



Customized Solutions to your Flow Metering Needs

September 18, 2013

Mr. Jim Hilborn, P.E.  
**GRW ENGINEERS, INC.**  
 404 BNA Drive, Suite 201  
 Nashville, TN 37217

**RE: PROPOSAL FOR TEMPORARY FLOW MONITORING AND  
 INFILTRATION / INFLOW ANALYSIS – CROSSVILLE, TENNESSEE**

Dear Jim,

Thank you for allowing us to submit this proposal for temporary flow monitoring in the remaining two drainage basins in Crossville. I met with Bob Threadgill and Andrew Hulsey in your office today and looked at the system map with 13 sites tentatively identified. CSL will field verify these locations and discuss any changes with you before proceeding. Once final locations are determined, we will install and calibrate the flow meters along with 2 rain gauges and collect data for a period of 90 days. Once the data collection period is completed we will analyze the data and develop an infiltration and inflow (I&I) analysis following the format that we used on the Little Obed study we completed earlier this year.

Our proposed cost schedule for this work is presented below, and our Terms and Conditions are provided on pages 3 through 5.

**PROPOSED COST SCHEDULE**

Item	Units	Unit Price	Item Total
1. Flow Monitor Installation and Calibration, each	13 each	\$ 600	\$ 7,800
2. Flow Monitor Maintenance and Data Collection, per meter-day	1,170 meter- days	\$ 45	\$ 52,650
3. I&I Analysis and CSL Final Report submitted to GRW	LS	\$ 6,500	\$ 6,500
	<b>TOTAL</b>		<b>\$ 66,950</b>

*Flow Monitors*  
 13      14

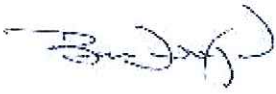
*8,400*  
*56,700*  
*6,500*  
*67,600*

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We look forward to continuing to provide our services to GRW, Veolia and the City of Crossville and pledge to deliver quality data on which to base your rehabilitation design. Please let me know if you have any questions or comments.

Best regards,

**CSL SOUTH, INC.**

A handwritten signature in black ink, appearing to read "William H. Dawson", with a stylized flourish at the end.

William H. Dawson, P.E.  
Vice President

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## CSL South, Inc. (CSL)

### Terms and Conditions for Temporary Flow Monitoring Services

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#### CSL Scope of Services:

The Services To Be Performed by CSL Will Include the Following:

- Provide a 2-person field crew for all CSL field work
- Provide sewer flow monitoring equipment to measure sanitary flows
- Install and program flow monitoring equipment at client designated locations
- Collect flow data and manually confirm depth and velocity measurements of monitors at monitor equipment installation, and immediately prior to monitoring equipment removal
- Remove flow monitoring equipment at the end of the monitoring period
- Perform data processing and analysis
- Prepare and deliver a final report

#### Flow Monitoring Equipment:

The flow monitoring equipment provided by CSL shall be suitable for open channel sewer flow monitoring. CSL will use portable, battery-powered flow monitoring equipment at all flow monitor locations. Flow monitors will be programmed to record measured flow depth and velocity at no greater than 15-minute intervals.

CSL will use Hach/American Sigma, Isco, ADS or FlowAV area-velocity flow monitoring equipment. These flow monitors use bubbler or pressure sensor technology for level measurement, and ultrasonic, continuous wave Doppler technology for velocity measurement.

#### Safety:

CSL has full responsibility for the safety of its employees and agents, including providing appropriate safety equipment for its field personnel.

CSL shall assign personnel to the project who are trained in flow monitoring, familiar with working in the field and are trained in safe traffic control and permit-required confined space access procedures. A 2-person field crew is nominally required for safe confined space access (manhole entry) per OSHA regulation. CSL shall be fully responsible for its own safety while on the job. CSL personnel shall comply with City, County, State and Federal OSHA requirements.

CSL will provide limited traffic control setup with cones and signs, as required. CSL assumes heavy traffic control, including all labor and equipment beyond cones and signs, will be provided by others, if required. Heavy traffic control would include, but not be limited to, traffic plan(s), flag person(s), arrow board(s), lighted sign board(s), etc.

**Specific Exclusions:**

CSL specifically excludes the following work tasks necessary to accomplish the base scope of work:

- Field locating potential monitoring locations
- Uncovering buried or paved over manholes
- Accessing manholes on private property
- Field visit(s) to the flow monitoring location(s) between scheduled visits
- Interim data submittals
- Moving flow monitors once installed
- Provision of more than a 2-person field crew
- Data loss due to events beyond CSL's control
- Heavy traffic control not provided by CSL

**Deliverables:**

CSL will deliver to the CLIENT two (2) copies of a flow monitoring data report that is to include:

- Field investigation report(s) describing monitoring location information, access information, and area maps
- Hydrograph(s) of depth, velocity, and flow using hourly averaging of 15-minute measurements
- Tabular output(s) of the flow using hourly averaging of 15-minute measurements, including daily minimum, average, and peak flow rate
- High Groundwater Infiltration and Rainfall-derived I&I quantities for each sub-system
- Sub-system prioritization table

**Responsibilities Of The Client:**

CSL is proposing to provide a turnkey service that will minimally impact the client's resources. Certain items, however, will be required in advance of CSL filed activities to accomplish the basic Scope of Services. The items are:

- Provide engineering maps clearly identifying each of the flow monitoring locations
- Provide linear footages and diameters of each sub-system
- Provide a list of proposed flow monitoring location(s) with pipe diameters identified at least 2 weeks prior to CSL's mobilization to the project site (Imperative for preparing sensor flow monitoring equipment)
- Field confirm that manhole(s) are accessible, not buried, not paved over, not on private property, etc.
- Field confirm that monitoring locations do not have accumulated debris precluding flow monitoring equipment installation or causing flow disturbance

**Payment Terms:**

CSL shall submit progress payment invoices at monthly intervals during the performance of services. The progress payment invoices will be based on CSL estimated completion percentages. At the completion of services, CSL will submit a final invoice for any remaining portion of the contract amount not previously invoiced. If CSL's CLIENT is not the Primary Contracting entity, CLIENT shall invoice the Primary

Contracting entity for CSL work within 5 business days of receipt of CSL invoice. Payment Terms are Net 30 days. 1.5% per month interest shall be added to all payments in excess of 30 days.

**Work Schedule:**

CSL will coordinate the start of the monitoring period with the CLIENT after CSL receives a written notice to proceed.

**Additional Work Items:**

CSL shall not perform work outside of the scope of services listed in these terms and conditions for temporary flow monitoring services unless changed by written amendment by both CSL and the CLIENT.

**Insurance:**

CSL currently carries the following coverage:

General & Excess Umbrella Liability  
HARTFORD FIRE INSURANCE COMPANY  
\$1,000,000  
Policy # 13uunkh0479  
Exp. 03/13/14

Automobile Liability  
SENTINEL INSURANCE COMPANY  
\$1,000,000  
Policy # 13UUNKH0479  
Exp. 3/13/14

Excess/Umbrella Liability  
HARTFORD CASUALTY INSURANCE COMPANY  
\$1,000,000  
POLICY # 13XHUKH0603  
EXP. 03/13/14

Professional Liability  
IRONSHORE SPECIALTY INSURANCE CO.  
\$1,000,000  
Policy # 000530303  
Exp. 07/16/14

Workers Compensation & Employer's Liability  
Trumbull Insurance Company  
\$500,000/ \$500,000/ \$500,000  
Policy # 13WECBJ6990  
Exp. 01/15/14

**EXECUTION**

Execution by a representative of GRW ENGINEERS, INC. will be authorization for CSL to proceed with the Services described herein.

The parties hereto have caused this Agreement to be executed this \_\_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_.

**FOR GRW ENGINEERS, INC.:**

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

ATTEST: \_\_\_\_\_

**FOR CSL SOUTH, INC.:**

By: \_\_\_\_\_

Title: Vice President

Date: 9/18/2013