

- TDEC Notice of Intent for General NPDES Permit for Stormwater Discharges from Construction Activities TNR10000 (Form CN-0940 (Rev. 7-14))
- TDOT Application and Utility Use and Occupancy Agreement (Form U-2 (February, 2003 (Revised)))

Task 4: Bidding Assistance

Neel-Schaffer will provide bidding and awarding assistance for the proposed improvements following the completion of the permitting and at the direction of the City. As part of this assistance, Neel-Schaffer will provide the following:

- Schedule and arrange for bid advertising (not required for TDOT Move-in-State Contract).
- Attend one pre-bid meeting.
- Receive and respond to contractor questions.

- Prepare and issue addenda as required.
- Attend the bid opening.
- Evaluate bids, prepare bid tabulation after receipt of bids and award project. (not required for TDOT Move-in-State Contract).
- Prepare Contract Documents and Drawings and package into Project Manuals after the contract has been awarded (not required for TDOT Move-in-State Contract).
- Provide hard copy sets of conformed documents to the Contractor, Inspector and Owner.

Task 5: Construction Administration

Neel-Schaffer will provide limited construction assistance during the construction phase of the project. The scope of these services will be developed following the completion of the design services.

Final Deliverables:

One CD w/PDF and CADD drawings of final plans

One loose set of specifications

Print and electronic cost estimate based on final bid quantities

CITY OF MURFREESBORO, TENNESSEE RESPONSIBILITIES AND ACTIVITIES

City of Murfreesboro, Tennessee will provide the following information or will perform the following activities:

1. Provide all available information they have of the area in the form of "as-built" drawings for related existing water mains, force mains, and gravity sewers for the project area.
2. Review of the Contract Documents at the 30%, 60%, 90%, and 100% design levels and submittal of review comments to the Engineer.

SCHEDULE

The services described above will be completed in accordance with the following summary.

1. Submittal of Contract Documents at 30% completion will be within 60 calendar days from Notice-to-Proceed.
2. Submittal of Contract Documents at 60% completion will be within 90 calendar days from Notice-to-Proceed.
3. Submittal of Contract Documents at 90% completion will be within 20 calendar days after receiving the City's review comments for the 60% plans.
4. Final Contract Documents will be submitted within 15 calendar days after receipt of City's review comments for the 90% plans.
5. Completion of Design Phase Services within 155 calendar days of Notice-to Proceed.

COMPENSATION

Compensation to the Engineer for services performed under this fee proposal will be lump sum not to exceed as described. The design, permitting, and bidding assistance shall not exceed the lump sum amount without prior written approval. The total amount to be paid to the Engineer as compensation for design engineering services is \$62,000.00.

Compensation for construction administration shall be developed following completion of design engineering services. Compensation for construction administration shall be an hourly not to exceed amount per hourly rates as listed in Attachment A.

EXHIBIT A
NEEL-SCHAFFER, INC.
2016 SPECIAL RATE SCHEDULE FOR PROFESSIONAL SERVICES
FOR CITY OF MURFREESBORO, TENNESSEE

Employee Classification	Position	Hourly Rate
P-8	Senior Manager / Vice President	\$200.00
P-7	Engineer Manager/Professional IV/Survey Manager	\$170.00
P-6	Senior Project Manager/Assistant Engineer Manager/Professional III	\$150.00
P-5	Project Manager/Professional II	\$125.00
P-4	Professional I	\$110.00
P-1, P-2, P-3	Professional Intern	\$95.00
T-6	Senior Certified Engineering Technician/Client Manager	\$130.00
T-5	Certified Engineering Technician/Supervisory Technician	\$115.00
T-4	Technician IV/ Inspector IV/ Surveyor IV	\$110.00*
T-3	Technician III/Inspector III//Survey Crew Chief	\$80.00*
T-2	Technician II/Inspector II/Survey Instrument Person	\$70.00*
T-1	Technician I/Inspector I/Survey Assistant	\$58.00*
T-1	Student Intern	\$40.00*
A-4	Senior Administrative	\$65.00
A-2, A-3	Clerical	\$55.00*
A-1	Assistant Clerical	\$40.00*
	Four-Member Survey Party	\$170.00*
	Three-Member Survey Party	\$145.00*
	Two-Member Survey Party	\$128.00*
	One-Member Survey Party	\$80.00*

* Hourly rates indicated for these non-exempt classifications apply to regular time. If overtime work is required to meet client's schedule, Neel-Schaffer reserves the right to negotiate overtime rates.

"Professional" positions include engineer, architect, geologist, scientist, landscape architect, and planner.

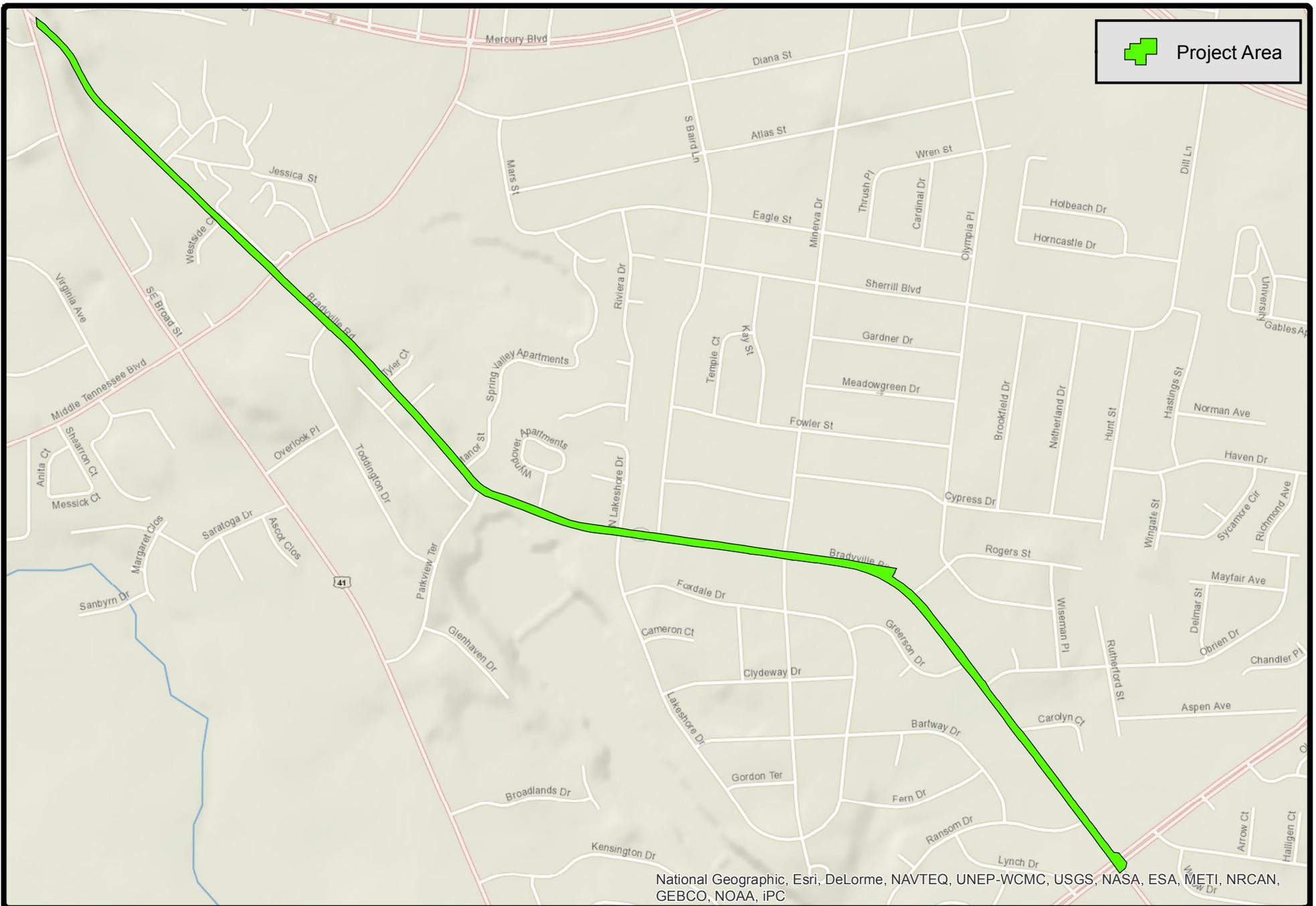
"Technician" positions include engineering, soil, architecture, planning, GIS and information technology.

REIMBURSABLE EXPENSE SCHEDULE

EXPENSE	COST
Vehicle Mileage	\$0.46/mile
Traffic Counter	\$10.00/day

All other expenses, including contract reproduction/printing, travel and subsistence, parking, communications, equipment rental, postage and overnight mail, and supplies will be reimbursed at actual cost.

Use State or Federal Rates for mileage, travel and subsistence where necessary and/or required.



National Geographic, Esri, DeLorme, NAVTEQ, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, IPC



SCALE: 1" = 1,000'

MURFREESBORO WATER AND SEWER DEPARTMENT
Bradyville Pike Improvements





... creating a better quality of life

MEMORANDUM

DATE: September 21, 2016
TO: Water and Sewer Board
FROM: Valerie Smith
SUBJECT: Sanitary Sewer Master Plan
Cherry Lane Extension
Memorial Boulevard to NW Broad Street

Background

The City in conjunction with the Tennessee Department of Transportation (TDOT) are in the early stages of design for the extension of Cherry Lane. The alignment has been set and they are ready to schedule a public meeting late October early November 2016. The extension would be from Cherry Lane, at the western end previously widened, at Memorial Boulevard to N.W. Broad Street. I have attached exhibits of the alignment. Once the public meetings are complete, TDOT and the City will be ready to move forward with the land acquisition. The schedule for bidding the project will depend on the amount of time for the acquisition, but could be as early as spring of 2018.

Currently Wisser Company (Wisser) is contracted with TDOT for the design of the roadway. Staff has request a proposal from Wisser to study the area around the alignment to develop a Sanitary Sewer Master Plan (Plan). Staff chose Wisser because of their familiarity with the project and with our sewer system. Once the Plan is accepted, staff will better understand what sewer infrastructure will need to be built with the extension. Attached is the proposal from Wisser for the development of the Plan in the amount of \$17,000.

Recommendation

Staff would request the Water and Sewer Board recommend to Council approval of the development of a Sanitary Sewer Master Plan, to Wisser in an amount not to exceed \$17,000.

Fiscal Impact

The Cherry Lane Repurified Water Main Extension project was included in the Department's FY16-20 CIP summary. \$825,000 was programmed in for year 2016/2017 & \$1M for year 2017/2018. Staff recommends this study be funded from the Department's working capital reserves account. The future fiscal impact associated with the sewer construction costs for the roadway extension will be brought back before the Board for approval.

Attachments

Engineering Proposal from Wisser
Roadway Alignment Exhibits



Wiser Consultants, LLC
1427 Kensington Square Court
Murfreesboro, Tennessee 37130

www.wiserconsultants.com
p. 615-278-1500
f. 615-217-8130

September 21, 2016

Valerie Smith, PE
Murfreesboro Water and Sewer Department
300 NW Broad Street
Murfreesboro, Tennessee 37130

**RE: Sanitary Sewer Study Related to the Cherry Lane Extension
Murfreesboro, Tennessee**

Dear Mrs. Smith,

Wiser Consultants is pleased to submit to you our scope of work for professional services to study and design for the future needs assessment for sanitary sewer construction in conjunction with the development of the Cherry Lane corridor located in Northwest corridor of Murfreesboro. The purpose of the study will be utilized by the Murfreesboro Water and Sewer Department (MWSD) for the development of a Sanitary Sewer Master Plan within the Cherry Lane Extension corridor.

Project Understanding

The City of Murfreesboro is currently in the design phase for the extension of Cherry Lane. The Cherry Lane corridor has been separated into three (3) different phases. Phase 1 consists of the existing widened Cherry Lane from US231/Memorial Blvd. to the tie-in of Cherry Lane back into the existing 2 lane section. Phase 2 picks up at the tie-in along existing Cherry Lane and travels westward to Sulphur Springs Road. Phase 3 begins up at Sulphur Springs Road and travels west and southwest ultimately terminating at Murfreesboro Road/US41A. MWSD seeks to prepare a sanitary sewer master plan for this corridor that will review the existing subdivisions currently located within the corridor, as well as evaluate future development plans for this area in order to determine what sanitary sewer services and infrastructure may be required when Cherry Lane is constructed.

Scope of Services

Wiser proposes to provide Study Phase services associated with the preparation of the Master Plan. Those services will include the following individual tasks and sub-tasks:

Tasks

- 1.1** Develop a summary of the current subdivisions and sanitary sewer infrastructure located within each phase of Cherry Lane.
 - Review existing GIS maps and obtain information from Rutherford County in regards to the sanitary sewer infrastructure located in the existing subdivisions and within the corridor.
 - Review MWSD subbasin and 201 plan as well as zoning maps within the corridor.
 - Identify any future subdivisions that are currently known in order to determine what services may be required.
 - Identify existing pump stations, force mains, and gravity sewer within the corridor.

- 1.2** Develop future infrastructure requirements/needs for each phase of Cherry Lane and how that corresponds to the MWSD subbasins.
 - Develop routes and alignments for gravity sewer and force mains.

- Identify how existing subdivisions will be served should their existing system fail.
- Develop cost estimates for the proposed infrastructure improvements.

1.3 Attend two (2) meetings with MWSD to discuss findings and options

1.4 Prepare the Cherry Lane Sanitary Sewer Master Plan Report

- Prepare a draft report and exhibits summarizing the analysis and results of the project.
- Upon review of the draft report and comments from MWSD, prepare a final report.
- Provide a presentation for the MWSD Board (if required).

At the end of the study, Wisser will coordinate with MWSD as to when the development of construction plan sets and specifications for the proposed infrastructure improvements will commence. These plans would include the development of preliminary and final construction plans, cost estimates and specifications for each project.

Compensation and Fees

We propose to accomplish this scope of work on a Lump Sum Not to Exceed basis in the amount of **\$17,000.00**.

Task 1.1 (25%)	\$4,250.00
Task 1.2 (40%)	\$6,800.00
Task 1.3 (15%)	\$2,550.00
Task 1.4 (20%)	\$3,400.00
Total	\$17,000.00

We are available to begin work upon notice to proceed from the City of Murfreesboro.

As always, Wisser Consultants looks forward to working with you and your staff on this project.

Sincerely,

WISER CONSULTANTS, LLC

Kyle M. Peters, PE
Vice President

Attachments: Cherry Lane Sewer Exhibits





Wiser Consultants, LLC
1427 Kensington Square Court
Murfreesboro, Tennessee 37130

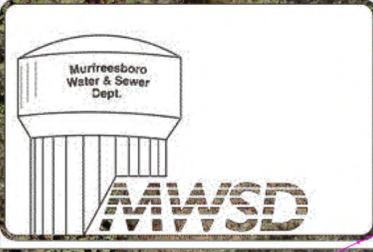
www.wiserconsultants.com

p. 615-278-1500

o. 615-207-8130

The scope of work for the Study Phase will be as follows:

- Review existing infrastructure and subdivisions within the corridor
- Determine existing and future areas that can be serviced by:
 - Gravity sanitary sewer
 - Sanitary sewer force main
 - Use of pump stations and grinder pumps
 - Identify areas where STEP systems may be required
- Prepare a preliminary report for review by MWSD
- Attend two (2) meeting with MWSD to discuss report and options
- Presentation of various options for infrastructure for sewer service within the corridor
- Prepare a Final Report consisting of recommendations, options, proposed cost estimates, and exhibits for guidance in the future planning efforts of MWSD.



CHERRY LANE PROPOSED FORCE MAIN AND SANITARY SEWER LAYOUT



PROP
PUMP STA

GRAVITY
LINE "A"

CHERRY LANE

GRAVITY
LINE "B"

EXIST
PUMP STA.

FORCE
MAIN "A"

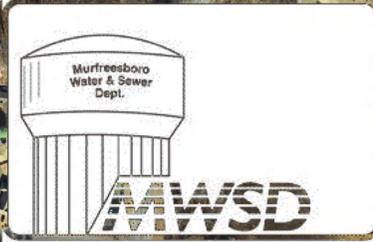
GRAVITY
LINE "C"

(HWY 41, HWY 70)

SR-840



CHERRY LANE
PROPOSED FORCE MAIN
AND
SANITARY SEWER LAYOUT





CHERRY LANE
PROPOSED FORCE MAIN
AND
SANITARY SEWER LAYOUT



MINUTES
MURFREESBORO WATER AND SEWER BOARD
August 23, 2016

The Murfreesboro Water and Sewer Board met on Tuesday, August 23, 2016 in the conference room 4at the Operations and Maintenance Building, 1725 S. Church Street. Present at the meeting were Board members: Mr. John Sant Amour, Mr. Ron Crabtree, Mr. Brian Kidd, Ms. Sandra Trail, and Dr. Al Carter. Also present were Darren Gore, Valerie Smith, Michele Pinkston, Craig Tindall, Doug Swann, Steve Tate, Terry Taylor, Donald Hughes, John Strickland, Randy McCullough, Alison McGee, Steve Huffman, Mike Bernard, and Kenny Diehl, along with other members of the public.

The Consent Agenda was presented for the following considerations:

A. Consider a revision to the CUD Water Service Boundary –

For this additional revision to Amendment #5, there are five properties to consider. The properties surround the Trustpoint Hospital located at 1009 N. Thompson Lane, which is a current Murfreesboro Water & Sewer Department (MWSD) customer. Trustpoint is in the process of designing an expansion and would like for the entire campus to be served by MWSD. The five properties are within Consolidated Utility District's (CUD) water service area. Consolidated Utility District's Board has approved this revision to the boundary at the July Board meeting.

An amendment document will be prepared, and these changes will be considered a part of Amendment #5 to the boundary.

Staff recommended the Board recommend to City Council approval of the revisions to the CUD/MWSD boundary and the Mayor executing an amendment to the Water Service Boundary.

Water connection fees for the Trustpoint Hospital expansion will be based upon the type and size of expansion.

B. Consider precast manhole structures contract renewal –

On July 11, 2013, bids were opened at Operations and Maintenance to provide precast manhole structures to the Murfreesboro Water and Sewer Department. Two vendors submitted bids and Sherman Dixie was the lowest bidder and awarded the contract.

Staff recommended extending the contract for precast manhole structures to Sherman Dixie Concrete Industries for an additional two years. Sherman Dixie is reliable and can quickly construct made to order manholes. This will be the fifth and final extension to the original contract.

The Operations and Maintenance Division uses approximately 20 precast manhole structures on sewer projects each year. Staff estimates costs for FY '17 to be approximately \$15,000.

C. Consider vehicle purchases for SRWTP –

There are two vehicles approved in the MWSD FY 2016-2017 capital budget for the Stones River Water Treatment Plant. One vehicle is to replace Unit 14 for the Instrumentation and Control Technician; one is to replace Unit 29 for Maintenance. There is one vehicle approved in the MWSD FY 2016-2017 capital budget for the Sinking Creek Treatment Plant. This vehicle is for the Instrumentation and Control Technician and will replace Unit 38.

Staff has reviewed the available standing contracts and selected the most appropriate vehicles for its intended use. The details are as follows:

The three vehicles are from the State of Tennessee Statewide Contract 209, Contract Number 0000000000000000000050708 with Ford of Murfreesboro, Inc.

Qty	Item ID/Description	Cost	Budgeted
1	1 Ton Pickup, Full Size, Super Cab, 4WD	\$29,561.16	
1	Service Body	\$24,283.54	
Total		\$53,844.70	\$65,000

Qty	Item ID/Description	Unit Cost	Total	Budgeted
2	High Roof Cargo Van, 148" Wheelbase, Diesel Engine	\$33,999.36	\$67,998.72	
2	Electrical Contractor Package	\$4,351.30	\$8,702.60	
Grand Total			\$76,701.32	\$100,000

Staff recommended the Board recommend to City Council to approve purchase of the three vehicles in accordance with the existing contracts as identified with funding coming from the FY 2016-2017 budgeted capital account.

The cost for the referenced vehicles on the State of Tennessee Statewide Contract is in the amount of \$130,546.02. The total amount budgeted for these vehicles in the rate funded capital equipment for FY 2016-2017 is \$165,000.

D. Consider vehicle purchase for O&M –

On March 3, 2016, O&M opened bids to replace a single axle dump truck. The bid was awarded to Country Ford in the amount of \$87,981. O&M’s Budget for Fiscal Year 2017 includes the purchase of an additional dump truck to replace Unit 74. Country Ford has agreed to provide a new 2017 F-750 for the same contract price provided in March.

Paul Boyer, the Director of Purchasing, has reviewed the bid and documentation and supports staff’s recommendation to purchase from Country Ford.

Staff recommended the Board recommend to City Council to approve purchase of the referenced vehicle from Country Ford with funding coming from the FY 2016-2017 budgeted capital account.

The Collection & Sewer Rehab's Capital Budget FY 2017 includes a line item for \$95,000. The cost for the referenced vehicle is \$87,981 which is \$7,019 under budget.

E. Consider Department participation for sewer main extension for Kroger, Mercury Blvd. –

The Kroger is proposing to relocate from Middle Tennessee Boulevard and rebuild along Mercury Boulevard at Mercury Plaza. They are going to tear the center portion of the existing Mercury Plaza down and rebuild in the center. As part of the construction of the new building, they will have to relocate the existing utilities. This includes the 10" water and sewer mains along the rear of the property. With regard to the sewer main relocation, Perry Engineering, LLC (Perry), the project engineer proposed to set a manhole over the existing sewer main on the western side of the property. This is typically acceptable to staff; however, after reviewing the CCTV for this section of sewer, it was determined that the proposed manhole was going to be installed within the center of an existing sag in the main.

If this manhole were installed in this location, the Department would not ever be able to correct the problem with the incorrect grade in the sewer main, therefore staff requested the remainder of that section of sewer be relayed with this project to avoid future problems. Since this is not a typical request, and it is not the fault of the developer that the sag is in the line, staff agreed to bring a participation request before the Board for approval to pay for the cost of relaying the last 100 linear feet of sewer main.

Perry has submitted a request letter and cost estimate for the construction cost of relaying the 100 linear feet of sewer in the amount of \$11,500. This cost covers replacing 100 linear feet of 10" defective, clay sewer main with new coated ductile iron sewer main. This request doesn't fit our standard participation request requirements as listed below, but staff does feel that the request is fair.

A few points per the Department's participation policy, within our approved Policies, Procedures & General Design Requirements adopted in 2009 by the Board & Council are:

1. Prior to dedication and acceptance of the improvements by the City, the Developer requesting reimbursement must present to the City Council a detailed statement of the actual eligible costs and the City Council in its discretion may amend the agreement, and the reimbursement amount, to reflect the actual project costs.
2. Should a project be eligible for participation by the City due to upsizing of a water or sewer line, the Department reserves the right to publicly bid the project or the portion of the project eligible for participation.
3. Participation in the cost to upsize water and/or sewer lines shall be in accordance with established policies in effect. The Department or Developer can prepare a schedule of upsize participation, based on recent bid results or agreed upon unit pricing, which the Department and the Developer may accept in lieu of publicly bidding, subject to approval of the Water and Sewer Board and City Council.
4. The Department will only participate on that portion of sewer deeper than twelve (12) feet deep, if the sewer is upsized and if the material changes.
5. Sewer must extend to the limits of construction at strategic locations for future extension.

Staff recommended the Board recommend to City Council approval of paying for the replacement of the 100 linear feet of sewer main in the amount of \$11,500. The proposed funding is from the Department's working capital reserves.

F. Consider a proposal for geotechnical engineering services from TTL, Inc. for DeJarnette Lane Pump Station #13 Replacement –

TTL, Inc. submitted a proposal to perform geotechnical engineering services and materials testing during the proposed construction of the DeJarnette Lane PS #13 Replacement project. Included in this proposal is a construction testing estimate as well.

TTL has worked for the Department on several geotechnical and materials testing projects in the past and has always performed to the satisfaction of the Department. They are currently working for the Department on the Wastewater Treatment Plant Expansion Phase 4D. TTL estimated the \$13,500 based on time and materials and per the unit pricing in the construction testing schedule. Staff feels this proposal amount is in line for this project.

Staff recommended that the Board recommend to City Council awarding the geotechnical engineering services and materials testing associated with the construction of the DeJarnette Lane PS #13 Replacement to TTL in the amount of \$13,500.

This construction project has been programmed to come from into the Department's 5-year capital improvement plan with funding from working capital reserves.

G. Consider a proposal for engineering design services from SEC, Inc. for John Rice Boulevard Widening –

The City is moving forward with the design to reconstruct and widen John Rice Boulevard from Highway 96 to just north of Doe Drive. Typically the Department's policy is to replace and upgrade the existing water and sewer mains with new roadway reconstruction projects to avoid having old lines within a new road. However, the water and sewer mains along this stretch are adequate and fairly young so a full replacement is not necessary. What is necessary is to extend a few water stubs to properties so John Rice will not have to be open-cut for future development.

The City is under contract with SEC Engineering, Inc. (SEC) to design the roadway improvements and as matter of standard practice, staff has requested a proposal from SEC to design the water improvements.

SEC has provided their proposal on an hourly rate bases with a not to exceed amount of \$6,500.

Staff recommended the Board to recommend the City Council approve the proposal for engineering design services in the amount not to exceed \$6,500.

This project was not a planned project listed in the 5-year capital improvement plan. Once an estimate is prepared, the construction costs will be factored in. This project is proposed to be funded from working capital reserves.

H. Consider a proposal for engineering design services from Huddleston-Steele Engineering for St. Clair Street Improvements –

The City is moving forward with the design to reconstruct and widen St. Clair Street from North Walnut to Memorial Boulevard. Typically the Department's policy is to replace and upgrade the existing water and sewer mains with new roadway reconstruction projects to avoid having old lines within a new road. The water mains along this stretch are 10" and 12" cast iron lines installed in 1969. Staff will replace these old lines with new 12" ductile iron. The sewer main along this stretch is an 18" interceptor. The sewer system in this area has been reconfigured so Huddleston-Steele along with staff will be evaluating whether to replace this 18" with a smaller main.

The City is under contract with Huddleston-Steele Engineering, Inc. (H/S) to design the roadway improvements and as matter of standard practice, staff has requested a proposal from H/S to design the water and sewer improvements.

H/S has provided their proposal on an hourly rate bases with a not to exceed amount of \$9,000.

Staff recommended the Board to recommend the City Council approve the proposal for engineering design services in the amount not to exceed \$9,000.

This project was not a planned project listed in the 5-year capital improvement plan. Once an estimate is prepared, the construction costs will be factored in. This project is proposed to be funded from working capital reserves.

A motion was made by Dr. Carter to accept the Consent Agenda as presented and it was seconded by Sandra Trail. The Board voted unanimously to approve.

The August 2, 2016 Board Minutes were unanimously accepted as written.

The Board considered the crushed stone contract renewal.

On July 11, 2013, bids were opened at Operations and Maintenance to provide crushed stone to the Murfreesboro Water and Sewer Department. Hoover, Inc. was the only bidder.

Hoover, Inc. has been the Department's stone provider for many years, and they have been very reliable and dependable. Staff recommended extending the contract for 2 years. This will be fifth year and final extension to the original contract.

The Operations and Maintenance Division uses approximately 17,000 tons of crushed stone on various projects throughout the year. The estimated cost for FY'17 is \$165,000.

Sandra Trail made a motion to approve. Dr. Carter seconded. The motion unanimously passed.

The Board considered a request to release Invitations to Bid the Chiller System Replacement at Stones River Water Treatment Plant.

The Stones River Water Treatment Plant uses a chiller system in order to cool several areas throughout the facility. These areas include the high service building, high service VFD pumps, GAC room, operations laboratory, cross-connection offices, map room, file room, third floor training and break room, post treatment building, membrane building, and the membrane pump room. This system was installed during the expansion and put into service in 2008.

Since January 2016, the chiller unit has had 8 service repairs resulting in costs of over \$25,600. The most recent repairs occurred in the months of July and August at a cost of over \$7,000. As the result of these costly repairs over the course of eight months, staff recommended replacement of the chiller unit.

Staff did not anticipate the need to replace the chiller prior to early June 2016. Therefore, the chiller replacement was not included in the FY 2016/17 Capital Budget.

Staff recommended the Board to approve release of an invitation to bid for replacement and installation of the chiller system. Results of the bid will come before the Board at the September meeting.

The cost for replacement and installation of the chiller system is estimated to be \$100,000. Funding would come from working capital reserves.

Ron Crabtree made a motion to approve. Dr. Carter seconded. The motion unanimously passed.

The Board considered bids for auxiliary raw water intake standby generator.

In February of 2014, staff solicited quotes from Thompson Power to purchase standby generators for the raw water pump intake. At the time, staff believed the work may be done "in-house". However, based on the size and complexity of the project, staff recommended and the Board approved Smith Seckman and Reid (SSR) to design the installation in December of 2015. At that time, the budget from the working capital reserves was established as \$600,000 to pay for the generator along with the construction/installation costs.

Per the recommendation of SSR, bids were received on August 18, 2016. Four bidders submitted bids; the low bidder being John Bouchard and Sons, Inc. (JB&S). SSR recommends approving the referenced bid to JB&S and MWSD staff concurs. Staff has a standing contract with JB&S for several maintenance projects involving the water and wastewater plant along with several collection system pump station improvements and repairs. JB&S has performed exemplary on all of the work awarded them in the past two years.

Staff recommended the Board recommend to City Council awarding the Auxiliary Raw Water Intake Standby Generator contract to John Bouchard & Sons, Inc.

Funding of the low bid amount of \$480,000 is recommended to come from the Department's working capital reserves. This construction project has been programmed into the Department's 5-year capital improvement plan in the amount of \$600,000.

Sandra Trail made a motion to approve. Brian Kidd seconded. The motion unanimously passed.

The Board considered a Work Change Directive for Middle Tennessee Boulevard.

This project was originally bid June 2, 2015 and then rebid October 8, 2015. Jarrett Builders, Inc. was awarded the project by City Council at the November 19, 2015 meeting. The total water and sewer bid was in the amount of \$1,640,567.50.

At last month's meeting, a Work Change Directive was approved in the amount of \$32,320 for Jarrett Builders to replace the 8" sewer service with an 8" sewer main to the MTSU Alumni Gym.

With regard to the water construction, Jarrett Builders has completed the installation of the water main along Middle Tennessee Boulevard (MTB), however they still lack testing and chlorinating sections of this stretch. They have begun to tie the new water line along MTB over to the water lines along each side street and any large water lines and meters to the MTSU Buildings. In the original bid, staff received pricing for 6" and 8" Inserta Valves to assist in making these connections. This type of Valve assists Jarrett Builders and our Resident Inspector by allowing a valve to be inserted into the water line, without shutting the water line down and having numerous MTSU buildings and customers without water. This month, in the coordination meeting, it was determined that the MTSU Murphy Center cannot be without water during the day and it will be very difficult to shut the water off at night, tie the new line over to the old line, flush the lines as necessary and have the water turned back on by morning. Both Jarrett Builders and our Resident Inspector have requested to purchase an 8" Inserta Valve in order to keep from having to shut the water off to the Murphy Center.

Staff feels this a reasonable request. Jarrett has submitted a price in the amount of \$15,000 for this Valve.

Staff recommended that the Board recommend City Council approve the Work Change Directive for the 8" Inserta Valve for a total of \$15,000. This work will be added to a future Change Order for the project.

This project was funded from working capital reserves. Funds are available for this work change directive.

Brian Kidd made a motion to approve. Dr. Carter seconded. The motion unanimously passed.

The Board considered a proposal from Blue Margin, Inc. for Discovery and Master Planning to Implement Microsoft Power BI.

Staff requested approval to enter into a Discovery and Master Planning engagement with Blue Margin, Inc., involving assessment of the Murfreesboro Water and Sewer Department's (MWSD) current

data environment and our varied user-classes and use-cases. This engagement is expected to result in a Master Plan that includes a detailed Project Plan focusing on our Customer Information Service (CIS) and Financial Information System (FIS) reporting, utilizing Microsoft Power BI (Business Intelligence) software.

Blue Margin uses Microsoft's Power BI to help companies create "The Dashboard Effect", which puts performance metrics at top-of-mind, driving focus and productivity. Power BI connects to any data source (ERP, Google Analytics, Salesforce, SAGE, SQL, GP, Excel, Dynamics, etc.) and delivers real-time dashboards via computer, phone, or tablet. Blue Margin also helps clients get control of their data with data warehousing on Azure. The result is a single source of data that is secure, scalable, and easy to use.

The specific goals associated with Power BI align with MWSD's Effective Utility Management (EUM) attributes Enterprise Resiliency, Operational Optimization and Stakeholder Understanding and Support. Power BI is expected to improve operational visibility as well as increase operational efficiency and service to constituents. MWSD has numerous systems (e.g., AMI, CIS, Utility Billing, Financial, Kronos, SQL, COBOL, etc.) and needs a way to efficiently access key performance indicators (KPIs) in near real-time.

Staff requested Board approval to enter into an agreement with Blue Margin, Inc. for the described services. The City's Information Technology (IT) Department has purchased several Power BI developer licenses and believes they can accomplish the goals and objectives internally that MWSD has defined. Staff would like to afford the City's IT Department some time to attempt to develop these solutions "in-house", with Blue Margin, Inc. being a secondary option.

MWSD budgeted for an external consultant to perform phase 1 - discovery and phase 2 - implementation in the amount of \$50,000. The cost submitted by Blue Margin for Phase 1 is in the amount of \$14,725.

Sandra Trail made a motion to approve. Dr. Carter seconded. The motion unanimously passed.

Staff presented the Board a PowerPoint presentation of the summarized results of the 2015 AWWA Benchmarking Survey for review.

The survey attracted more participants this year at 163 utilities of which 98 are combined water/wastewater utilities. This is nearly double the number of combined utility respondents in the last survey.

The benchmarking survey results provide some positive reinforcement of many of our systems and practices. As such, our results in comparison to our peers define a utility that:

- manages revenue, debt, and cost of service very effectively (Financial Viability)
- has well trained employees (Employee and Leadership Development)
- is not at significant risk of institutional loss of knowledge and know-how through retirement (Enterprise Resiliency)

- provides reliable water and wastewater services with a minimum of disruptions or failure (Customer Satisfaction and Infrastructure Strategy and Performance)
- strictly complies with all applicable water and wastewater regulations regarding product quality and impact to the environment (Product Quality, Customer Satisfaction, and Community Sustainability)
- charges very affordable rates to its customers (Customer Satisfaction)
- has an adequate long term water supply (Water Resource Sustainability and Community Sustainability)

The survey results also illustrate some challenges for the Department as we move forward. Staff submitted that water loss is No. 1. In addition, the metrics for planned (preventive) maintenance in all areas (water treatment/distribution and wastewater treatment/collection) show us to be less proactive than our peers. While it is possible we understated our hours expended in this area, staff reported expending fewer resources in these areas as a result of prioritizing unplanned repairs and growth (e.g., new taps, and new construction, etc.)

MWSD's cost of service is comparatively low across the board, from water service to wastewater service to customer service, and it is reflected in our ability to charge very reasonable and affordable rates and still reserve funds every year. The largest factor in our cost of service is labor. Although the survey does not address labor rates, if it did, staff thinks it would be low compared to our peers. The benchmarking survey illustrates that we have a higher than average workforce based on the number of accounts, but we are still very affordable. MWSD does have a higher ratio compared to our peers of Operations personnel to Administrative personnel, which staff believes is a positive.

This presentation was for informational and discussion purposes only. No formal action was required by the Board.

Under Other Business, the Board considered contingency allocations for Sinking Creek WWTP Phase 4D.

The Department received bids for the Sinking Creek Plant Expansion Phase 4D on January 8, 2015 and the Board approved to award the project to 3D Enterprises the contract in the amount of \$30,472,000. As part of the referenced project, Item #4 within Schedule C of the Construction Contract is a contingency allowance of \$500,000.

The change control log identifies the recent allowance allocation issued through field work change directives. These work change directives do not change the contract price, only adjust the remaining balance of the contingency allowance. The final contract price will be adjusted accordingly in a future change order or a final balancing change order at the end of the project.

The following table is provided to update the Board on the current field work change directives and the remaining contingency allowances. Per SSR's letter of explanation, the estimated amount for CCF #27

is \$10,000. The actual amount of the work will be calculated based on time and materials and a final amount will be brought back to the Board for final approval and adjustment of the Remaining Contingency Allowance.

Project	Contingency Allowance	Prior Contingency Allocations	Current Contingency Allocations	Remaining Contingency Allowance
Phase 4D Expansion	\$500,000	\$213,387.00**	\$ 10,000 *	\$276,613.00

*CCF # - 27 (Estimated) (Current)

**CCF #'s (1 Rev. 2, 2, 5-9, 11-13, 17-26 (previously approved) (cumulative)

Staff recommended the referenced estimated contingency allocation for the Phase 4D Expansion be authorized. A final contract amount accounting for all contingency items will be brought to the Board and City Council for approval in a final balancing change order.

There is no fiscal impact at this time to the Department’s State Revolving Fund (SRF) loan, as the contingency allowance has been approved within the contract and the contract amount remains unaffected.

Sandra Trail made a motion to approve. Brian Kidd seconded. The motion unanimously passed.

The Board considered purchase of a vehicle for the Meter Reading Department.

Vehicle #63 is a 2007 Ford F150. The vehicle has 127,888 miles and is used in the Meter Reading Department. It will be moved to become the spare vehicle, replacing unit #49 a 2006 GMC Pickup 1500 with 182,938 miles. This vehicle could be sold or given to another department.

Staff recommended the purchase of a 2017 Ford 150 for the Meter Reading Department. The new vehicle will be purchased from Country Ford per the Murfreesboro Police Department bids. A vehicle replacement request form was sent to the Fleet Department and approved by Jack Hyatt.

A total of \$23,989 is in the FY17 Capital Expenditure Budget which has been approved by the MWSD Board and City Council. The amount budgeted for the vehicle itself was \$19,289. An additional \$4,700 was budgeted for accessories (lights, tool box, bed cover etc.). With accessories of \$4,700, the total cost is expected to be \$23,989.

Brian Kidd made a motion to approve. Dr. Carter seconded. The motion unanimously passed.

The Board considered purchase of extended cab trucks for Engineering Inspection and Stormwater.

In the Fiscal Year 2016-2017 approved Stormwater and Water & Sewer Budgets, it was approved for (1 each) 4x4 Extended Cab truck purchase for Engineering Inspection and Stormwater. These are to replace 1999 and 2006 existing trucks that have 125,000 plus miles.

Currently most all the inspectors have Ford F-150 extended cab trucks and they have worked out nicely. There is enough room in the back seat to keep their construction drawings with them, but also enough space in the back of the truck for the day to day equipment. Per the City’s Police Department vehicle bid the dealer for this particular Ford truck is the Country Ford Dealership in Mississippi. They do

not have a truck available on the lot that meets our requirements and is within the budgeted amount therefore the truck will be ordered. Staff would like to move forward with the purchase because the City's contract will expire at the end of August and the timing for any new bids and contracts for vehicle purchases is unknown.

Staff recommended the purchase of the vehicles off the Police Department's bid and requested the Board to recommend approval from the City Council.

The 2015-2016 budget for these vehicle purchases was \$26,000 each under rate funded capital. A verbal quote has been received of \$24,495 each for the referenced vehicles. If the actual quote comes in substantially more than the \$26,000 budgeted, the new quote will be taken to Council for approval if the Board approves.

Dr. Carter made a motion to approve. Sandra Trail seconded. The motion unanimously passed.

Staff presented the Board the Director's Executive Summary Reflecting Back on FY15-16 and Anticipating Things to Come in FY16-17.

Since August of 2013, the Director has been publishing an Executive Summary that reviews the Departments accomplishments achieved in the previous fiscal year and attempts to forecast anticipated achievements in the upcoming year.

This summary effectively "tracks" progress from year to year and ensures that the Department is intentional in moving forward with defined goals and objectives.

Staff presented and discussed the Water and Sewer Dashboard Performance for July 2016.

Staff and the Board congratulated Terry Taylor on his upcoming retirement and expressed appreciation for his years of service with the Murfreesboro Water and Sewer Department.

Staff informed the Board the Department received an award at the Water Professionals Conference for pretreatment excellence recognizing outstanding management and execution of the program by not having any violations in the past 5 years from the State.

There being no further business, the meeting was adjourned.

John Sant Amour, Chairman



... creating a better quality of life

MEMORANDUM

DATE: September 21, 2016

TO: Water and Sewer Board

FROM: Valerie H. Smith

RE: Department Participation
Sewer Main Extension
Springfield Luxury Apartments

Background

At the April Board meeting, staff brought a sewer participation request for the Lancaster Christian Daycare, which is proposing to build along Manson Pike next to the Overall Creek Interceptor Sewer. This development was first in line to connect to the existing interceptor sewer along Overall Creek. The Board approved the sewer participation to install a larger and deeper sewer main in order to serve the area shown on the attached Sub-basin Area Master Plan (SAMP). The extension through Lancaster Daycare was a second alternative route consistent with the SAMP.

The Springfield Luxury Apartments are along this same route and will extend the larger and deeper line through their site to the west in order to be able to continue moving toward the SAMP.

A few points per the Department's participation policy, within our approved Policies, Procedures & General Design Requirements adopted in 2009 by the Board & Council are:

1. Prior to dedication and acceptance of the improvements by the City, the Developer requesting reimbursement must present to the City Council a detailed statement of the actual eligible costs and the City Council in its discretion may amend the agreement, and the reimbursement amount, to reflect the actual project costs.
2. Should a project be eligible for participation by the City due to upsizing of a water or sewer line, the Department reserves the right to publicly bid the project or the portion of the project eligible for participation.
3. Participation in the cost to upsize water and/or sewer lines shall be in accordance with established policies in effect. The Department or Developer can prepare a schedule of upsize participation, based on recent bid results or agreed upon unit pricing, which the Department and the Developer may accept in lieu of publicly bidding, subject to approval of the Water and Sewer Board and City Council.
4. The Department will only participate on that portion of sewer deeper than twelve (12) feet deep, if the sewer is upsized and if the material changes.
5. Sewer must extend to the limits of construction at strategic locations for future extension.

Water and Sewer Department

300 NW Broad Street * P.O. Box 1477 * Murfreesboro, TN 37133-1477 * Office: 615 890 0862 * Fax: 615 896 4259
TTY 615 848 3214 * www.murfreesborotn.gov

To determine the Department participation amount, Bill Huddleston, with Huddleston Steele Engineering, Inc., has prepared an estimate for the cost associated with the extra depth of sewer “over” twelve (12) feet to include the material invoice cost associated with upsizing and the change in pipe material from eight (8) inch to twelve (12) inch and ductile iron pipe (DIP) respectively.

The estimated amount of the extra depth and increase in size is \$45,813.00 and is also the Department’s participation amount to the Developer.

Recommendation

Staff recommends the Board recommend to City Council approval of participating financially in this sanitary sewer extension requiring extra depth and size to serve future MWSD customers, as established through the Sub-basin Area Master Plan for this area. This approval is consistent with the Department’s adopted Policies and Procedures.

Fiscal Impact

The proposed funding is from the Department’s working capital reserves in the amount of \$45,813.00.

Attachments

Huddleston Steele Engineering Cost Estimate
GIS Exhibit of the SAMP

**HUDDLESTON-STEELE ENGINEERING, INC.
SPRINGFIELD LUXURY APARTMENTS
SEWER PARTICIPATION SUMMARY**

September 22, 2016

Participation for Sewer Over 12' Depth

133 L.F. 12" DIP (12'-23' Deep) @ \$240.00/FT =	\$31,920.00
133 L.F. 12" PVC (12' Deep) @ \$120.00/FT =	<u>- \$15,960.00</u>
Sub-Total:	\$15,960.00

Participation for Sewer Material & Size Increase (From Hayes Pipe Supply Quote)

133 L.F. 12" DIP @ \$43.93/FT =	\$5,842.69
133 L.F. 8" SDR 35 PVC @ \$3.25/FT =	<u>- \$432.25</u>
Sub-Total:	\$5,410.44
TOTAL	\$21,370.44

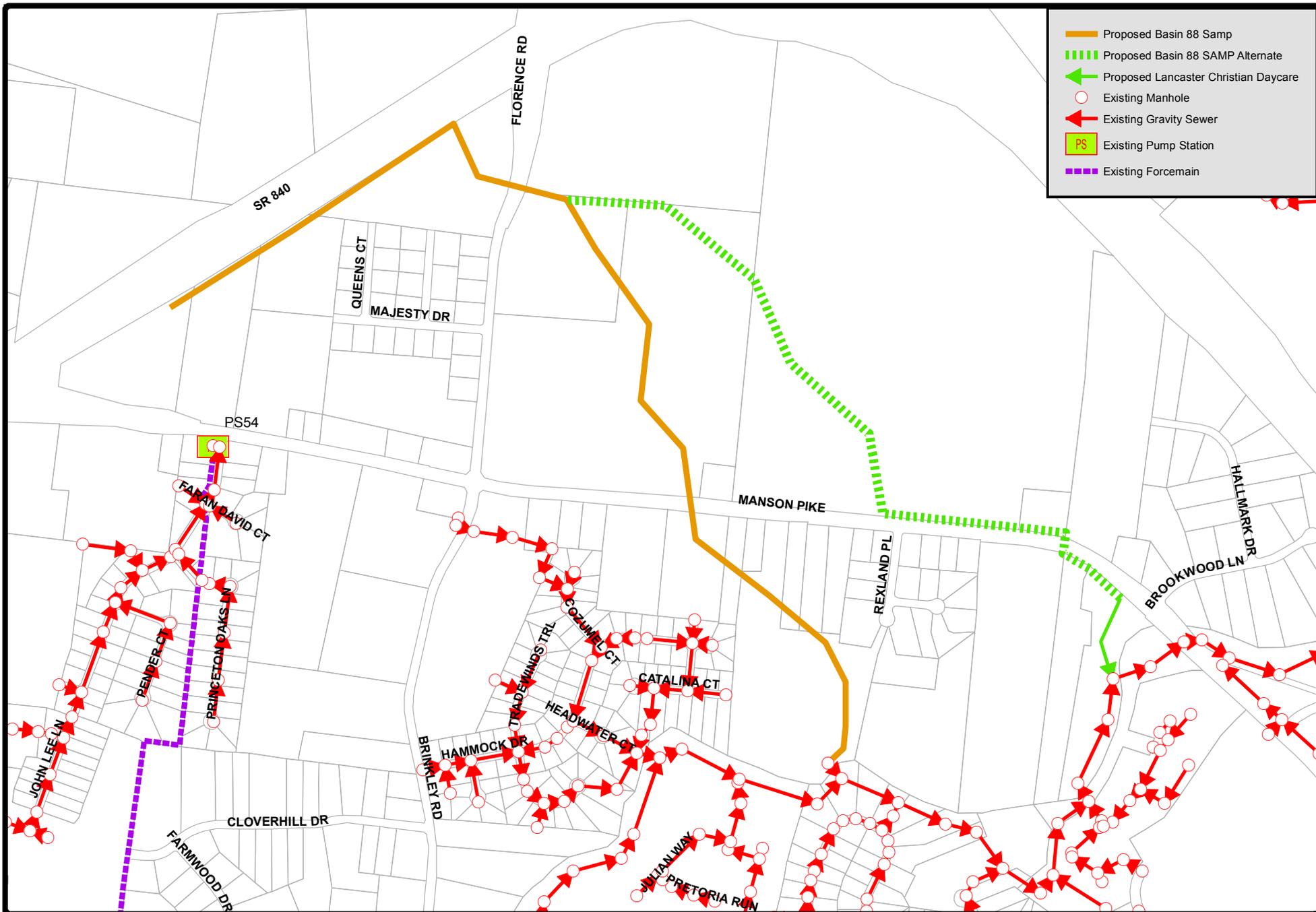
Participation for Sewer Over 12' Depth

181 L.F. 12" DIP (12'-23' Deep) @ \$240.00/FT =	\$43,440.00
181 L.F. 12" PVC (12' Deep) @ \$120.00/FT =	<u>- \$21,720.00</u>
Sub-Total:	\$21,720.00

Participation for Increased Sewer Size & Material (From Hayes Pipe Supply Quote)

181 L.F. 12" DIP @ \$43.93/FT =	\$7,951.33
181 L.F. 8" DIP @ \$28.89/FT =	<u>-\$5,229.09</u>
Sub-Total:	\$2,722.24
TOTAL	\$24,442.24

133 L.F. TOTAL	\$21,370.44
181 L.F. TOTAL	<u>\$24,442.24</u>
TOTAL COST OF PARTICIPATION	\$45,812.68



MURFREESBORO WATER AND SEWER DEPARTMENT

Sub-Basin Area Master Plan - Basin 88 Alternate Route

SCALE : 1" = 800'



April 2016
TAB



... creating a better quality of life

MEMORANDUM

DATE: September 20, 2016

TO: Water and Sewer Board

FROM: Alan Cranford

SUBJECT: Request Reserve Funds for Bar Screen, Pipe Gallery Leaks and Actuator Access
Stones River Water Treatment Plant

Background

River Bar Screen Issues: In December 2015, Staff noticed problems with the raw water bar screen at the river pump station located at the water treatment plant. As a result, Staff requested at the January Board meeting that \$3,273.00 from rate funded capital reserves be used to allow John Bouchard & Sons Co., currently under a contract with MWSD for Water/Wastewater System Mechanical/Electrical Services, to conduct an inspection of the raw water bar screen to determine the necessary repairs to get the bar screen properly working again. After JB&S and Evoqua personnel (Evoqua is the company that manufactures the equipment) conducted the inspection in April 2016, it was determined that the cost to repair the existing equipment installed in 1981 would be \$94,132.00. These repairs were to do the minimum to get the equipment operating and functioning. There would be no warranty on this work. Staff recommends that due to the cost of repairing a 35-year old bar screen, it would be better to replace it with a new bar screen.

Pipe Gallery Leaks: The treated water trough going from the pretreatment building to each of the five softening basins has a liner in it for basins #1-4. The reason the liner was installed during the expansion back in 2008 was that water was leaking into the pipe gallery and causing problems (electrical and mechanical). Prior to the expansion we had ABG Calking, who was awarded the work, to repair leaks by injecting urethane into the areas. This would work for a couple of years and then other leaks would reappear. It was decided that during the plant expansion we would use an approved liner. This liner worked for about six years. Then the leaks began to reappear. During the FY 2015/16 we had budgeted \$50,000 per year, for the next three years, to repair the leaks based upon discussion with several waterproofing companies. Then back in October 2015 we started trying to get these companies back out to assist in developing bid specs for repairs. By February 2016, all three companies had decided that they would not bid the repairs. As a result, Staff did not know how these problems could be addressed. It is for this reason that Staff would like SSR to recommend a method that would provide a more permanent repair to the leaks problems.

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Actuator Access: In the upper level of the pipe gallery there are 7 actuators pre GAC contactor. Generally, it is not required that Staff accesses these actuators on a regular basis for repairs. In late February 2016, however, 3 of the effluent actuators began to malfunction. At this time, Staff determined that accessing these actuators by ladder was very difficult and that repair, removal and replacement of the actuators would be dangerous. Staff researched various methods to access the actuators that would make it safe for Staff to repair, removal and replacement of the actuators. The best method Staff could determine was that a platform be designed to allow access from one of the pipe gallery walkways. Staff asked SSR to look at the problem and it was determined this would be the best method. The three actuators that are malfunctioning are going to be replaced in October. This will be a very difficult replacement and Staff request approval to allow SSR to design, bid and have a contractor install the platform for future incidents with GAC actuators.

Recommendations

Staff recommends the Water and Sewer Board recommends that the City Council approve the use of reserves to fund the three projects that became major costs were identified after the FY 2016/17 Capital Budget was approved.

Fiscal Impact

Staff and SSR are currently looking at ways to address each of the issue in order to provide a better estimate of the costs. These projects have been placed in the Department's 5-yr CIP; the best estimate at this time to complete all three projects is \$500,000. Adequate funds exist in reserves to pay for these improvements.



... creating a better quality of life

MEMORANDUM

DATE: September 20, 2016
TO: Water and Sewer Board
FROM: Alan Cranford
SUBJECT: Water Chiller Replacement and Installation - Stones River Water Treatment Plant

Background

The chiller system is used to cool several areas throughout the facility. These areas include the high service building, high service VFD pumps, GAC room, operations laboratory, cross-connection offices, map room, file room, third floor training and break room, post treatment building, membrane building, and the membrane pump room. Staff has identified a need to purchase and install a new chiller system due to service repairs on the current unit totaling over \$25,600.00 in less than one year and additional repairs of over \$15,000 that need to be made again at this time. Staff originally had estimated in the capital budget a replacement in FY 2021 but unforeseen failures have necessitated unit replacement at this time.

Staff recommended at the August Board meeting the release for invitations to bid for the replacement and installation for (1) chiller system. It was determined after this recommendation that the U.S. Communities Government Purchasing Alliance contained the chiller system needed for replacement at SRWTP. The scope of work includes removal of the existing Standard Efficiency McQuay Scroll compressor air cooled chiller and installation of a High Efficiency Trane Air Cooled Screw Compressor chiller; including factory start up and a five (5) year compressor warranty, one (1) year parts, labor and refrigerant whole unit warranty.

Staff has reviewed the available standing contracts and found this equipment on the U.S. Communities Government Purchasing Alliance contract pricing effective through September 30, 2018. The details are as follows:

The U.S. Communities Government Purchasing Alliance contract #15-JLP-023 is through Trane.

Qty	Item ID/Description	Cost
1	155-ton Trane Chiller	\$119,357.00
1	5-year Extended Parts & Labor Warranty	\$4,265.00
	Total Price	\$123,622.00

Recommendations

Staff recommends the Water and Sewer Board recommends that the City Council approve the replacement of the existing chiller with the purchase of a Trane 155-ton chiller from Trane U.S. Inc. in accordance with the U.S. Communities Government Purchasing Alliance USC 15-JLP-023.

Fiscal Impact

The cost for the referenced equipment on the U.S. Communities Government Purchasing Alliance is in the amount of \$123,622.00. Staff did not anticipate the need to replace the chiller prior to the FY 2016/17 Capital Budget. Funding would come from rate funded capital reserves.

Attachments

Trane Turnkey Proposal from US Communities Contract # is 15-JLP-023 dated September 20, 2016 with attached contract



Trane Turnkey Proposal



Turnkey Proposal For:

Alan Cranford
City of Murfreesboro, Water & Sewer
5528 Sam Jared Drive
Murfreesboro, TN 37130

Local Trane Office:

Trane U.S. Inc. dba Trane
601 Grassmere Park Drive, Suite 10
Nashville, TN 37211-3659

Local Trane Representative:

Brian Bolin
Account Manager
Office: (615) 242-0311

Proposal ID: 2166241

Quote Number: 13-359933-16-001

Co-op Contract Number: USC 15-JLP-023

Date: September 15, 2016





TRANE TURNKEY PROPOSAL

Executive Summary

Trane is pleased to present a solution to help Murfreesboro Water and Sewer each its performance goals and objectives. This proposed project will enhance your operation by helping you to optimize your resources, improve the comfort in your facility, and reduce energy costs.

We appreciate the effort to assist in the HVAC system analysis and business discussions. Because of your efforts, we were able to develop a proposal that offers Turnkey retrofit service solutions to your specific concerns, based on Trane system knowledge and application expertise.

As your partner, Trane is committed to providing Turnkey retrofit services to help achieve a comfortable building environment for the people who occupy the building. For the people who own, manage and maintain the building, Trane is committed to providing reliable HVAC systems and products that improve performance.

Trane appreciates the opportunity to earn your business. Your investment in the proposed project is \$. This investment will provide Murfreesboro Water and Sewer with the capability to significantly reduce operating costs and improve comfort conditions in your facility.

We look forward to partnering with Murfreesboro Water and Sewer for your Turnkey retrofits service needs. I will be contacting you soon to discuss the proposal and to schedule the next steps

WE VALUE THE CONFIDENCE YOU HAVE PLACED IN TRANE AND LOOK FORWARD TO PARTNERING WITH YOU.

Brian Bolin
Account Manager, Trane U.S. Inc. dba Trane





Prepared For:
City of Murfreesboro Water & Sewer

Date:
September 20, 2016

Job Name:
Murfreesboro Water Chiller Replacement

Proposal Number:
2166241

Delivery Terms:
Freight Allowed and Prepaid – F.O.B Factory

Payment Terms:
Net 30

State Contractor License Number:

Proposal Expiration Date:
30 Days

Scope of Work

“Scope of Work” and notations within are based on the following negotiated scope of work with and based on the site surveys performed on 9/1/2016.

Turnkey Installation Scope Summary

Removal of the existing McQuay Scroll compressor air cooled chiller and installation of a High Efficiency Trane Air Cooled Screw Compressor chiller; including factory start up and a five (5) year compressor warranty, one (1) year parts, labor and refrigerant whole unit warranty.

Mechanical Installation

- Provide and Install one (1) new Trane 155 ton High Efficiency RTA air cooled chiller
- Recover existing refrigerant and dispose of properly
- Disconnect existing chiller and piping as needed for removal
- Furnish Crane removal of existing chiller and setting of new one
- Fabricate and install new 4” piping from new chiller and connect to existing piping at closest point of connection to chilled water supply and return lines
- Insulate all new piping with 1-1/2” fiberglass insulation and cover with aluminum jacket
- Provide Trane factory start-up and commissioning of new units
- Unit Control includes BACnet interface

Electrical Installation

- Disconnect and Re-Connect existing electrical

Turnkey systems services not included

- Controls Integration
- Engineered drawings
- Heat Trace or any chilled water freeze protection

Proposal Notes/ Clarifications

- All work to be performed during normal business hours (8am to 5pm, M-F, non-holidays)
- Proposal does not include "Premium Time" or Price Contingency therefor
- Equipment Order Release and Services rendered are dependent on receipt of PO/Subcontract and credit approval
- Trane will not perform any work if working conditions could endanger or put at risk the safety of our employees or subcontractors
- Asbestos or hazardous material abatement removal shall be performed by customer



Pricing and Acceptance

City of Murfreesboro, Water & Sewer
5528 Sam Jared Drive
Murfreesboro, TN 37130

Price

Total Net Price\$119,357.00

Optional Add

Extended Parts & Labor Warranty.....\$4,265.00

**Trane offers a discounted five (5) year Preventative Maintenance program if done in conjunction with this proposal*

Financial items not included

- Bid Bond
- Payment and Performance Bond
- Guarantee of any energy, operational, or other savings

Respectfully submitted,

Brian Bolin
Account Manager
Trane U.S. Inc. dba Trane
(615) 242-0311



ACCEPTANCE

This proposal is subject to Customer's acceptance of the attached Trane Terms and Conditions (Installation).

We value the confidence you have placed in Trane and look forward to working with you.

Submitted By: Brian Bolin	Office: (615) 242-0311 Proposal Date: September 15, 2016
CUSTOMER ACCEPTANCE	TRANE ACCEPTANCE Trane U.S. Inc. dba Trane
Authorized Representative	Authorized Representative
Printed Name	Printed Name
Title	Title
Purchase Order	Signature Date
Acceptance Date:	License Number:



TERMS AND CONDITIONS – COMMERCIAL INSTALLATION

“Company” shall mean Trane U.S. Inc. dba Trane.

1. **Acceptance; Agreement.** These terms and conditions are an integral part of Company’s offer and form the basis of any agreement (the “Agreement”) resulting from Company’s proposal (the “Proposal”) for the commercial goods and/or services described (the “Work”). **COMPANY’S TERMS AND CONDITIONS ARE SUBJECT TO PERIODIC CHANGE OR AMENDMENT.** The Proposal is subject to acceptance in writing by the party to whom this offer is made or an authorized agent (“Customer”) delivered to Company within 30 days from the date of the Proposal. If Customer accepts the Proposal by placing an order, without the addition of any other terms and conditions of sale or any other modification, Customer’s order shall be deemed acceptance of the Proposal subject to Company’s terms and conditions. If Customer’s order is expressly conditioned upon Company’s acceptance or assent to terms and/or conditions other than those expressed herein, return of such order by Company with Company’s terms and conditions attached or referenced serves as Company’s notice of objection to Customer’s terms and as Company’s counter-offer to provide Work in accordance with the Proposal and the Company terms and conditions. If Customer does not reject or object in writing to Company within 10 days, Company’s counter-offer will be deemed accepted. Customer’s acceptance of the Work by Company will in any event constitute an acceptance by Customer of Company’s terms and conditions. This Agreement is subject to credit approval by Company. Upon disapproval of credit, Company may delay or suspend performance or, at its option, renegotiate prices and/or terms and conditions with Customer. If Company and Customer are unable to agree on such revisions, this Agreement shall be cancelled without any liability, other than Customer’s obligation to pay for Work rendered by Company to the date of cancellation.
2. **Pricing and Taxes.** Unless otherwise noted, the price in the Proposal includes standard ground transportation and, if required by law, all sales, consumer, use and similar taxes legally enacted as of the date hereof for equipment and material installed by Company. Tax exemption is contingent upon Customer furnishing appropriate certificates evidencing Customer’s tax exempt status. Company shall charge Customer additional costs for bonds agreed to be provided. Equipment sold on an uninstalled basis and any taxable labor/labour do not include sales tax and taxes will be added. Following acceptance without addition of any other terms and condition of sale or any other modification by Customer, the prices stated are firm provided that notification of release for immediate production and shipment is received at the factory not later than 3 months from order receipt. If such release is received later than 3 months from order receipt date, prices will be increased a straight 1% (not compounded) for each one-month period (or part thereof) beyond the 3 month firm price period up to the date of receipt of such release. If such release is not received within 6 months after date of order receipt, the prices are subject to renegotiation, or at Company’s option, the order will be cancelled. Any delay in shipment caused by Customer’s actions will subject prices to increase equal to the percentage increase in list prices during that period of delay and Company may charge Customer with incurred storage fees.
3. **Exclusions from Work.** Company’s obligation is limited to the Work as defined and does not include any modifications to the Work site under the Americans With Disabilities Act or any other law or building code(s). In no event shall Company be required to perform work Company reasonably believes is outside of the defined Work without a written change order signed by Customer and Company.
4. **Performance.** Company shall perform the Work in accordance with industry standards generally applicable in the area under similar circumstances as of the time Company performs the Work. Company may refuse to perform any Work where working conditions could endanger property or put at risk the safety of persons. Unless otherwise agreed to by Customer and Company, at Customer’s expense and before the Work begins, Customer will provide any necessary access platforms, catwalks to safely perform the Work in compliance with OSHA or state industrial safety regulations.
5. **Payment.** Customer shall pay Company’s invoices within net 30 days of invoice date. Company may invoice Customer for all equipment or material furnished, whether delivered to the installation site or to an off-site storage facility and for all Work performed on-site or off-site. No retention shall be withheld from any payments except as expressly agreed in writing by Company, in which case retention shall be reduced per the contract documents and released no later than the date of substantial completion. Under no circumstances shall any retention be withheld for the equipment portion of the order. If payment is not received as required, Company may suspend performance and the time for completion shall be extended for a reasonable period of time not less than the period of suspension. Customer shall be liable to Company for all reasonable shutdown, standby and start-up costs as a result of the suspension. Company reserves the right to add to any account outstanding for more than 30 days a service charge equal to 1.5% of the principal amount due at the end of each month. Customer shall pay all costs (including attorneys’ fees) incurred by Company in attempting to collect amounts due and otherwise enforcing these terms and conditions. If requested, Company will provide appropriate lien waivers upon receipt of payment. Customer agrees that, unless Customer makes payment in advance, Company will have a purchase money security interest in all equipment from Company to secure payment in full of all amounts due Company and its order for the equipment, together with these terms and conditions, form a security agreement. Customer shall keep the equipment free of all taxes and encumbrances, shall not remove the equipment from its original installation point and shall not assign or transfer any interest in the equipment until all payments due Company have been made.
6. **Time for Completion.** Except to the extent otherwise expressly agreed in writing signed by an authorized representative of Company, all dates provided by Company or its representatives for commencement, progress or completion are estimates only. While Company shall use commercially reasonable efforts to meet such estimated dates, Company shall not be responsible for any damages for its failure to do so.
7. **Access.** Company and its subcontractors shall be provided access to the Work site during regular business hours, or such other hours as may be requested by Company and acceptable to the Work site’ owner or tenant for the performance of the Work, including sufficient areas for staging, mobilization, and storage. Company’s access to correct any emergency condition shall not be restricted. Customer grants to Company the right to remotely connect (via phone modem, internet or other agreed upon means) to Customer’s building automation system (BAS) and/or HVAC equipment to view, extract, or otherwise collect and retain data from the BAS, HVAC equipment, or other building systems, and to diagnose and remotely make repairs at Customer’s request.
8. **Completion.** Notwithstanding any other term or condition herein, when Company informs Customer that the Work has been completed, Customer shall inspect the Work in the presence of Company’s representative, and Customer shall either (a) accept the Work in its entirety in writing, or (b) accept the Work in part and specifically identify, in writing, any exception items. Customer agrees to re-inspect any and all excepted items as soon as Company informs Customer that all such excepted items have been completed. The initial acceptance inspection shall take place within ten (10) days from the date when Company informs Customer that the Work has been completed. Any subsequent re-inspection of excepted items shall take place within five (5) days from the date when Company informs Customer that the excepted items have been completed. Customer’s failure to cooperate and complete any of said inspections within the required time limits shall constitute complete acceptance of the Work as of ten (10) days from date when Company informs Customer that the Work, or the excepted items, if applicable, has/have been completed.
9. **Permits and Governmental Fees.** Company shall secure (with Customer’s assistance) and pay for building and other permits and governmental fees, licenses, and inspections necessary for proper performance and completion of the Work which are legally required when bids from Company’s subcontractors are received, negotiations thereon concluded, or the effective date of a relevant Change Order, whichever is later. Customer is responsible for necessary approvals, easements, assessments and charges for construction, use or occupancy of permanent structures or for permanent changes to existing facilities. If the cost of such permits, fees, licenses and inspections are not included in the Proposal, Company will invoice Customer for such costs.
10. **Utilities During Construction.** Customer shall provide without charge to Company all water, heat, and utilities required for performance of the Work.
11. **Concealed or Unknown Conditions.** In the performance of the Work, if Company encounters conditions at the Work site that are (i) subsurface or otherwise concealed physical conditions that differ materially from those indicated on drawings expressly incorporated herein or (ii) unknown physical conditions of an unusual nature that differ materially from those conditions ordinarily found to exist and generally recognized as inherent in construction activities of the type and character as the Work, Company shall notify Customer of such conditions promptly, prior to significantly disturbing same. If such conditions differ materially and cause an increase in Company’s cost of, or time required for, performance of any part of the Work, Company shall be entitled to, and Customer shall consent by Change Order to, an equitable adjustment in the Contract Price, contract time, or both.
12. **Pre-Existing Conditions.** Company is not liable for any claims, damages, losses, or expenses, arising from or related to conditions that existed in, on, or upon the Work site before the Commencement Date of this Agreement (“Pre-Existing Conditions”), including, without limitation, damages, losses, or expenses involving Pre-Existing Conditions of building envelope issues, mechanical issues, plumbing issues, and/or indoor air quality issues involving mold/mould and/or



fungi. Company also is not liable for any claims, damages, losses, or expenses, arising from or related to work done by or services provided by individuals or entities that are not employed by or hired by Company.

13. Asbestos and Hazardous Materials. Company's Work and other services in connection with this Agreement expressly excludes any identification, abatement, cleanup, control, disposal, removal or other work connected with asbestos, polychlorinated biphenyl ("PCB"), or other hazardous materials (hereinafter, collectively, "Hazardous Materials"). Customer warrants and represents that, except as set forth in a writing signed by Company, there are no Hazardous Materials on the Work site that will in any way affect Company's Work and Customer has disclosed to Company the existence and location of any Hazardous Materials in all areas within which Company will be performing the Work. Should Company become aware of or suspect the presence of Hazardous Materials, Company may immediately stop work in the affected area and shall notify Customer. Customer will be exclusively responsible for taking any and all action necessary to correct the condition in accordance with all applicable laws and regulations. Customer shall be exclusively responsible for and, to the fullest extent permitted by law, shall indemnify and hold harmless Company (including its employees, agents and subcontractors) from and against any loss, claim, liability, fees, penalties, injury (including death) or liability of any nature, and the payment thereof arising out of or relating to any Hazardous Materials on or about the Work site, not brought onto the Work site by Company. Company shall be required to resume performance of the Work in the affected area only in the absence of Hazardous Materials or when the affected area has been rendered harmless. In no event shall Company be obligated to transport or handle Hazardous Materials, provide any notices to any governmental agency, or examine the Work site for the presence of Hazardous Materials.

14. Force Majeure. Company's duty to perform under this Agreement is contingent upon the non-occurrence of an Event of Force Majeure. If Company shall be unable to carry out any material obligation under this Agreement due to an Event of Force Majeure, this Agreement shall at Company's election (i) remain in effect but Company's obligations shall be suspended until the uncontrollable event terminates or (ii) be terminated upon 10 days notice to Customer, in which event Customer shall pay Company for all parts of the Work furnished to the date of termination. An "Event of Force Majeure" shall mean any cause or event beyond the control of Company. Without limiting the foregoing, "Event of Force Majeure" includes: acts of God; acts of terrorism, war or the public enemy; flood; earthquake; tornado; storm; fire; civil disobedience; pandemic insurrections; riots; labor/labour disputes; labor/labour or material shortages; sabotage; restraint by court order or public authority (whether valid or invalid), and action or non-action by or inability to obtain or keep in force the necessary governmental authorizations, permits, licenses, certificates or approvals if not caused by Company; and the requirements of any applicable government in any manner that diverts either the material or the finished product to the direct or indirect benefit of the government.

15. Customer's Breach. Each of the following events or conditions shall constitute a breach by Customer and shall give Company the right, without an election of remedies, to terminate this Agreement or suspend performance by delivery of written notice: (1) Any failure by Customer to pay amounts when due; or (2) any general assignment by Customer for the benefit of its creditors, or if Customer becomes bankrupt or insolvent or takes the benefit of any statute for bankrupt or insolvent debtors, or makes or proposes to make any proposal or arrangement with creditors, or if any steps are taken for the winding up or other termination of Customer or the liquidation of its assets, or if a trustee, receiver, or similar person is appointed over any of the assets or interests of Customer; (3) Any representation or warranty furnished by Customer in this Agreement is false or misleading in any material respect when made; or (4) Any failure by Customer to perform or comply with any material provision of this Agreement. Customer shall be liable to Company for all Work furnished to date and all damages sustained by Company (including lost profit and overhead).

16. Indemnity. To the fullest extent permitted by law, Company and Customer shall indemnify, defend and hold harmless each other from any and all claims, actions, costs, expenses, damages and liabilities, including reasonable attorneys' fees, resulting from death or bodily injury or damage to real or tangible personal property, to the extent caused by the negligence or misconduct of their respective employees or other authorized agents in connection with their activities within the scope of this Agreement. Neither party shall indemnify the other against claims, damages, expenses or liabilities to the extent attributable to the acts or omissions of the other party. If the parties are both at fault, the obligation to indemnify shall be proportional to their relative fault. The duty to indemnify will continue in full force and effect, notwithstanding the expiration or early termination hereof, with respect to any claims based on facts or conditions that occurred prior to expiration or termination.

17. Limitation of Liability. NOTWITHSTANDING ANYTHING TO THE CONTRARY, IN NO EVENT SHALL COMPANY BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT CONSEQUENTIAL, OR PUNITIVE OR EXEMPLARY DAMAGES (INCLUDING WITHOUT LIMITATION BUSINESS INTERRUPTION, LOST DATA, LOST REVENUE, LOST PROFITS, LOST DOLLAR SAVINGS, OR LOST ENERGY USE SAVINGS, EVEN IF A PARTY HAS BEEN ADVISED OF SUCH POSSIBLE DAMAGES OR IF SAME WERE REASONABLY FORESEEABLE AND REGARDLESS OF WHETHER THE CAUSE OF ACTION IS FRAMED IN CONTRACT, NEGLIGENCE, ANY OTHER TORT, WARRANTY, STRICT LIABILITY, OR PRODUCT LIABILITY). In no event will Company's liability in connection with the provision of products or services or otherwise under this Agreement exceed the entire amount paid to Company by Customer under this Agreement.

18. Patent Indemnity. Company shall protect and indemnify Customer from and against all claims, damages, judgments and loss arising from infringement or alleged infringement of any United States patent by any of the goods manufactured by Company and delivered hereunder, provided that in the event of suit or threat of suit for patent infringement, Company shall promptly be notified and given full opportunity to negotiate a settlement. Company does not warrant against infringement by reason of Customer's design of the articles or the use thereof in combination with other materials or in the operation of any process. In the event of litigation, Customer agrees to reasonably cooperate with Company. In connection with any proceeding under the provisions of this Section, all parties concerned shall be entitled to be represented by counsel at their own expense.

19. Limited Warranty. Company warrants for a period of 12 months from the date of substantial completion ("Warranty Period") commercial equipment manufactured and installed by Company against failure due to defects in material and manufacture and that the labor/labour furnished is warranted to have been properly performed (the "Limited Warranty"). Trane equipment sold on an uninstalled basis is warranted in accordance with Company's standard warranty for supplied equipment. **Product manufactured by Company that includes required startup and is sold in North America will not be warranted by Company unless Company performs the product start-up.** Substantial completion shall be the earlier of the date that the Work is sufficiently complete so that the Work can be utilized for its intended use or the date that Customer receives beneficial use of the Work. If such defect is discovered within the Warranty Period, Company will correct the defect or furnish replacement equipment (or, at its option, parts therefor) and, if said equipment was installed pursuant hereto, labor/labour associated with the replacement of parts or equipment not conforming to this Limited Warranty. Defects must be reported to Company within the Warranty Period. Exclusions from this Limited Warranty include damage or failure arising from: wear and tear; corrosion, erosion, deterioration; Customer's failure to follow the Company-provided maintenance plan; refrigerant not supplied by Trane; and modifications made by others to Company's equipment. Company shall not be obligated to pay for the cost of lost refrigerant. Notwithstanding the foregoing, all warranties provided herein terminate upon termination or cancellation of this Agreement. No warranty liability whatsoever shall attach to Company until the Work has been paid for in full and then said liability shall be limited to the lesser of Company's cost to correct the defective Work and/or the purchase price of the equipment shown to be defective. Equipment, material and/or parts that are not manufactured by Company are not warranted by Company and have such warranties as may be extended by the respective manufacturer. **THE WARRANTY AND LIABILITY SET FORTH IN THIS AGREEMENT ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES, WHETHER IN CONTRACT OR IN NEGLIGENCE, EXPRESS OR IMPLIED, IN LAW OR IN FACT, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND/OR OTHERS ARISING FROM COURSE OF DEALING OR TRADE. COMPANY MAKES NO REPRESENTATION OR WARRANTY EXPRESS OR IMPLIED REGARDING PREVENTION BY THE WORK, OR ANY COMPONENT THEREOF, OF MOLD/MOULD, FUNGUS, BACTERIA, MICROBIAL GROWTH, OR ANY OTHER CONTAMINATES. COMPANY SPECIFICALLY DISCLAIMS ANY LIABILITY IF THE WORK OR ANY COMPONENT THEREOF IS USED TO PREVENT OR INHIBIT THE GROWTH OF SUCH MATERIALS.**

20. Insurance. Company agrees to maintain the following insurance while the Work is being performed with limits not less than shown below and will, upon request from Customer, provide a Certificate of evidencing the following coverage:

Commercial General Liability	\$2,000,000 per occurrence
Automobile Liability	\$2,000,000 CSL
Workers Compensation	Statutory Limits



If Customer has requested to be named as an additional insured under Company's insurance policy, Company will do so but only subject to Company's manuscript additional insured endorsement under its primary Commercial General Liability policies. In no event does Company waive its right of subrogation.

21. Commencement of Statutory Limitation Period. Except as to warranty claims, as may be applicable, any applicable statutes of limitation for acts or failures to act shall commence to run, and any alleged cause of action stemming therefrom shall be deemed to have accrued, in any and all events not later than the last date that Company or its subcontractors physically performed work on the project site.

22. General. Except as provided below, to the maximum extent provided by law, this Agreement is made and shall be interpreted and enforced in accordance with the laws of the state or province in which the Work is performed, without regard to choice of law principles which might otherwise call for the application of a different state's or province's law. Any dispute arising under or relating to this Agreement that is not disposed of by agreement shall be decided by litigation in a court of competent jurisdiction located in the state or province in which the Work is performed. Any action or suit arising out of or related to this Agreement must be commenced within one year after the cause of action has accrued. To the extent the Work site is owned and/or operated by any agency of the Federal Government, determination of any substantive issue of law shall be according to the Federal common law of Government contracts as enunciated and applied by Federal judicial bodies and boards of contract appeals of the Federal Government. This Agreement contains all of the agreements, representations and understandings of the parties and supersedes all previous understandings, commitments or agreements, oral or written, related to the subject matter hereof. This Agreement may not be amended, modified or terminated except by a writing signed by the parties hereto. No documents shall be incorporated herein by reference except to the extent Company is a signatory thereon. If any term or condition of this Agreement is invalid, illegal or incapable of being enforced by any rule of law, all other terms and conditions of this Agreement will nevertheless remain in full force and effect as long as the economic or legal substance of the transaction contemplated hereby is not affected in a manner adverse to any party hereto. Customer may not assign, transfer, or convey this Agreement, or any part hereof, or its right, title or interest herein, without the written consent of the Company. Subject to the foregoing, this Agreement shall be binding upon and inure to the benefit of Customer's permitted successors and assigns. This Agreement may be executed in several counterparts, each of which when executed shall be deemed to be an original, but all together shall constitute but one and the same Agreement. A fully executed facsimile copy hereof or the several counterparts shall suffice as an original.

23. Equal Employment Opportunity/Affirmative Action Clause. Company is a federal contractor that complies fully with Executive Order 11246, as amended, and the applicable regulations contained in 41 C.F.R. Parts 60-1 through 60-60, 29 U.S.C. Section 793 and the applicable regulations contained in 41 C.F.R. Part 60-741; and 38 U.S.C. Section 4212 and the applicable regulations contained in 41 C.F.R. Part 60-250 Executive Order 13496 and Section 29 CFR 471, appendix A to subpart A, regarding the notice of employee rights in the United States and with Canadian Charter of Rights and Freedoms Schedule B to the Canada Act 1982 (U.K.) 1982, c. 11 and applicable Provincial Human Rights Codes and employment law in Canada.

24. U.S. Government Work.

The following provision applies only to direct sales by Company to the US Government. The Parties acknowledge that all items or services ordered and delivered under this Agreement are Commercial Items as defined under Part 12 of the Federal Acquisition Regulation (FAR). In particular, Company agrees to be bound only by those Federal contracting clauses that apply to "commercial" suppliers and that are contained in FAR 52.212-5(e)(1). Company complies with 52.219-8 or 52.219-9 in its service and installation contracting business.

The following provision applies only to indirect sales by Company to the US Government. As a Commercial Item Subcontractor, Company accepts only the following mandatory flow down provisions: 52.219-8; 52.222-26; 52.222-35; 52.222-36; 52.222-39; 52.247-64. If the Work is in connection with a U.S. Government contract, Customer certifies that it has provided and will provide current, accurate, and complete information, representations and certifications to all government officials, including but not limited to the contracting officer and officials of the Small Business Administration, on all matters related to the prime contract, including but not limited to all aspects of its ownership, eligibility, and performance. Anything herein notwithstanding, Company will have no obligations to Customer unless and until Customer provides Company with a true, correct and complete executed copy of the prime contract. Upon request, Customer will provide copies to Company of all requested written communications with any government official related to the prime contract prior to or concurrent with the execution thereof, including but not limited to any communications related to Customer's ownership, eligibility or performance of the prime contract. Customer will obtain written authorization and approval from Company prior to providing any government official any information about Company's performance of the work that is the subject of the Proposal or this Agreement, other than the Proposal or this Agreement.

25. Limited Waiver of Sovereign Immunity. If Customer is an Indian tribe (in the U.S.) or a First Nation or Band Council (in Canada), Customer, whether acting in its capacity as a government, governmental entity, a duly organized corporate entity or otherwise, for itself and for its agents, successors, and assigns: (1) hereby provides this limited waiver of its sovereign immunity as to any damages, claims, lawsuit, or cause of action (herein "Action") brought against Customer by Company and arising or alleged to arise out of the furnishing by Company of any product or service under this Agreement, whether such Action is based in contract, tort, strict liability, civil liability or any other legal theory; (2) agrees that jurisdiction and venue for any such Action shall be proper and valid (a) if Customer is in the U.S., in any state or United States court located in the state in which Company is performing this Agreement or (b) if Customer is in Canada, in the superior court of the province or territory in which the work was performed; (3) expressly consents to such Action, and waives any objection to jurisdiction or venue; (4) waives any requirement of exhaustion of tribal court or administrative remedies for any Action arising out of or related to this Agreement; and (5) expressly acknowledges and agrees that Company is not subject to the jurisdiction of Customer's tribal court or any similar tribal forum, that Customer will not bring any action against Company in tribal court, and that Customer will not avail itself of any ruling or direction of the tribal court permitting or directing it to suspend its payment or other obligations under this Agreement. The individual signing on behalf of Customer warrants and represents that such individual is duly authorized to provide this waiver and enter into this Agreement and that this Agreement constitutes the valid and legally binding obligation of Customer, enforceable in accordance with its terms.

1-26.251-10(0315)
Supersedes 1-26.251-10(0614)



... creating a better quality of life

MEMORANDUM

DATE: September 20, 2016
TO: Water and Sewer Board
FROM: Darren Gore
SUBJECT: Draft 2016 303(d) List Comments by Murfreesboro Water and Sewer Department (MWSD) to TN Department of Environment and Conservation (TDEC)

Background

TDEC issues a biannual (every other year) list of impaired streams, known as the 303(d) list. Under section 303(d) of the Clean Water Act, states, territories and authorized tribes are required to submit lists of impaired waters. These are waters that are too polluted or otherwise degraded to meet water quality standards. The law requires that the states establish priority rankings for waters on the lists and develop Total Maximum Daily Loads (TMDL) for these waters.

TDEC is taking public comment on the Draft 2016 State of Tennessee 303(d) list until September 30, 2016. Staff wanted to apprise the Board of our comments in conjunction with reviewing where the Department is on several action items and goals/objectives.

Recommendation

Not applicable

Fiscal Impact

No fiscal impact

Attachments

Letter to Greg Denton with TDEC dated 9/20/16 regarding Public Comments on the DRAFT 2016 303(d) List



... creating a better quality of life

Greg Denton
Planning and Standards Unit
Division of Water Resources
11th Floor, Tennessee Tower
312 Rosa L. Parks Ave.
Nashville, TN 37243

September 21, 2016

RE: **Public Comments on the DRAFT 2016 303(d) List**

Dear Mr. Denton:

The Murfreesboro Water and Sewer Department (MWSD) appreciates the opportunity to make comment on the DRAFT 2016 303(d) list. The following comments pertain to several stream segments within the Murfreesboro Urban Growth Boundary (UGB).

West Fork Stones River Segment 1000 (TN513023018-1000)

We take particular interest in the West Fork Stones River (WFSR) as it is the primary surface water intersecting our city and service area and is the receiving stream for our wastewater treatment plant. As such we are disappointed to find Segment 1000 (TN513023018-1000) on the draft 2016 303d list. Segment 1000 is listed for E. coli impairment with the pollutant sources listed as MS4 discharges and collection system failure. We found it curious that MS4 and collection system failure were listed as sources when Segment 1000 traverses neither. These suspect sources prompted us to ask Debbie Arnwine about it and she directed us to STORET data on the segment. We looked at STORET data and make the following observations:

- a. **Pollutant Source Questionable**: The pollutant source is identified as discharges from MS4 and collection system failure. MWSD has no sanitary sewer infrastructure paralleling or adjacent to stream section 1000, and has no recorded sanitary sewer overflows in the area immediately upstream of this stream section during the time period of sampling. Additionally, neither Murfreesboro nor Rutherford County has any defined MS4 outfalls on section 1000 of the WFSR. Rutherford County tells us that they are attempting to assess this stream section over the next two (2) years. Based on the rain events prior to sampling that caused surrounding stormwater runoff into the river, the more reasonable pollutant source would be E. coli generated from the cattle farms and septic systems adjacent to this section of the WFSR.

- b. *Non-optimal Stream Conditions for Sampling*: The state of the stream does not appear to be in an optimal condition for sampling that took place on Sept 20, 2012, March 13 and March 20, 2013 due to elevated flows. It appears that the results taken on these days are the root cause for exceeding the 126 cfu/100ml threshold. We have attached Exhibit A to document the rainfall data occurring in Murfreesboro during September 2012 and March 2013. As you can see a 3.6 inch rain event occurred on September 17, 2012 – three days prior to sampling, which undoubtedly caused an overbank condition. Also, on March 11, 2013 a 1.09 inch rainfall occurred and March 18, 2012 a 0.55 inch rainfall event occurred; each event effectively two (2) days prior to a sampling event. We believe all three of these samples should be omitted from the dataset. While these samples may be allowable per the regulations, they do not instill confidence that they were taken during optimal conditions of stream flow and therefore are questionable as to properly identifying the WFSR as impaired.
- c. *Statistical Significance of Sample*: The sampling dataset is small and does not seem representative of a statistically significant timeframe to properly characterize the stream. MWSD would be willing to add E. coli to our summer sampling regimen, as well as look at genetic coding the bacteria to determine its origin.
- d. *Age of Data*: The age of the data causes MWSD to ask the question why this impairment wasn't listed on the 2014 303(d) list?

Based on these findings, we submit that there should be more data collected prior to assessing WFSR_1000 and respectfully request its removal from the draft 2016 303(d) list.

As an aside, WFSR_1000 is augmented by two very significant springs that originate back to the Snail Shell cave in an area of Rutherford County known as Rockvale. These springs are charged by runoff (from an approximate local area of 3,910 acres and total recharge basin of 35,307 acres) into a series of sinkholes that transport stormwater surface runoff water through a network of underground limestone conduits that ultimately “daylight” at the springs identified as Vanderford Spring and Wallace Spring (see attached Exhibit B). These springs could be potential sources for elevated E. coli counts during higher than average stream flows as well as sources for higher phosphate concentrations. For instance, there is a cattle farm just upstream of where Vanderford Spring flows into the West Fork. We believe these sources should be characterized properly prior to listing section 1000 of the WFSR on the 2016 303(d) list.

Puckett Creek (TN05130203015-0100)

In field surveys, our water quality staff have concluded that Puckett Creek has fairly healthy streamside buffer despite development in the watershed, and so MWSD's assessment does not align with TDEC's listing this stream section as impaired for alteration in stream-side or littoral vegetative cover by development. Our regulatory Water Quality Protection Area has been applied on several developments since 2007 and imposes a 50 ft buffer where new

development occurs. See attached Exhibit C. The following statistics are supporting of this statement.

- Puckett Creek is roughly 5.2 miles in length (city)
- WQPA on 1 or both sides of the stream – 1.4 miles/ 26%
- Plus healthy buffer on both sides of the stream in either fully developed land or potential WQPA – 2 miles/ 38%
- Much of the property with little cover is private pastures or fields

We would submit that alterations in stream side or littoral vegetative cover caused by land development is minimal in comparison to the impact of private lands not under development.

Sinking Creek (TN05130203018 0100)

It is important to note in the record that Sinking Creek at Thompson Lane scored a 38 TMI in June 2016. While numerical measurements of NO₂/NO₃ and E. coli potentially caused by multiple presumed pollutant sources (land development, MS4 area, and collection system failures) may technically keep this stream on the list, this latest TMI score does not correlate with these numerical parameters. These types of findings continue to show that numerical thresholds of such parameters do not reliably measure or translate to actual instream impact. There is a strong argument to be made that “impairment” is not evidenced and delisting should be strongly considered.

Bear Branch (TN05130203023-0310)

Regarding Bear Branch (TN05130203023-0310), we agree with the TDEC assessment of “cover” as the Lower Bear Branch clearly suffers from erosion caused by cattle. The Upper Bear Branch however is hydrologically dissimilar as it is connected to the VA spring and scored a 36 TMI in 2016 sampling. In effect, Bear Branch comprises two different streams.

On the matter of collecting data, we want our efforts to be of use to TDEC, and we invite TDEC personnel to participate in our summer sampling events, or team with our stormwater staff throughout the year, as you can. We look forward to continuing our partnership with you.

If you find any of the above is unclear or you have questions, please contact me and I will do my best to respond.

Best Regards,

Darren W. Gore, P.E.
Director

cc: Steve Tate, MWSD EUM Coordinator
Robert Haley, MWSD Stormwater Coordinator

Exhibit A – Murfreesboro, TN Rain Gauge Data



Daily Tabular Report For The Period 9/1/2012 - 9/30/2012

RG02, Pipe Height: 14.75 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)					Rain (in)	
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2012																	0.04
9/2/2012																	0.65
9/3/2012																	0.09
9/4/2012																	0.21
9/5/2012																	0.25
9/6/2012																	
9/7/2012																	
9/8/2012																	0.23
9/9/2012																	
9/10/2012																	
9/11/2012																	
9/12/2012																	
9/13/2012																	
9/14/2012																	
9/15/2012																	
9/16/2012																	
9/17/2012																	3.60
9/18/2012																	0.02
9/19/2012																	
9/20/2012																	
9/21/2012																	
9/22/2012																	
9/23/2012																	
9/24/2012																	
9/25/2012																	
9/26/2012																	
9/27/2012																	
9/28/2012																	
9/29/2012																	
9/30/2012																	

Report Summary For The Period 9/1/2012 - 9/30/2012

	Rain (in)
Total	5.09
Avg	

Exhibit A – Murfreesboro, TN Rain Gauge Data



Daily Tabular Report For The Period 3/1/2013 - 3/31/2013

RG02, Pipe Height: 14.75 In

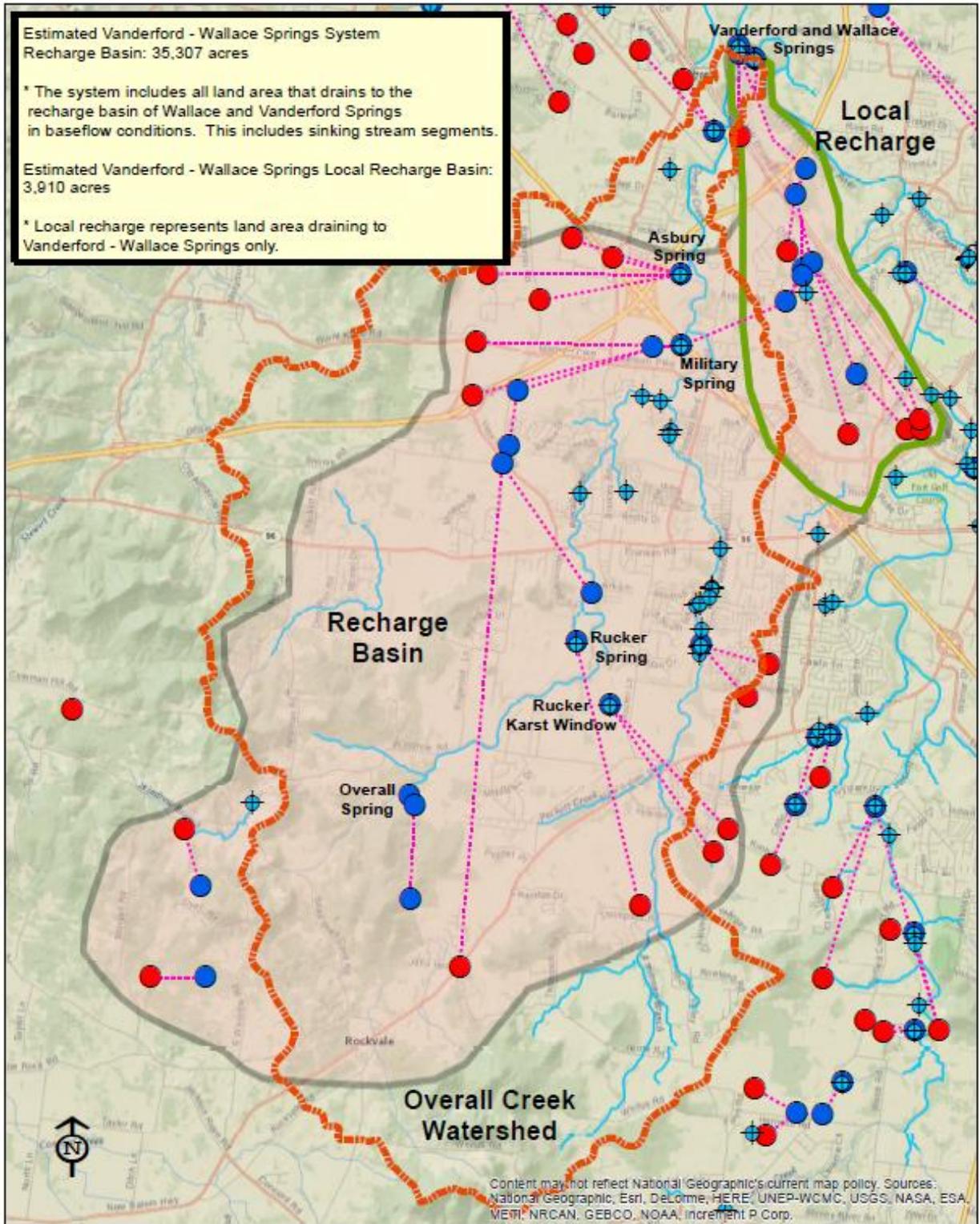
Daily Tabular Report

Date	Depth (In)				Velocity (ft/s)				Quantity (MGD - Total ft ³)					Rain (In)			
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
3/1/2013																	
3/2/2013																	0.01
3/3/2013																	
3/4/2013																	
3/5/2013																	0.65
3/6/2013																	
3/7/2013																	
3/8/2013																	
3/9/2013																	
3/10/2013																	0.01
3/11/2013																	1.09
3/12/2013																	
3/13/2013																	
3/14/2013																	0.04
3/15/2013																	
3/16/2013																	
3/17/2013																	
3/18/2013																	0.55
3/19/2013																	
3/20/2013																	
3/21/2013																	
3/22/2013																	
3/23/2013																	0.05
3/24/2013																	0.49
3/25/2013																	
3/26/2013																	
3/27/2013																	
3/28/2013																	
3/29/2013																	0.07
3/30/2013																	0.25
3/31/2013																	0.01

Report Summary For The Period 3/1/2013 - 3/31/2013

	Rain (In)
Total	3.22
Avg	

Exhibit B - Vanderford and Wallace Spring on Section 1000 of the WFSR



Wallace and Vanderford Springs Potential Recharge Basin

Exhibit B - Vanderford and Wallace Spring on Section 1000 of the WFSR

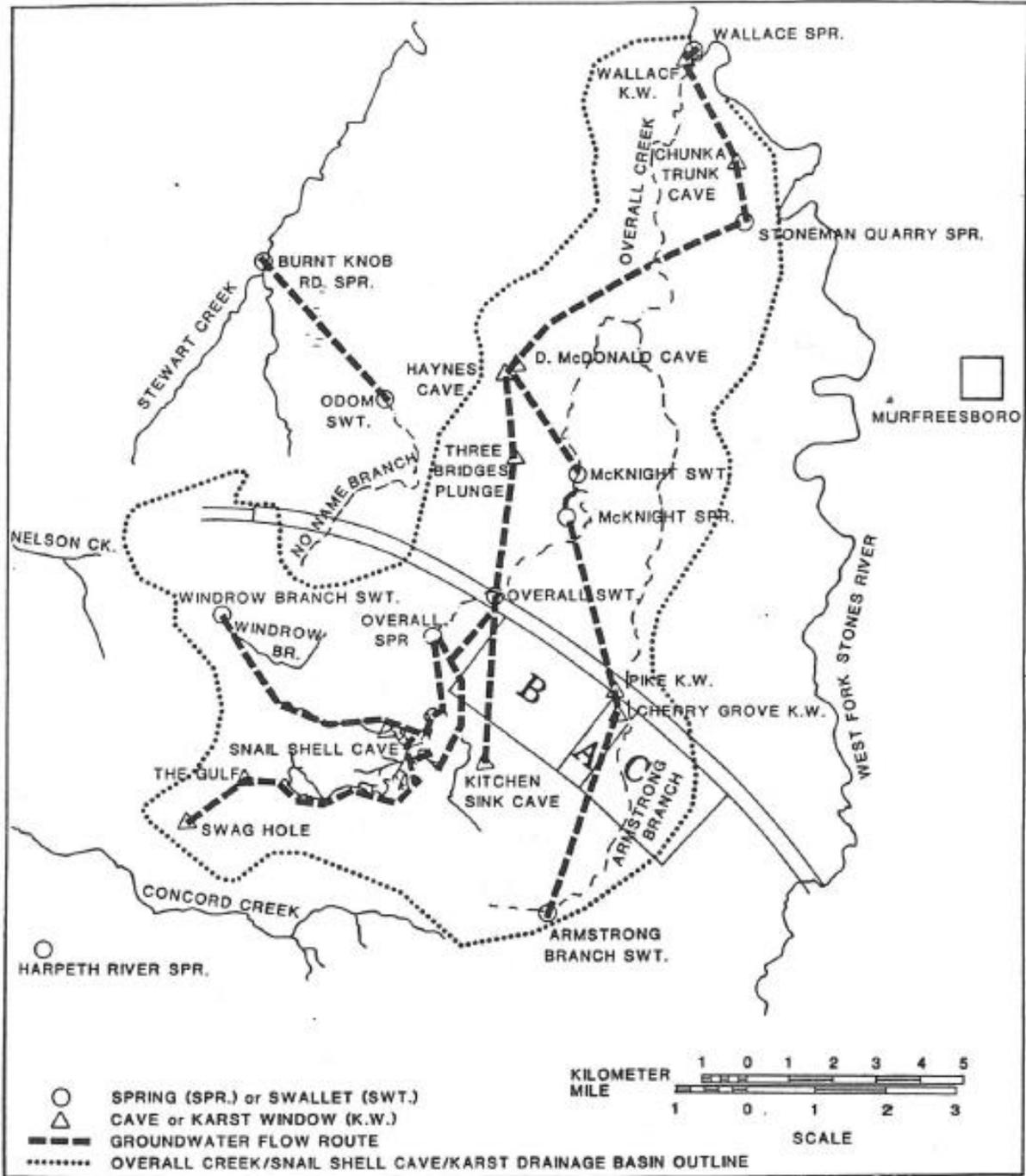
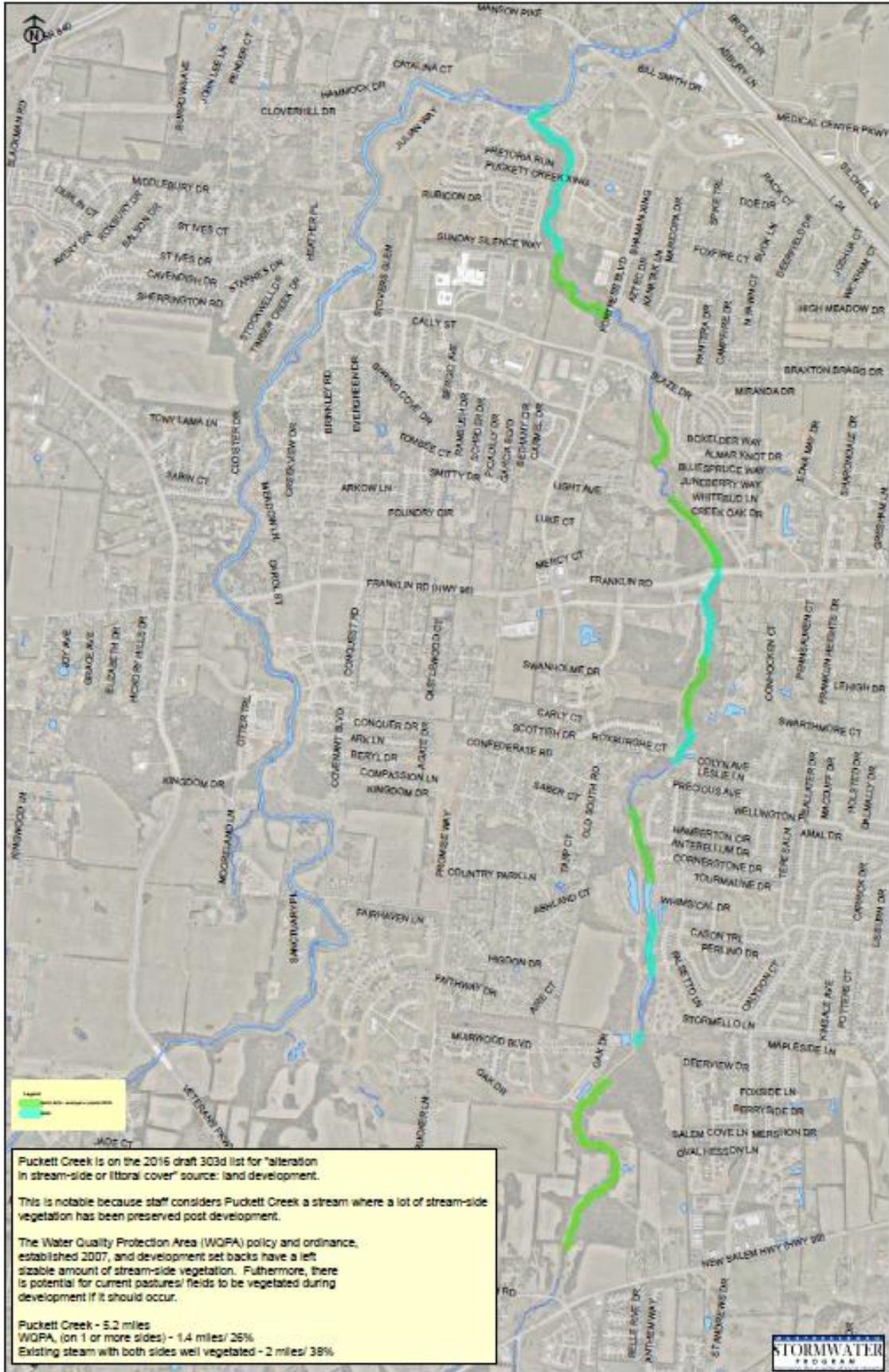


Figure 11. Ground water flow routes: Overall Creek/Snail Shell Cave Drainage Basin (from Crawford, 1998).

Exhibit C – Stream-side Vegetative Cover Status along Puckett Creek





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MEMORANDUM

DATE: September 21, 2016
TO: Water and Sewer Board
FROM: Darren Gore
SUBJECT: AquAeTer E. coli and Fecal Coliform Proposal for the West Fork Stones River and Sinking Creek – Amendment No. 4 to SSR Work Order 09-47-001.2

Background

As a result of the Tennessee Department of Environment and Conservation (TDEC) draft 2016 listing of the Section 1000 of the West Fork Stones River (WFSR) and Sinking Creek as being impaired for E. coli, staff has requested of AquAeTer to include sampling in this section of the river.

E. coli is commonly found in the lower intestine of warm-blooded organisms. TDEC's test does not confirm whether the E. coli originated from human sources or animal sources. We believe this issue is of significance due to the impairment pollutant source being listed as "Discharges from MS4 area" and "Collection System Failure".

I believe it is important to confirm whether human E. coli is present to validate that Collection System Failure is an appropriate pollutant source to list. MWSD does not have any sanitary sewer infrastructure in this section of the WFSR. We do have infrastructure in the section of Sinking Creek listed as impaired; however, we did not have any sewer overflows during the sampling events taken by TDEC, so the new pollutant source listing of Collection System Failure is suspect in my opinion.

As MWSD's comments state in our public comment letter to TDEC, the more reasonable source for E. coli during elevated stream conditions resulting from stormwater runoff are from animal sources (e.g., cattle, birds, dogs, etc.). The attached proposal from AquAeTer is intended to confirm the genetic source of the E. coli, and as such, at a minimum, demonstrate to TDEC that Collection System Failure (or human E. coli presence) is or is not an appropriate pollutant source.

Recommendation

Staff recommends the Board recommend to City Council approval of Amendment No. 4 to SSR Task Order 09-47-001.2 for E. coli sampling in the West Fork Stones River and Sinking Creek

Fiscal Impact

The fiscal impact is \$20,300. Staff recommends funding this project from the Department's working capital reserves.

Attachments

AquAeTer proposal for Murfreesboro E. coli sampling
SSR Amendment #4 to Engineering Work Order 09-47-001.2



September 9, 2016

152384

Mr. Mike Bernard, P.E.
Smith Seckman Reid, Inc.
2995 Sidco Drive
Nashville, Tennessee 37204

Sent via e-mail to MBernard@ssr-inc.com

RE: Proposal to Conduct Bacterial Analyses for the Presence of *Escherichia coli* and Fecal Coliform in the West Fork Stones River and Sinking Creek

Dear Mr. Bernard:

At your request, AquAeTer, Inc. has prepared a Scope of Work to provide bacterial analyses for the presence of *Escherichia coli* (*E.coli*) and fecal coliform in the West Fork Stones River and Sinking Creek. The water quality investigations are to be conducted in both streams to determine the total levels of *E.coli* present, as well as the total fecal coliform and the percent of human fecal coliform. These data will be collected over one thirty day period and will consist of five sample events. The bacterial data can then be submitted to the State to provide additional real data to demonstrate that the West Fork Stones River and Sinking Creek should not be listed for *E.coli* on the 2016 303(d) list. Currently Sinking Creek is listed on the 2014 303(d) and proposed to remain on the 2016 303(d) list and the 1000 segment of the West Fork Stones River is proposed to be listed on the 2016 303(d) list. The primary cause currently listed by the State is discharges from MS4 area and collection system failure.

SCOPE OF WORK

AquAeTer has prepared the following scope of work for this project. The scope of work will include sample collection from the West Fork Stones River and Sinking Creek to assess bacterial levels.

Health and Safety Plan

A Health and Safety Plan has been developed for the previous water quality and biological sampling conducted in 2015. This Health and Safety Plan will be amended to account for the alternate sampling styles and sample handling that is associated with *E.coli* and fecal coliform sampling.

Stream Investigations

The 1000 segment of the West Fork Stones River is currently proposed to be listed in 2016 as impaired due to high levels of *E.coli*, with the pollutant source listed as discharges from MS4 area and collection failure system. In addition, Sinking Creek is currently listed as impaired due to high *E.coli* levels, with the pollutant source listed as discharges from MS4 area and a proposed pollutant source of collection system failure. *E.coli* studies that have been completed by the state appear flawed according to the Standard Operating Procedures established by the state. In addition, no data have been collected from either stream since 2013. The State no longer collects fecal coliform data. Total *E.coli* does not distinctly represent the percent of human fecal coliform presence within the sample and is only a total number which can include run-off from pastures and other non-point source contributors. These bacterial analyses will be done in order to determine the percent of human fecal influence on the overall number.

To develop a geometric mean for *E.coli* and fecal coliform, we propose to do the following:

1. *E.coli* and fecal coliform analyses will be conducted at the State sampling location on the West Fork Stones River and at the State sampling location on Sinking Creek. These collections will be completed during a period of base flow with no inflow of run-off from precipitation events. In order to obtain a geometric mean, which is the protocol for TDEC, five sampling events must occur within 30 days, and may not be conducted less than 24 hours from one another. **AquAeTer** will follow the TDEC SOP for water quality sampling. **AquAeTer** will collect a duplicate at sample during each of the sampling events for analysis. In addition, **AquAeTer** proposes to conduct one sampling event during high flow, immediately following a significant rain event. This will allow for the examination, and comparison, of human fecal coliform presence during similar conditions of the 2012 and 2013 TDEC sampling events.
2. In-situ water quality measurements
 - a. Conductivity
 - b. pH
 - c. Dissolved Oxygen
 - d. Temperature

Meetings

We have included costs for two meetings over the course of the study. We anticipate one meeting with the State to discuss the results of field activities following the completion of the study. The other meeting is intended for periodic updates during the course of the study.

Report

At the completion of all field events, one full report will be developed summarizing the findings of all sampling events.

SCHEDULE

AquAeTer is prepared to begin this project upon authorization from the City of Murfreesboro. It is anticipated that the sampling event will begin in September and last for approximately 30 days.

It is anticipated that the first draft of the summary report will be available in January 2017, although this will depend upon the exact date of sampling events and the turnaround time for the genetic testing.

COST ESTIMATE

AquAeTer has prepared a cost estimate for this work, as presented in Table 1. The total estimated cost is \$20,300. This cost includes bacteria analyses. We have also included costs of two meetings during the course of the work.

PROJECT EXPERIENCE

AquAeTer professionals have extensive water quality and NPDES Permitting project experience in 29 states, 1 territory and 6 foreign countries. A few projects pertinent to this project include work in Tennessee, Georgia, Alabama, Florida, South Carolina, North Carolina, Arkansas, Louisiana, Texas, and Oklahoma.

Our team has conducted numerous comprehensive water quality and TMDL analyses including bacteriological and nutrient eutrophication issues as well as biological investigations. Previous work experience includes:

- East Fork Stones River, Murfreesboro, Tennessee;
- West Fork Stones River, Murfreesboro, Tennessee;
- Harpeth River, Franklin, Tennessee;
- Little Harpeth River, Brentwood, Tennessee;
- Cumberland River, Nashville, Tennessee;
- Mill Creek, a tributary to the Cumberland River, Nashville, Tennessee;
- Overall Creek, a tributary to the Cumberland River, Nashville, Tennessee;
- Richland Creek, Nashville, Tennessee;
- Unnamed Tributary to Richland Creek, Nashville, Tennessee
- Tennessee River, Counce, Tennessee;

- Tennessee River, New Johnsonville, Tennessee;
- Clinch River, Oak Ridge and Clinton, Tennessee;
- Duck River, Columbia, Tennessee;
- Pigeon River, Tennessee;
- French Broad River, Tennessee;
- Pigeon River, North Carolina;
- Tombigbee River, Naheola, Alabama;
- Intracoastal Waterway, Gulf Shores, Alabama;
- Alabama River, Burkville, Alabama;
- Alabama River, Yellow Bluff, Alabama;
- Huntsville Spring Branch/Indian Creek, Redstone Arsenal, Alabama;
- Tennessee River, Decatur, Alabama;
- Tombigbee River, Naheola, Alabama;
- Conecuh, Brewton, Alabama;
- Escambia River and Escambia Bay, Pensacola, Florida;
- St. Johns River, Palatka, Florida;
- Hillsborough Bay, Tampa, Florida;
- Manatee River, Bradenton, Florida;
- North and West Bays, Panama City, Florida;
- Turtle River, Brunswick, Georgia;
- North Newport River, Georgia;
- Conasauga, Coosawattee and Oostanaula Rivers, Dalton, Georgia;
- Chattahoochee River, Atlanta, Georgia;
- Ocmulgee and Altamaha Rivers, Georgia;
- Flint River, Woodbine and Oglethorpe, Georgia;
- Savannah River, Augusta, Georgia;
- Broad River/Savannah River/Lake Murray, Elberton, Georgia;
- Ouachita River, Camden and Crossett, Arkansas;
- Red River, Ashdown and Fulton, Arkansas;
- Arkansas River, Little Rock, Arkansas;
- Arkansas River, Russellville, Arkansas;
- Pearl River, Monticello, Mississippi;
- Tennessee River, Calvert City, Kentucky;
- Arkansas River, Muskogee, Oklahoma;
- Grand Neosho River, near Pryor, Oklahoma;
- Mississippi River, Cordova, Alton, and Sauget, Illinois;
- Illinois River, Ottawa and Henry, Illinois;
- Illinois River, Liverpool, Illinois;
- Wabash River, Cowling, Illinois;
- Rock River, Rockford and Joslin, Illinois;
- St. Joseph River, Auburn, Indiana;
- Lake Michigan, Whiting, Indiana;
- Wabash River, Terre Haute, Indiana;
- Fox River, Twin Locks, Wisconsin;

- Superior Bay, Duluth, Minnesota;
- St. Louis River, Cloquet, Minnesota;
- Embarrass River, Aurora, Minnesota;
- Fields Brook/Ashtabula River, Ashtabula, Ohio;
- Lake Erie, Ashtabula, Ohio
- Ohio River, Cincinnati, Ohio
- Paint Creek, Greenville, Ohio
- Amuay Bay, Amuay, Venezuela;

PROJECT TEAM

AquAeTer will assign Mike Corn, P.E. (TN), BCEE as Technical Director. Mr. Corn worked with Smith Seckman Reid on the original Wasteload Allocation Study for the West Fork Stones River in the early 1980's. He recently directed the field work on the East Fork Stones River. Mr. Corn has been involved in TMDL and assimilative capacity studies, as well as the subsequent dispersion modeling and permit negotiations, for over 40 years. Mr. Corn has been involved in multiple diffuser design/installation projects, including Alaska, Louisiana, Illinois, and other states. Mr. Corn recently directed the work designing the diffuser that is to be installed at the Ferro facility. He has studied over 200 stream, river, lake, estuary, and open ocean systems both in the U.S. and abroad. He has assisted the USEPA, Athens, in the calibration of the dynamic (WASP) wasteload allocation model on the Alabama River near Montgomery, Alabama. He has completed numerous water quality projects in USEPA, Region 4, including projects in Tennessee, Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, and South Carolina.

John Michael Corn, P.E. (TN) will serve as the Project Manager. Mr. Corn has been the project manager for the all of the recent work completed for the MWSD. Mr. Corn has more than 15 years' experience in conducting water quality surveys.

Other **AquAeTer** staff members who will likely assist on the project include Nick Carmean, Richard Rogers, Jerrod Manning, and Rachel Stribling. Other staff may be employed as needed to complete the project.

STANDARD CONTRACTUAL TERMS

This project will be conducted pursuant to AquAeTer's contractual terms provided in the Standard Contractual Terms section of this proposal. AquAeTer will use good engineering and scientific practices consistent with the profession and regulatory requirements. Payment will be due 30 days after receipt of invoice. Acceptance of this proposal, standard contractual terms, and attachments can be accomplished by signing and returning one copy (along with an accompanying purchase order) to the following address:

AquAeTer, Inc.
215 Jamestown Park, Suite 100
Brentwood, TN 37027

This proposal will remain valid if accepted within 30 days from September 9, 2016.

CONCLUDING REMARKS

If you have questions or comments pertaining to this proposal, please contact us by telephone at (615) 373-8532, by FAX at (615) 373-8512, or by e-mail at jmcom@aquater.com or mcorn@aquater.com. We appreciate the opportunity to assist you on this project.

Sincerely,

AquAeTer, Inc.



John Michael Corn, P.E. (TN)
Project Manager



Michael R. Corn, P.E. (TN), BCEE
President

TABLE 1. COST ESTIMATE

CATEGORY	TASK 1 HEALTH & SAFETY PLAN		TASK 2 FIELD WORK		TASK 3 MEETINGS		TASK 4 SUMMARY REPORT		TOTAL HOURS	HOURLY RATE	TOTAL COST
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost			
LABOR											
Technical Director											
Mike Corn, P.E. (TN)	0	\$0	0	\$0	8	\$1,800	8	\$1,800	16	225	\$3,600
Project Manager											
John Michael Corn	1	\$135	6.5	\$878	8	\$1,080	16	\$2,160	32	135	\$4,253
Project Engineer/Scientist											
Nick Carmean	3	\$252	45	\$3,780	8	\$672	24	\$2,016	80	84	\$6,720
Jerrold Manning	0	\$0	45	\$3,330	0	\$0	0	\$0	45	74	\$3,330
Richard Rogers	1.5	\$126	0	\$0	0	\$0	8	\$672	10	84	\$798
Clerical/Administrative Services	1	\$68	0	\$0			2	\$136	3	68	\$204
Subtotal Labor		\$581		\$7,988				\$6,784			\$18,905
EXPENSES											
Supplies				\$635							\$635
Shipping				\$100							\$100
Miscellaneous Field Equipment				\$600							\$600
Analytical Laboratory											
<i>E.coli</i>				\$693							\$693
hubac and abac assays				\$2,376							\$2,376
Subtotal Expenses		\$0		\$1,335				\$0			\$1,335
ESTIMATED TASK TOTAL		\$583		\$9,351				\$6,804			\$20,300

AMENDMENT TO OWNER-ENGINEER AGREEMENT
Engineering Work Order 09-47-001.2
Amendment No. 4

1. *Background Data:*

- a. Effective Date of Owner-Engineer Agreement: May 2, 2014
- b. Owner: Murfreesboro Water and Sewer Department
- c. Engineer: Smith Seckman Reid, Inc
- d. Project: West Fork NPDES Application

2. *Description of Modifications:*

- a. The Tennessee Department of Environment and Conservation has proposed to list a Section of the West Fork Stones River and a section of Sinking Creek on its list of impaired waterways for E.Coli contamination that TDEC contends has been caused by collection system failure. This amendment is for AquAeTer to sample for E.Coli in both waterways, and to determine through genetic markers whether the organisms are from human or other animal contribution to contend this listing.

3. Agreement Summary (Reference only)

- a. Original Agreement amount: \$ 207,000.00
- b. Net change for prior amendments: \$ 125,181.00
- c. This amendment amount: \$ 20,300.00
- d. Adjusted Agreement amount: \$ 352,481.00

The foregoing Agreement Summary is for reference only and does not alter the terms of the Agreement.

Owner and Engineer hereby agree to modify the above-referenced Agreement as set forth in this Amendment. All provisions of the Agreement not modified by this or previous Amendments remain in effect. The Effective Date of this Amendment is _____.

OWNER:

ENGINEER:

By: _____

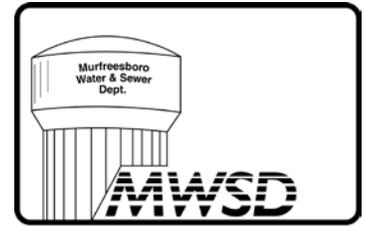
Title: _____

Date
Signed: _____

By: _____

Title: _____

Date Signed: _____



WATER AND SEWER ***DASHBOARD PERFORMANCE***

August 2016



PRELIMINARY MWSD FY2016-2020 CIP

NO.	PROJECT	2015-2016 2015 Issue	2016-2017 2016 Issue	2017-2018 2017 Issue	2018-2019 2018 Issue	2019-2020 2019 Issue	TOTAL
	Wastewater Treatment Plant Expansion Engineering (4C, 4D, SW FM & PS)	\$200,000	\$200,000	\$50,000			\$450,000
	Construction- Northeast Regional force main						\$0
	Construction- Northeast Regional pumping station						\$0
	Process expansion to 24 mgd, Phase 4D	\$14,500,000	\$13,000,000	\$2,000,000			\$29,500,000
	TOTAL Capital Improvements funded from Debt Service	\$14,700,000	\$13,200,000	\$2,050,000	\$0	\$0	\$29,950,000

NO.	PROJECT	2015-2016 2016 FY	2016-2017 2017 FY	2017-2018 2018 FY	2018-2019 2019 FY	2019-2020 2020 FY	TOTAL
	Sewer rehab- Account 335	\$1,250,000	\$1,250,000	\$1,250,000	\$1,250,000	\$1,250,000	\$6,250,000
	Meters, Water/Sewer Taps, Hydrants - 280, 290, 300, 310	\$435,000	\$435,000	\$435,000	\$435,000	\$435,000	\$2,175,000
	Water lines- Account 320	\$350,000	\$350,000	\$350,000	\$350,000	\$350,000	\$1,750,000
	Sewer Lines - Account 330	\$350,000	\$350,000	\$350,000	\$350,000	\$350,000	\$1,750,000
	Water Plant Membrane Replacement Sinking Fund	\$400,000	\$400,000	\$400,000	\$400,000	\$0	\$1,600,000
	Biolsolids Storage Sinking Fund	\$300,000	\$300,000	\$300,000	\$300,000	\$0	\$1,200,000
	Lift Station Replacement Sinking Fund	\$125,000	\$286,000	\$125,000	\$125,000	\$125,000	\$786,000
	NE Regional PS & FM Sinking Fund	\$0	\$500,000	\$500,000	\$500,000	\$500,000	\$2,000,000
	GAC Replacement	\$110,000	\$110,000	\$110,000	\$110,000	\$110,000	\$550,000
	Vehicle and Equipment Replacement	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$7,500,000
	TOTAL Capital Improvements funded from Rates	\$4,820,000	\$5,481,000	\$5,320,000	\$5,320,000	\$4,620,000	\$25,561,000

NO.	PROJECT	2015-2016 2016 FY	2016-2017 2017 FY	2017-2018 2018 FY	2018-2019 2019 FY	2019-2020 2020 FY	TOTAL
	W&S CAPITAL IMPROVEMENT PROJECTS						
	Misc FY15 Working Reserve Commitments	\$2,100,000					\$2,100,000
	Customer Service Area Security Renovations	\$450,000					\$450,000
	Contingency Items (Generators, Gear Box, HVAC)	\$775,000					\$775,000
	NE Regional Engineering Design	\$500,000	\$500,000	\$500,000	\$200,000	\$200,000	\$1,900,000
	NE Regional P.S.				\$2,500,000	\$5,000,000	\$7,500,000
	NE Regional Force Main				\$2,500,000	\$5,000,000	\$7,500,000
	SCWWTP Phase 4D Engineering & Inspection	\$300,000	\$250,000				\$550,000
	Lift Station Rehab/Replacement (#2, #13, #19 & #20)	\$1,500,000	\$1,000,000	\$500,000	\$500,000		\$3,500,000
	S. Church St. Sewer @ Joe B. Jackson Pkwy	\$250,000					\$250,000
	Water Resource Integration Plan (WRIP)	\$400,000					\$400,000
	WTP Membrane Replacement				\$2,000,000		\$2,000,000
	Biolsolids Storage Addition			\$1,500,000			\$1,500,000
	Stones River Water Qual Sampling / NPDES Permitting		\$200,000	\$150,000	\$100,000	\$100,000	\$550,000
	WTP Bar Screen, Pipe Gallery Leaks, Actuator Access		\$200,000	\$300,000			\$500,000
	Subtotal CAPITAL PROJECTS	\$6,275,000	\$1,950,000	\$2,650,000	\$7,800,000	\$10,300,000	\$29,475,000
	TRANSPORTATION (Water/Sewer Imp.)						
	Bradyville Pike		\$500,000	\$500,000			\$1,000,000
	MT Blvd Widening- Greenland to Main	\$750,000	\$750,000	\$140,000			\$1,640,000
	Lytle St. Relocation (Ph1 & Ph2)	\$390,000	\$1,170,000				\$1,560,000
	SR 99 Widening- Old Fort to Cason Lane		\$500,000	\$500,000			\$1,000,000
	Cherry Lane Repurified Main Extension (14,600 LF)		\$825,000	\$1,000,000			\$1,825,000
	Maney Avenue Reconstruction - Phase 2		\$250,000	\$250,000			\$500,000
	Wilkinson Pike Reconstruction (MCP to TL)		\$650,000				\$650,000
	Subtotal TRANSPORTATION PROJECTS	\$1,140,000	\$4,645,000	\$2,390,000	\$0	\$0	\$8,175,000
	REHABILITATION						
	Sewer Rehabilitation - Maintenance Contract	\$1,500,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$5,500,000
	INFORMATION TECHNOLOGY PROJECTS						
	CIS, IVR, MWM	\$50,000					\$50,000
	Advanced Metering Infrastructure (AMI)	\$4,150,000	\$2,850,000				\$7,000,000
	IT/Computer Systems Hardware Upgrades	\$200,000	\$50,000	\$50,000	\$50,000	\$50,000	\$400,000
	Financial Information Systems (FIS), HRIS						\$0
	Electronic Content Management (Scanning/Imaging)		\$150,000	\$150,000	\$150,000		\$450,000
	IT Design Services & Consulting	\$100,000	\$100,000	\$100,000	\$100,000		\$400,000
	Computerized Maintenance Management System (CMMS)			\$200,000	\$200,000		\$400,000
	Subtotal INFORMATION TECHNOLOGY PROJECTS	\$4,500,000	\$3,150,000	\$500,000	\$500,000	\$50,000	\$8,700,000
	TOTAL Projects from Working Capital Reserves	\$13,415,000	\$10,745,000	\$6,540,000	\$9,300,000	\$11,350,000	\$51,850,000

PROJECTED RESERVE FUND BALANCE REVENUE (TAPS)	\$8,500,000	\$6,000,000	\$4,500,000	\$4,500,000	\$4,500,000
PROJECTED ENHANCED REVENUE FOR RESERVES	\$200,000	\$500,000	\$750,000	\$2,000,000	\$2,000,000
SINKING FUND DEPOSITS TO RESERVES FROM RATES	\$825,000	\$1,486,000	\$1,325,000	\$1,325,000	\$625,000
SECURED MIN. BALANCE FOR WORKING CAPITAL RESERVES	\$20,404,791	\$20,812,887	\$21,229,145	\$21,653,727	\$22,086,802
PROJECTED WORKING CAPITAL RESERVE BALANCE	\$41,024,556	\$38,265,556	\$38,300,556	\$36,825,556	\$32,600,556
FUNDS ABOVE SECURED MINIMUM BALANCE	\$20,619,765	\$17,452,669	\$17,071,411	\$15,171,829	\$10,513,754

**Preliminary Draft 5-YR CAPITAL IMPROVEMENTS PLAN (CIP)
STORMWATER UTILITY FUND, FY17-21**

NO.	PROJECT	Originator	2016-2017 2017 FY	2017-2018 2018 FY	2018-2019 2019 FY	2019-2020 2020 FY	2020-2021 2021 FY	TOTAL
			<i>Budget</i>	<i>Pro Forma</i>	<i>Pro Forma</i>	<i>Pro Forma</i>	<i>Pro Forma</i>	
	Neighborhood Projects (NP)							
NP-1	Memorial Blvd / Haynes Dr. Drainage Improvements	City Eng	\$75,000	\$150,000	\$125,000			\$350,000
NP-2	Mitchell-Nielson Drainage Project	City Eng	\$50,000	\$50,000				\$100,000
NP-3	Huntwood/Leaf Ave Neighborhood Drainage Imp.	City Eng	\$100,000	\$100,000				\$200,000
NP-4	Southern Meadows / Kimbro Woods Drainage Imp.	City Eng	\$200,000	\$400,000				\$600,000
NP-5	Liberty Dr. / Thatcher Trace Spring Box	City Eng		\$25,000	\$50,000	\$50,000		\$125,000
NP-6	Pennington Drive Drainage Repair/Upgrade (Added)	City Eng						\$0
NP-7	Gateway Pond Repair (Added)	Eng/MWSD						\$0
NP-8	Hardwood Drive Drainage Upgrade (Added)	City Eng	\$100,000	\$250,000				\$350,000
NP-9	Pacific Place/Riverrock Blvd Drainage Imp.	City Eng	\$0	\$150,000	\$200,000			\$350,000
	Subtotal		\$525,000	\$1,125,000	\$375,000	\$50,000	\$0	\$2,075,000
	Water Quality Improvement (Compliance) Projects (WQ)							
WQ-1	Town Creek Bioretention BMP's @ Cannonsburgh	MWSD	\$0	\$75,000				\$75,000
WQ-2	Molloy Lane Water Quality Pond	MWSD		\$100,000	\$100,000			\$200,000
WQ-3	Rosebank Springs Constructed Wetlands	City Eng	\$400,000	\$300,000				\$700,000
WQ-4	Lee's Branch Stream Restoration	City Eng		\$50,000	\$50,000	\$50,000	\$50,000	\$200,000
WQ-5	West Fork Stones River at Cason Trail; bank repair	MWSD						\$0
WQ-6	Bear Branch Water Quality Mitigation	City Eng	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$250,000
WQ-7	Sinking Creek Headwater protection BMP	City Eng	\$100,000	\$100,000	\$150,000	\$150,000		\$500,000
WQ-8	Todd's Lake Regional Wetlands Improvements	City Eng						\$0
WQ-9	Hooper's Bottom Regional Water Quality Project	City Eng	\$100,000	\$150,000	\$150,000	\$150,000	\$150,000	\$700,000
WQ-10	Lytle Creek/Ridgley Road Bacteriological Reduction (Added)	MWSD			\$50,000			\$50,000
WQ-11	Memorial Blvd/VA Pond Trash Rack (Added)	MWSD			\$50,000			\$50,000
WQ-12	Spence Creek Restoration	Eng/MWSD	\$100,000	\$25,000	\$25,000	\$25,000	\$25,000	\$200,000
	Subtotal		\$750,000	\$850,000	\$625,000	\$425,000	\$275,000	\$2,925,000
	Public Drainage/Streets Participation Projects (PD)							
PD-1	Maney Avenue Phase 2	City Eng						\$0
PD-2	Town Creek Conveyance (Murfree Springs to Cannonsburgh)	City Eng	\$800,000					\$800,000
PD-3	Maple St. Alley Permeable Paver Project	City Eng						\$0
	Subtotal		\$800,000	\$0	\$0	\$0	\$0	\$800,000
	Parks & Rec and School Participation Projects (PP)							
PP-1	Hobgood School Porous Pavers	City Eng						\$0
PP-2	McFadden LID Project	MWSD						\$0
PP-3	Parks and Rec Office/Ag Center Pervious Parking Lot	MWSD						\$0
PP-4	West Elementary School Porous Pavers/Outdoor Classroom	City Eng						\$0
PP-5	Hobgood School Pervious Pavers Phase 2	City Eng						\$0
PP-6	Black Fox School Pervious Pavers	City Eng						\$0
PP-7	Police HQ Sinking Creek Water Quality Project	City Eng						\$0
	Subtotal		\$0	\$0	\$0	\$0	\$0	\$0
	Watershed Planning Projects / Development Participation (DP)							
DP-1	Warrior Dr. Regional Stormwater BMP	MWSD						\$0
DP-2	Mercury Plaza Shopping Center Pervious Parking Conversion	City Eng						\$0
	Subtotal		\$0	\$0	\$0	\$0	\$0	\$0
	Totals		\$ 2,075,000	\$ 1,975,000	\$ 1,000,000	\$ 475,000	\$ 275,000	\$ 5,800,000

\$ 5,800,000

EFFECTIVE UTILITY MANAGEMENT
Financial Viability
MWSD WORKING CAPITAL ACCOUNT SUMMARY

ESTIMATED Working Capital at 8/31/16

Board Designated (System Dev, Assessments, etc) as of 6/30/15	\$	28,659,579
Undesignated Excess Funds as of 6/30/15		18,310,430
Estimated Reserve Revenue thru 8/31/16		11,291,644
Estimated Reserve Expenditures thru 8/31/16		(12,679,684)
		45,581,969

COMMITTED Reserves at 8/23/16

Auxiliary Raw Water P.S. Generator	480,800	
Kroger (Mercury Blvd) Participation	11,500	
H-S Eng Services - St. Clair St. Imp	9,000	
Geotech Services for P.S. #13	13,500	
SEC Eng Services - John Rice Blvd Widening	6,500	
Pump Station #13 Replacement	1,515,000	
Amendment to Stones River Sampling	98,920	
Biosolids Master Plan	84,740	
John Bouchard - Fournier Press Install 15-06	291,709	
MR Systems - Fournier Press Install	27,593	
GAC Effluent Filter Actuator Replacement	30,936	
John Bouchard River Pump #1 - 16-04	12,226	
John Bouchard River Pump #6 - 16-05	29,440	
Wilkinson Pike Utilities Design	24,850	
Eng Design for Raw Water Aux Pumps Generator	13,298	
Sewer Rehab Projects (Littlejohn)	463,817	
Lytle St Ph2 Utility Design Services	9,941	
Lytle St Ph1 Construction Inspection Services	26,615	
Engineering Services - Fournier Biosolids Press Repl	43,343	
Middle TN Blvd Utility Construction	435,385	
Lytle St. Utility Construction	87,734	
Westin Task Order #11 - AMI Implementation Support	78,440	
Pump Stations #3, #19, & #20 Replacement	90,166	
Water Resource Integration Plan (WRIP)	362,157	
Johnson Bailey Architect Fee (O&M, C/S)	22,172	
AMI Implementation	1,771,636	
E. & W. Fork Stones River Water Quality Sampling	105,441	
Pump Station #13 Replacement Design	19,220	
Additional Services Ph4D - SSR Amendment	37,373	6,203,452
		6,203,452

APPROVAL Requests at 9/27/16

New Chiller at SRWTP	123,622	
Department Participation - Sewer, Springfield Apt	45,813	
Bradyville Pike Utility Design - Neil-Schaffer	62,000	
Cherry Lane Sewer Master Plan - Wisner	17,000	
Amendment #4, E. Coli Sampling	20,300	
Aux Generator Intake, SSR Const Admin	20,760	289,495
		289,495

BALANCE of Working Capital at 9/27/16 after COMMITMENTS **\$ 39,089,022**

DESIGNATED Projects Pending

Bar Screen, Trough, Platform Repair @ WTP	500,000	500,000
		500,000

ESTIMATED UNCOMMITTED Working Capital Reserves as of September 27, 2016 **\$ 38,589,022**

SECURED FY16-17 Operating and Maintenance Expenses **\$ 21,729,755**

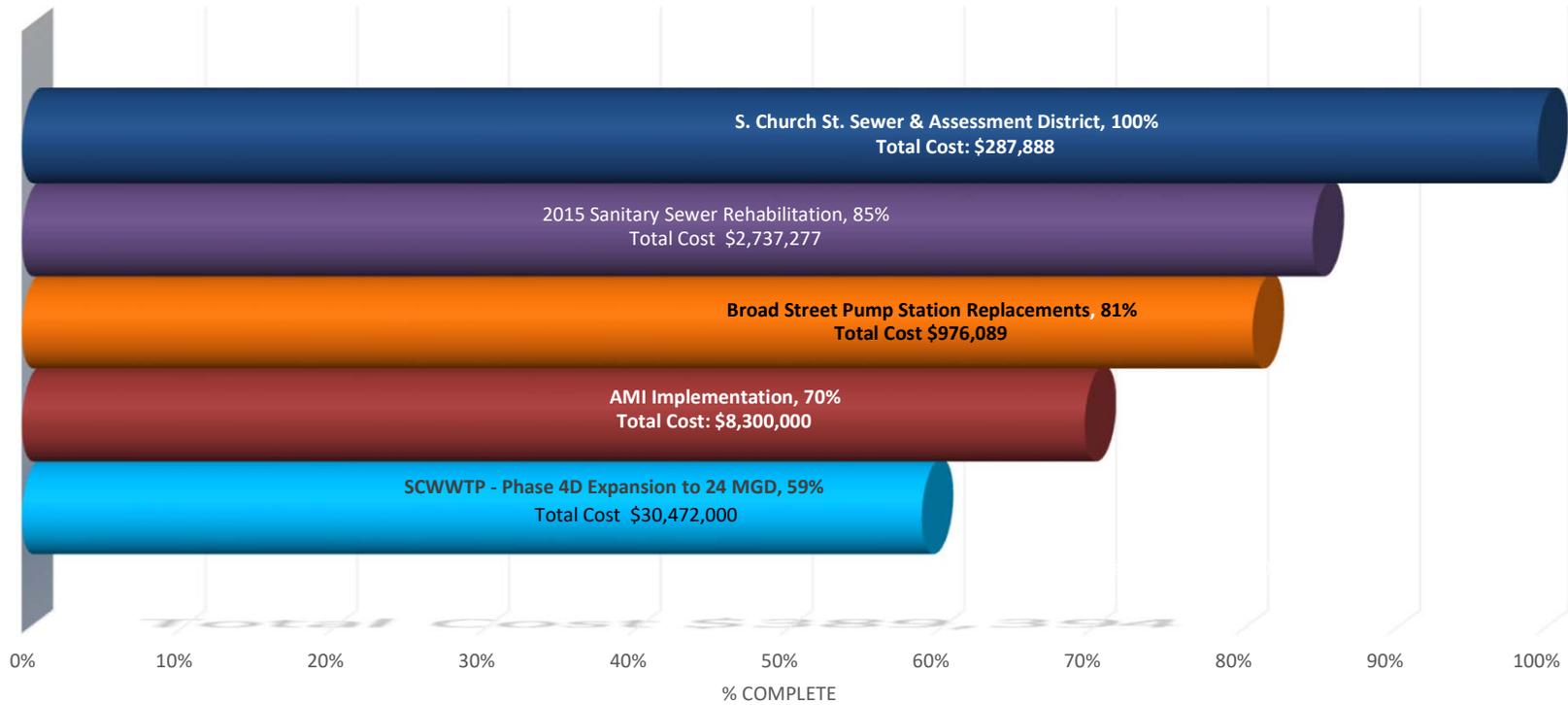
UNASSIGNED Working Capital Funds (Est. Uncommitted - Secured) **\$ 16,859,267**

MWSD Working Capital Reserves Dashboard

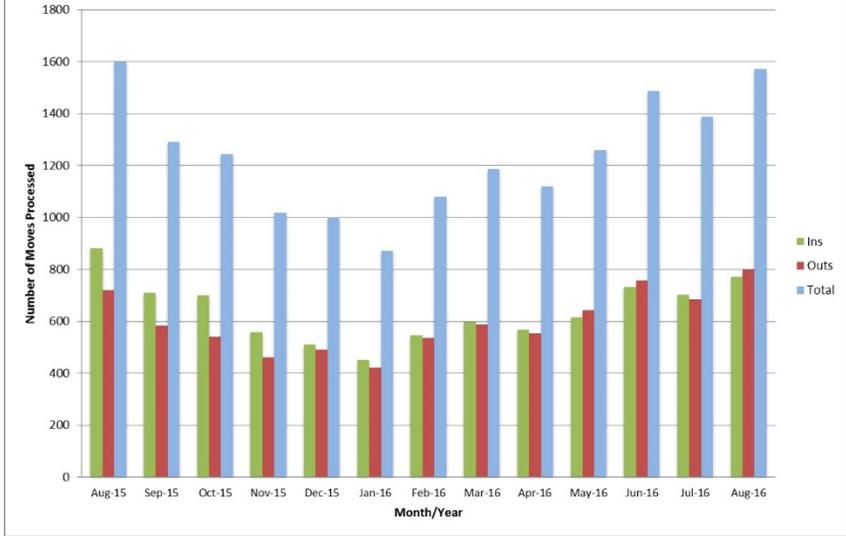


DASHBOARD PERFORMANCE - AUGUST 2016

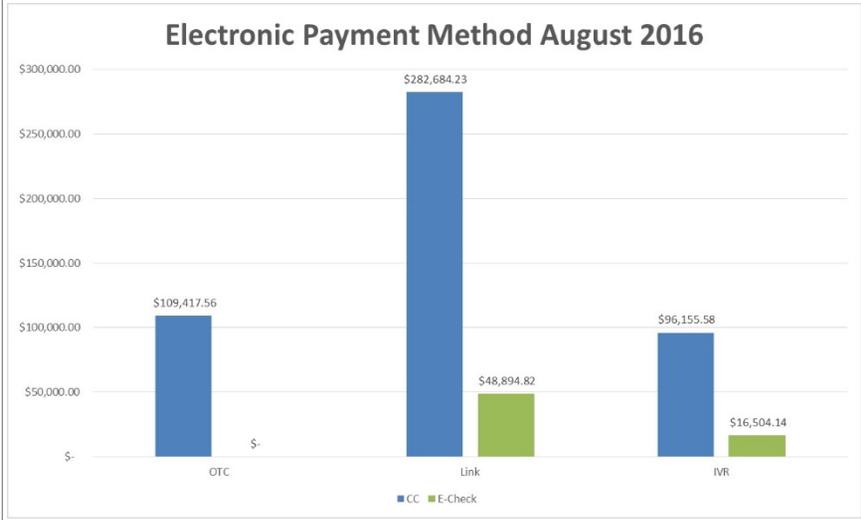
CAPITAL PROJECTS



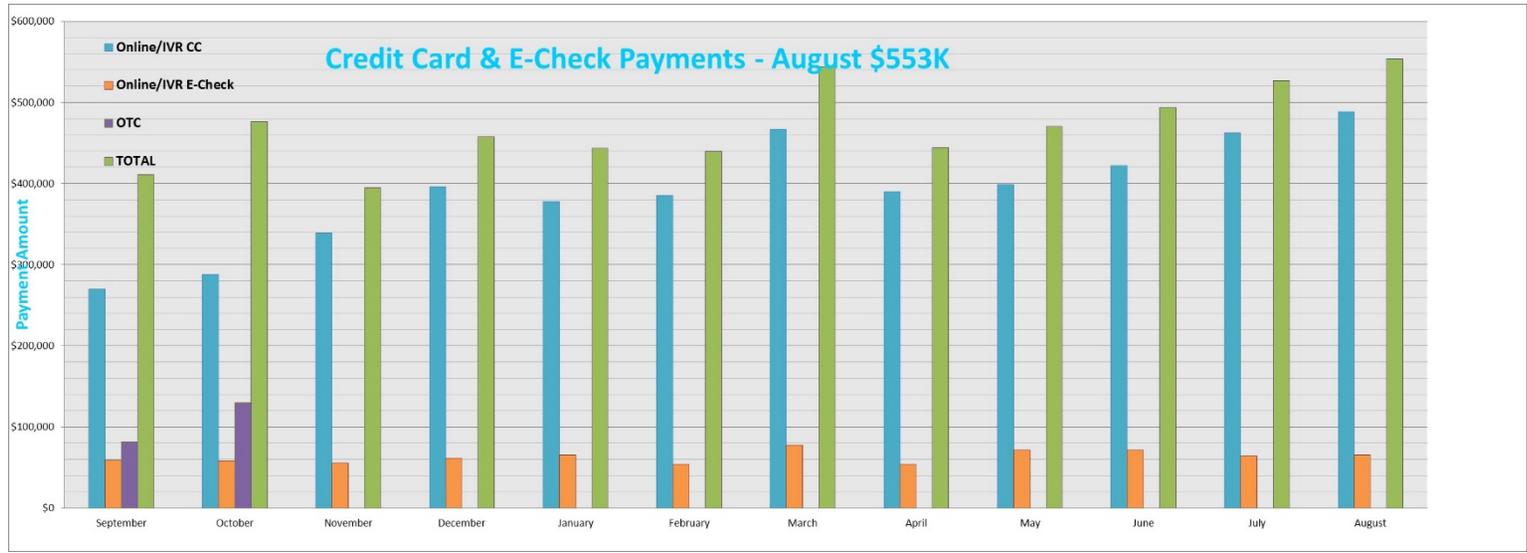
August Moves Processed = 1,573

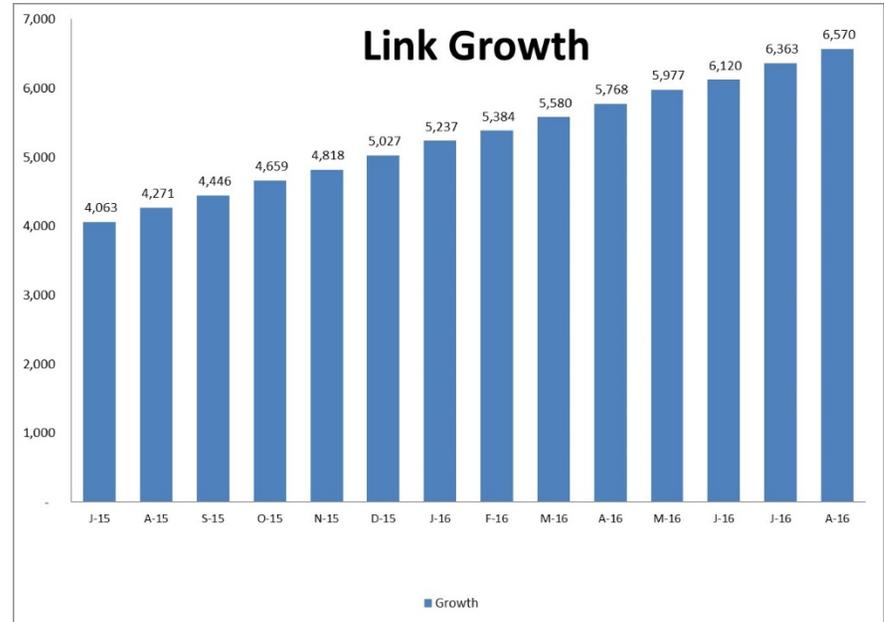
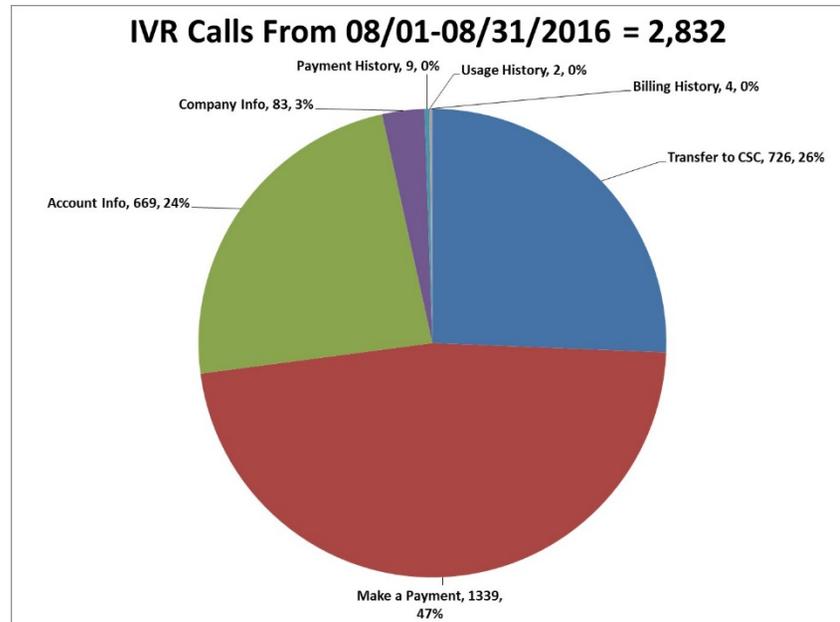
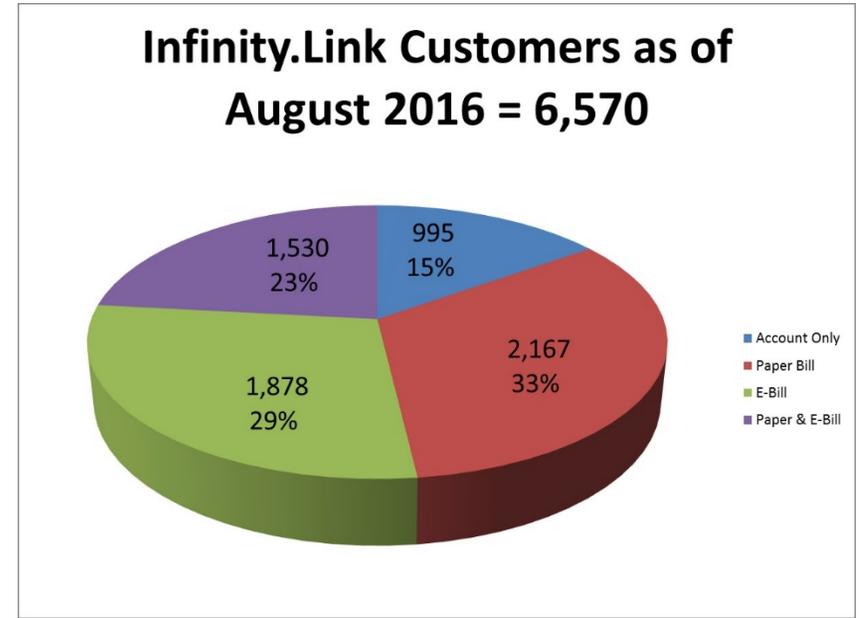
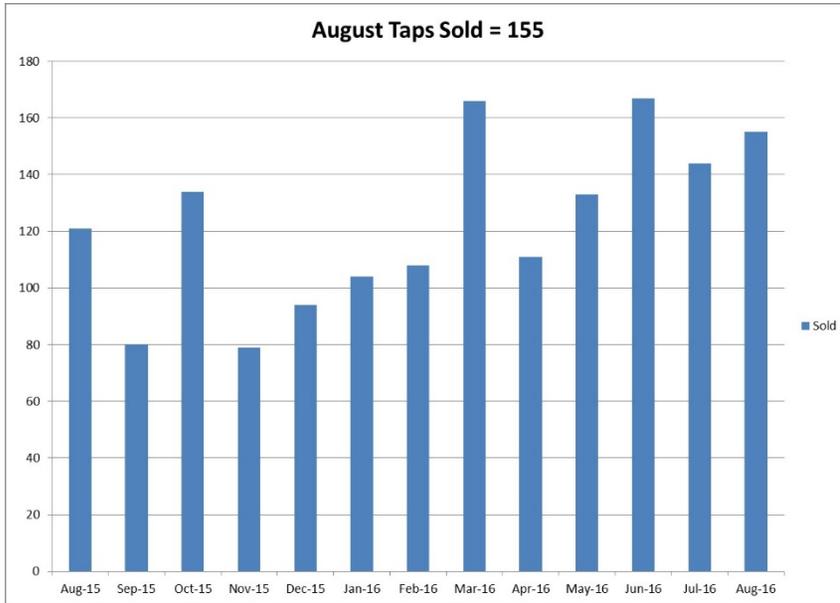


Electronic Payment Method August 2016

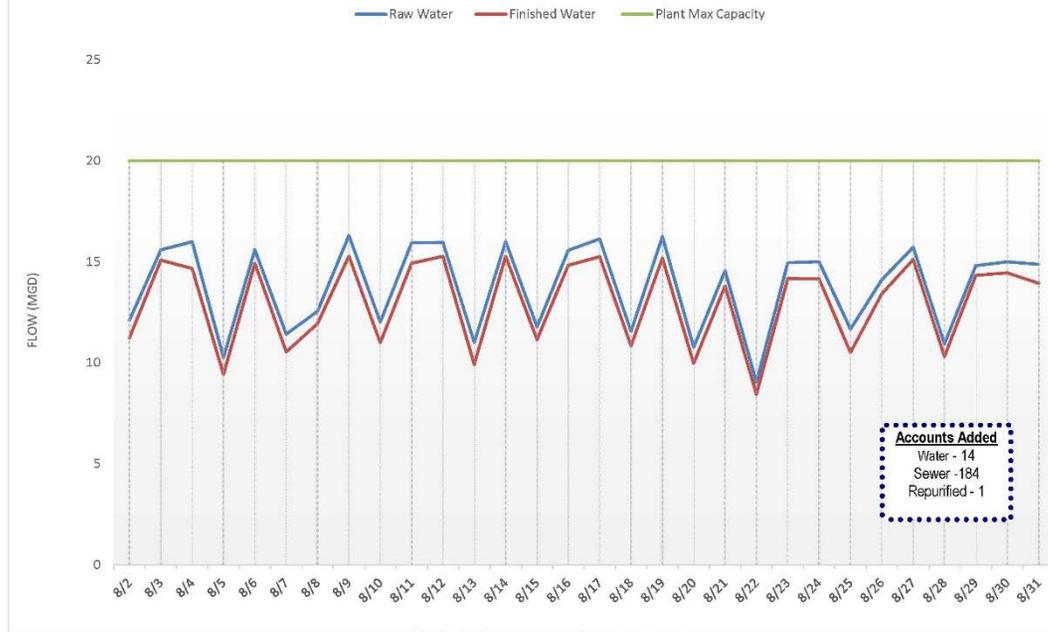


Credit Card & E-Check Payments - August \$553K

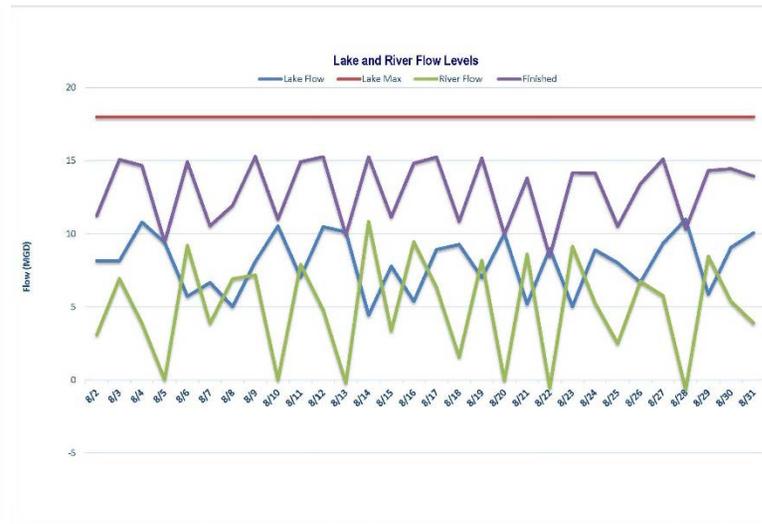
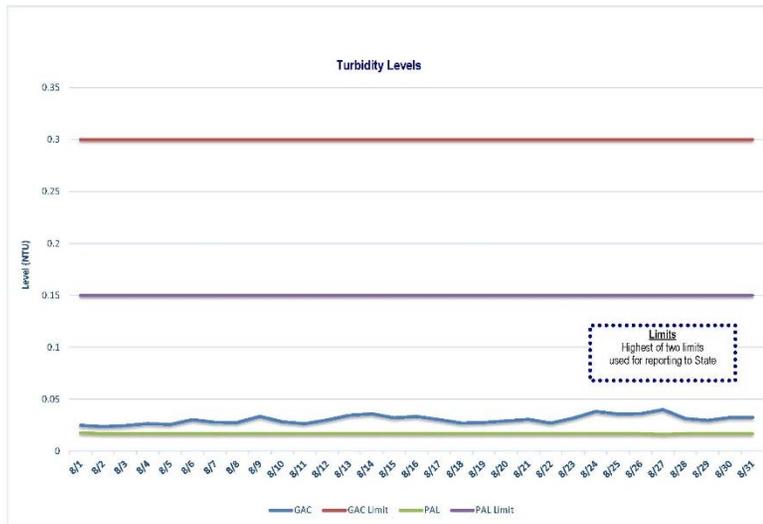




Dashboard Performance for August 2016 Stones River Water Treatment Plant



Totalized Finished Water Volume: 399.6 MG
 Totalized Billed Water Volume: 289.5 MG
 % Unaccounted for Water: 27.6%



State Report Coversheet

Month/Year Reported

August 2016

Name of Water Utility Murfreesboro Water & Sewer Department
 Name of WTP Stones River Water Treatment Plant
 County Rutherford
 PWSID 0000491
 Laboratory ID 00450

Bacteria	Total Number of Bacteria Samples for Month	100
Disinfection	Number of Samples	100
	Number of days plant operated	31
	Lowest Residual in Distribution System	0.70
	Lowest Residual Entering Distribution System	2.98
	Average Plant Effluent	3.3
Turbidity	Total Hours Planted Operated	743
	Number of Samples	186
	Maximum Turbidity	0.18
Flow	Average Raw Water Flow	13703
	Maximum Raw Water Flow	16301
Pumpage Data	Total Water Pumped (Lake)	231,147.001
	Average Water Pumped (Lake)	7,456.355
	Maximum Day (Lake)	10,987.000
	Minimum Day (Lake)	0.000
	Total Water Pumped (River)	193,652.687
	Average Water Pumped (River)	6,246.861
	Maximum Day (River)	15,594.319
Water Statistics	Minimum Day (River)	3,966.820
	Water Treated (Raw)	424,799.688
	Water Pumped (Finished)	399,617.904
	Water Transfer - to Murfreesboro (Smyrna, CUD)	0.000
	Water Metered (Sales, OM/Hydrant)	271,045.537
	Water Metered (Vacant Accounts, Fire Protection)	53.763
	Accounted For Water - (Flushing O&M/Eng, Fire, Street)	6,369.376
	Accounted For Water - (Flushing WTP)	894.507
	Process Water (Distribution,Tank,Water Plant)	11,109.760
	Water Transfer - to CUD	0.000
	Water Transfer - to Smyrna	0.000
	Total Accounted For Water	289,472.943
	Non Revenue Water	110,144.961
Water Loss - Percentage	27.6%	
Water Cost Per 1,000 gallons		

Subtotals		
0	0	
270,967.078	78.459	
0.000	53.763	
2945.572	3406.404	17.4
894507		
587.76	0	10522

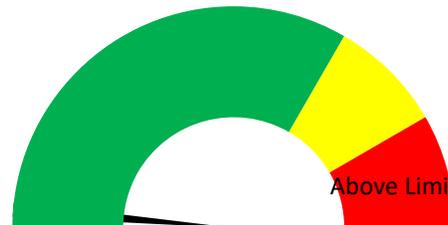
Reports Needed:

- MOR - Page 1 & 2 **DECEMBER Check YEAR!**
- Distribution
- Monthly Disinfectants Monitoring Report - Page 1 & 2
- Filter Performance Report
- Filter Turbidity Exceedance Report (Only if the filter turbidity exceeds standards)
- Monthly Microbiological Monitoring Report/Disinfectant Monitoring
- TOC & Enhanced Coagulation Report (Quarterly ADDED Data in March, June, September, December)
- Pumpage Data Report
- Bacteria Detail Report (**Check for POSITIVE Bacteria**)
- Flow to/from Smyrna to Smyrna, Dashboard Data to Pamela, Raw Flow to Debbie, PALL Turb to SS Indirect IT Folder, Dist Sheet to Randy
- Copy of Chemicals sheet to Debbie Crocker, Data to WaterLossMonthlyTotals (\\172.19.195.31\ShareA\Admin\Water Loss and Unaccounted for Water)
- Close out and lock Operator Log, convert to PDF, Add to SS Operator Log Folder
- High Service Dist. Monitor Logs to SS Folder
- PALL Data Logs to S3 and HS1 archives to S3
- BE-BH Correction on RAW Sheet/ **AUTOMATIC FLUSHING to KIM**

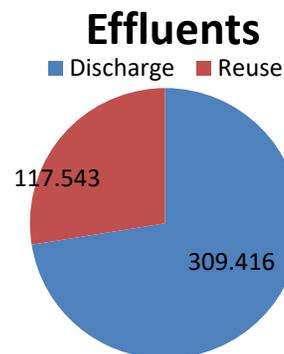
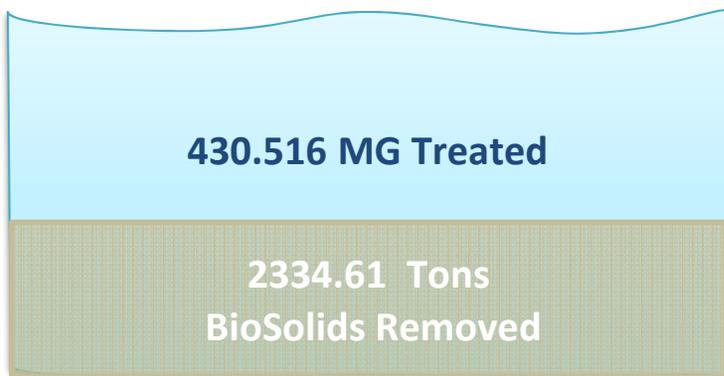
Dashboard Report August 2016
Sinking Creek Wastewater Treatment Plant



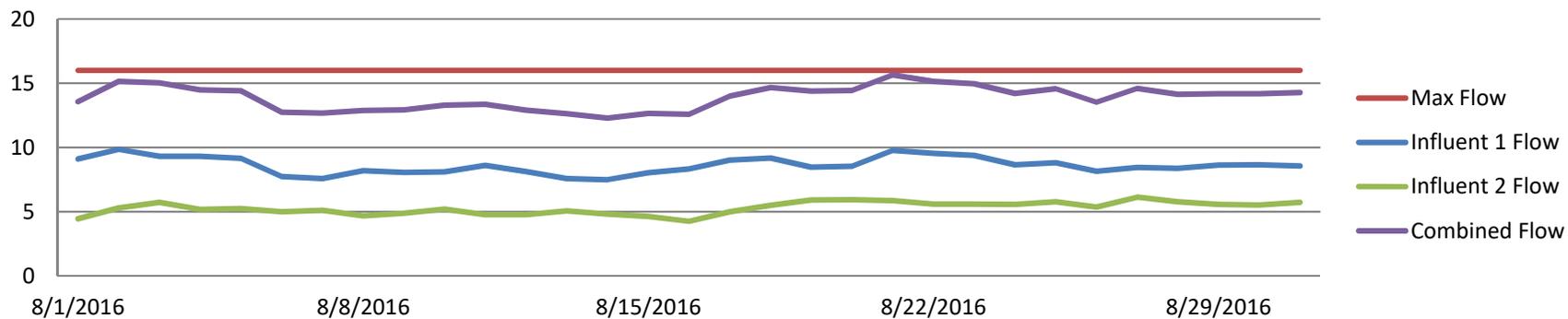
98.31%
Removal
BOD



99.35%
Removal
NH3

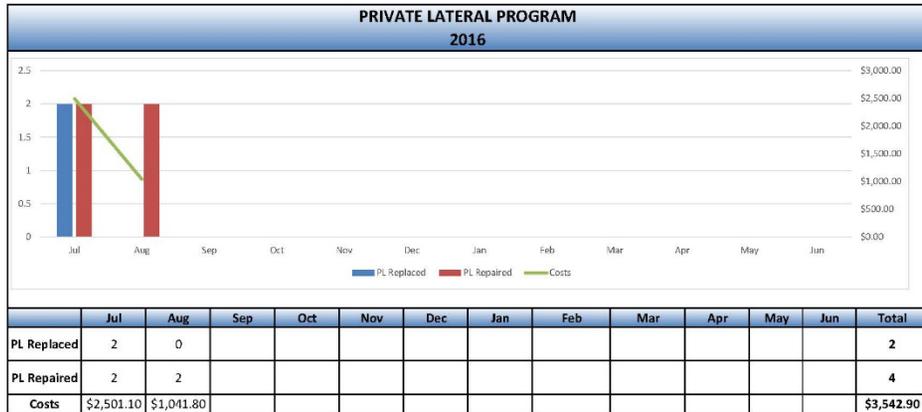
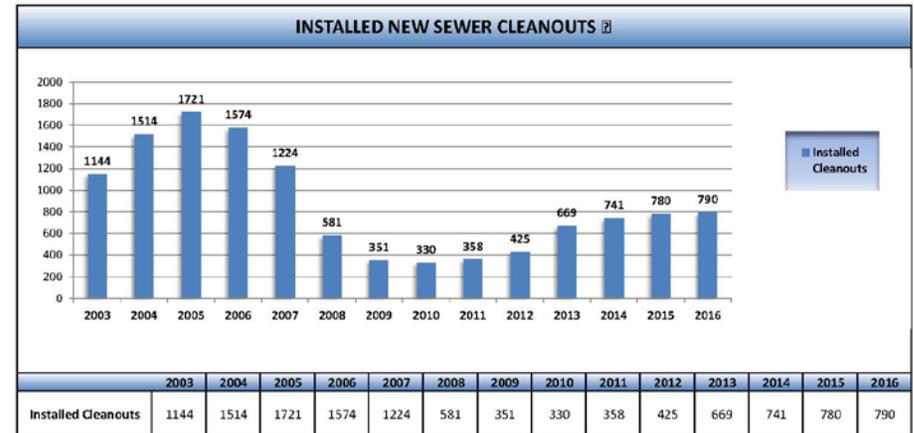
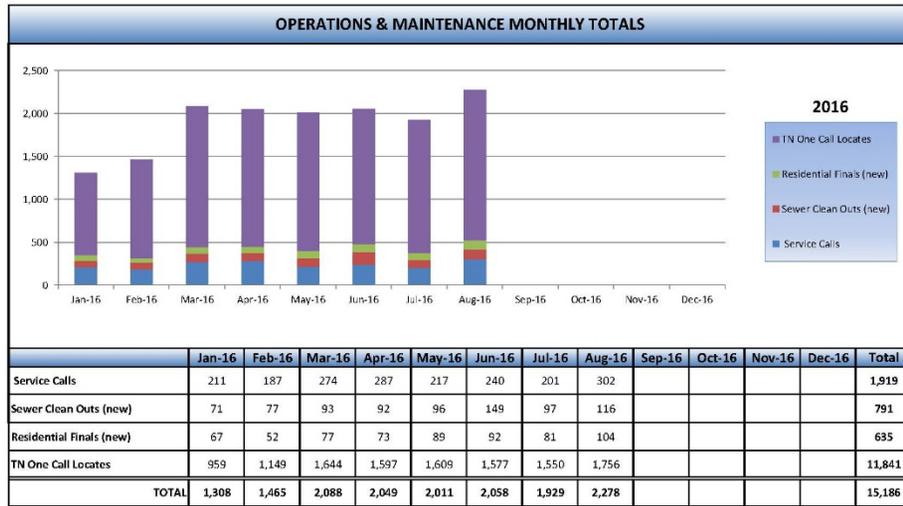


Average Influent Flow



Operations and Maintenance Dashboard

August 2016



ASPHALT PURCHASES 2016

DATE	PRODUCT PURCHASED	HAWKINS	HOOVER	LOJAC	OTHER	PURCHASED FROM	QTY	AMT PAID	APPROVED BY:	NOTES
4/14/2016	Cold Mix			\$73.00		Lojac	40.22	\$2,789.26	Taylor	Single source
4/27/2016	Fine BM	\$52.04				Hawkins	43.89	\$2,284.04	Taylor	Single source
5/3/2016	Fine BM	\$50.93	N/A	\$52.25		Hawkins	89.85	\$4,576.06	Taylor	
5/4/2016	BM	N/A		\$52.25		Lojac	86.12	\$4,499.77	Taylor	Hawkins closed
5/11/2016	Binder	\$50.62	N/A	\$46.25		Lojac	99.55	\$4,145.05	Taylor	Not running state mix
5/11/2016	Topping	\$54.18	N/A	\$53.00		Lojac			Taylor	Quote good for 1 month
5/13/2016	BM Binder	N/A	\$50.79	N/A		Hoover	19.98	\$1,014.78	Taylor	Not running state mix
5/13/2016						Lojac			Taylor	Single source
5/18/2016	Binder			\$46.25		Lojac			Taylor	Quote Only
5/18/2016						Hawkins	63.80	\$3,221.90	Taylor	May - Low bid Lojac
6/6/2016	BM Binder	\$50.50	\$51.00	\$55.78		Hawkins			Taylor	Hawkins
6/9/2016	BM	\$50.50				Hawkins	305.44	\$15,424.72	Taylor	Low bid for June
6/21/2016	Fine BM	\$50.50				Hawkins	15.88	\$801.94	Taylor	Hawkins low bid for June
6/22/2016	Fine BM	\$50.50				Hawkins	12.07	\$609.54	Taylor	
7/6/2016	Binder	\$50.80	\$51.43	\$54.18		Hawkins			Taylor	Quote Only
7/6/2016	Topping	\$58.60	\$59.03	\$62.19		Hawkins			Taylor	Quote Only
7/8/2016	Topping	\$58.60				Hawkins	81.88	\$4,798.17	Taylor	July - Low bid Hawkins
8/23/2016	Topping	\$58.60				Hawkins	10.01	\$549.75	Taylor	
8/23/2016	Binder	\$51.00	\$51.28	\$54.00		Hawkins			Taylor	Quote Only
8/23/2016						Hawkins			Taylor	Quote Only
9/14/2016	Binder	\$51.00	\$51.28	\$52.24		Hawkins			Taylor	Quote Only
9/14/2016						Hawkins			Taylor	Sept - Low bid Hawkins



DASHBOARD REPORT

Operations & Maintenance

July 2016 - June 2017

DISTRIBUTION SYSTEMS

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
New Stubs Water Pipe (ft)													
1" Copper	0	0											0
2" Copper	0	0											0
Maintenance													
Fire Hydrants (New)	0	9											9
Fire Hydrants (Blow off)	5	0											5
Main Water Line Damage	1	4											5
Main Water Line Leak	2	4											6
Taps (New)	35	17											52
Stubs (New)	0	0											0
Tap (Replacements)	1	2											3
Meter Connections	12	6											18

COLLECTION SYSTEMS

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
Maintenance													
Sewer Cleanouts (New)	97	116											213
Sewer Cleanouts (GIS Located)	2	2											4
Televised Lines & Line Cleaning (ft)													
TV Lines	23,095	27,025											50,120
TV Lines (Warranty)	0.00	0.00											0.00
TV Laterals	757.00	607.00											1,364.00
Line Cleaning	56,287.50	12,614.00											68,901.50
Sewer Rehab													
Maintenance Projects	5	9											14
Lateral Replacement Pipe (ft)	54	100											154
Restoration	20	22											42
Private Lateral													
Laterals Replaced	2	0											2
Laterals Repaired	2	2											4
4" SDR-35 (ft)	83	0											83
6" SDR-35 (ft)	13	8											21
Stormwater - Televised Lines & Line Cleaning (ft)													
TV Lines	0	0											0
Line Cleaning	0.00	0.00											0.00



DASHBOARD REPORT

Operations & Maintenance

July 2016 - June 2017

COLLECTION & DISTRIBUTION SYSTEMS

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
SERVICES													
Service Calls	201	302											503
TN One Call Locates	1,550	1,756											3,306
Inspections (Water & Sewer)	82	134											216
Inspections (Finals)	81	104											185
Total	1,914	2,296	0	4,210									
PAVING (tons)													
Asphalt	81.88	10.01											91.89
Stone	1,293.53	3,542.14											4,835.67

NEW CONSTRUCTION

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
Water Pipe													
6" C-900	0	0											0
8" C-900	0	0											0
6" Ductile Iron	0	0											0
8" Ductile Iron	0	0											0
1" Copper	345	0											345
2" Copper	0	0											0
Total	345	0	0	0	0	0	0	0	0	0	0	0	345
Sewer Pipe (ft)													
6" SDR-35 (PVC)	157	513											670
8" SDR-35 (PVC)	380	994											1,374
6" Ductile Iron	0	0											0
8" Ductile Iron	0	0											0
Total	537	1,507	0	2,044									
Maintenance													
Tap (Replacements)	0	0											

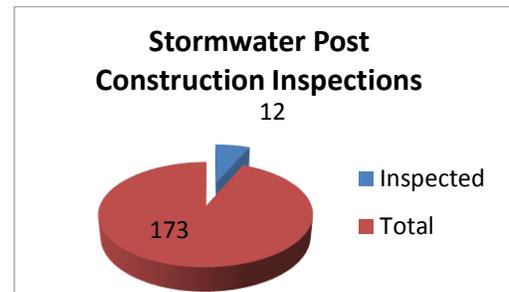
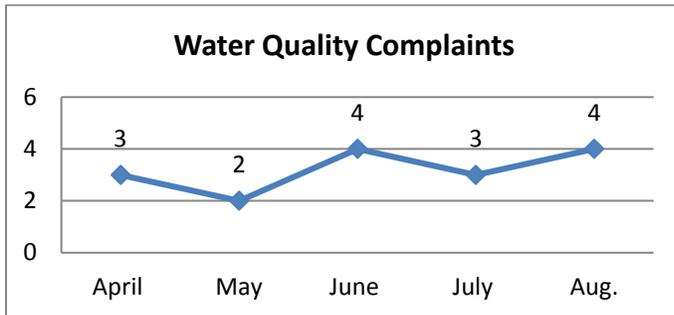
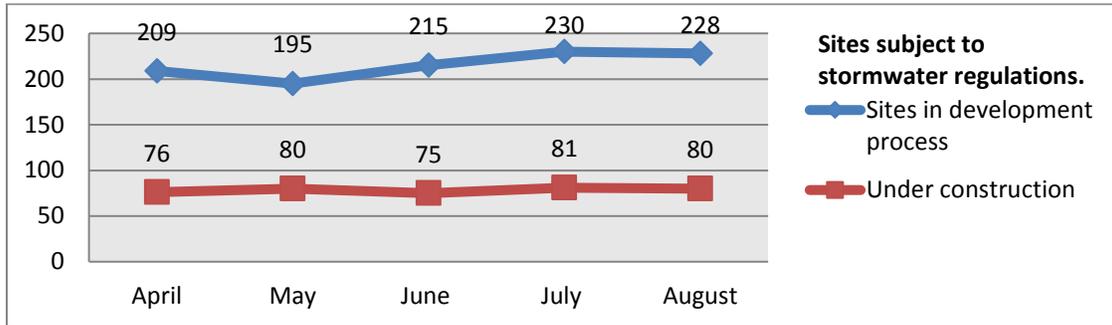


FLUSHING REPORT
Operations & Maintenance
July 2016 - June 2017

NON-BILLED WATER (O&M)													
	<i>JUL</i>	<i>AUG</i>	<i>SEP</i>	<i>OCT</i>	<i>NOV</i>	<i>DEC</i>	<i>JAN</i>	<i>FEB</i>	<i>MAR</i>	<i>APR</i>	<i>MAY</i>	<i>JUN</i>	<i>TOTAL</i>
Meters (Events)	28,275	0											28,275
Fire Hydrants	0	0											0
Jet\Wash Trucks	60,000	0											60,000
Sweepers & Saw	700	500											1,200
Stub & Meter Connection	5,600	5,600											11,200
New Construction	0	0											0
Tank Overflow & Main Line Leaks	11,300	105,000											116,300
Subtotal O&M	105,875	111,100	0	216,975									
NON-BILLED WATER (OTHER DEPTS)													
Engineering Department	1,742,032	2,834,472											4,576,504
Fire Department	1,718,505	3,406,404											5,124,909
Street Department	14,950	17,400											32,350
Subtotal Other Depts	3,475,487	6,258,276	0	9,733,763									
Total Non-Billed	3,581,362	6,369,376	0	9,950,738									
BILLED WATER													
O&M Water Pickup	21,743	47,010											68,753
Fire Hydrant Meter Rentals	3,713	31,449											35,162
Total Billed	25,456	78,459	0	103,915									
Total	3,606,818	6,447,835	0	10,054,653									

* Displayed in gallons

Stormwater August 2016



Monitoring and Sampling

Stream Miles Assessed (VSA June 2016)
 July - 0 miles
 August - 0 miles
 Year to Date - 2.2 miles

Samples Taken
 July - 0
 August - 9 (bacteria)
 Year to Date - 36

Outfall Screenings
 July - 0
 August - 2
 Year to Date - 4

Stormwater Infrastructure

Gravity Mains (ft)
 August - 9,689
 Year to Date - 42,294

Junction Boxes
 August - 93
 Year to Date - 406

Weirs/Headwalls/Basins
 August - 8/30/8
 Year to Date - 19/127/21
Pavers/ P. Concrete
 Total to Date: 31.3 acres

Outfalls
 July - 0
 August - 0
 Year to Date - 6

Stormwater Activities

Outreach Events
 July - 0
 August - 0
 Year to Date - 5

Ongoing Projects
 - West Fork Stones River bank stabilization
 - Invasive aquatic plant treatment and management plan at Murfree Spring Wetlands

