

# **SCOPE OF WORK**

## **ENGINEERING SERVICES**

### **FOR**

## **I/I PROGRAM SUPPORT (FY18/19)**

## **CITY OF OREGON CITY, OREGON**

### **Background**

The City of Oregon City (City) is in the midst of implementing an infiltration and inflow (I/I) characterization and reduction program. The City has completed flow monitoring, finalized and adopted a sanitary sewer master plan (SSMP), completed smoke-testing, and is now looking to develop an I/I program that outlines capital expenditures for the next 5 years. The City is seeking a consultant to help define the program, identify immediate projects to start reducing I/I flows to the system, and provide assistance managing the program.

### **Scope of Work – Tasks, Deliverables and Schedule**

This scope of work describes services to be provided by Murraysmith. Work will be performed by major work tasks outlined as follows:

- Task 1 – Project Management
- Task 2 – Data Review
- Task 3 – Develop I/I Program and Budget
- Task 4 – 2019/2020 CIP Projects

A more detailed discussion of proposed work tasks is provided below.

#### **Task 1 – Project Management**

This task includes the administration and coordination of the Consultant's staff, subconsultants, and the interface with the City's project manager and other City staff. Murraysmith will actively manage all project work to meet the project budget and schedule unless otherwise agreed-upon with the City. For the purposes of this scope and budget, an 11-month project duration is anticipated. The following subtasks are included:

## 1.1 Program Administration

- Perform general administration and project management throughout project to ensure successful completion of all tasks within the established scope, schedule and budget.
- Process and submit monthly billings with a summary of project status by task and subtask, including a summary of invoicing from subconsultants retained for this project.
- Provide progress reporting with monthly billings including review of work efforts completed, percent completion, and any encountered or projected challenges or issues.
- Prepare a project management plan and schedule to provide the project team with details regarding project scope and execution.
- Establish and follow a project quality assurance/quality control plan.
- Conduct bi-weekly progress meetings via conference call to update the City on current program status.
- Participate in and present at Technical Advisory meetings to present on Oregon City's program, as requested by the City. For the purposes of the fee, 2 meetings have been assumed.

## Task 2 – Data Review

This task includes the review of I/I efforts and other data collected by the City. Data includes flow monitoring, smoke-testing, recent CIP projects, CCTV data, O&M records, and stormwater assets and planned improvements. Subtasks include:

- Conduct interviews with O&M staff and gather records to determine system response during wet-weather events, including locations of flooding, backups, SSOs, customer complaints, and other information from the SSMP, draft stormwater master plan, and recent City projects.
- Review City CCTV inspection records to assess risk of sewer failure by determining overall structural condition grade and worst single defect for each pipe segment based on defects identified during CCTV inspection. Include in the scoring the high "consequence of failure" for critical lines that cannot be allowed to fail (e.g., largest and deepest lines, and lines under major arterials, highways, railroad tracks, buildings, or other costly-to-replace improvements).
- Review smoke-testing results and flow-monitoring results.
- Obtain and build GIS mapping that overlays the received data.

## Assumptions

The following assumptions are made:

- City shall provide all constraints to the work including, but not limited to, work hour restrictions, noise limitations, lane closures, restrictions on excavation, and individual lateral bypassing.
- City shall provide GIS files related to smoke-testing, CCTV, SSMP, SWMP, and work order/customer history, as available.

## Task 3 – Develop I/I Program

To provide recommendations for addressing I/I, this task will develop a prioritization of basins within the City and include subtasks for moving forward with the program: identification of near-term projects, identification of 5-year CIP and budget needs, and development of I/I reduction policies including work on private property.

### 3.1 Program Development, Basin Prioritization, and 5-Year CIP Plan

- Data analysis to prioritize basins. Develop planning-level costs to address I/I in each basin. Rank basins based on most-concentrated I/I rates and estimated cost-effectiveness rates (i.e., cost per gallon of I/I removed), while considering other capital project needs (e.g., new stormwater conveyance, future road improvements, etc.) within those basins.
- Following completion of I/I ranking by basin, advise City on targeted cleaning and CCTV inspection of highest I/I basins for which no recent (e.g., last 5 year) inspection records are available. Recommend further CCTV inspection, on cycle time that meets the City's current program.
- Conduct a workshop with the City to review findings from Task 2 and prioritization of basins and to solicit input prior to finalizing program.
- Categorize recommended program elements into packages. Develop 5-year I/I Reduction Project List (CIP). CIP will include planning level costs based on initial program recommendations, private I/I source control policy decisions, available City funding, asset management best practices including addressing sewers that require structural renewal, and ideal construction project size. Anticipated short-term packages include an early action project for design/construction in 2019, an open-cut project to be designed in 2019 and constructed in 2020, and a completely trenchless project to be designed in 2019 and constructed in 2020.
- Conduct workshop presenting 5-year CIP.
- Technical Memorandum documenting program goals, objectives, prioritization, and 5-year CIP.

### 3.2 *Private I/I Source Removal Policy Support*

- Review existing City Code and Inter-Governmental Agreements to determine current ability for City to develop policies regarding removing private I/I sources.
- Provide estimated I/I amounts and removal costs associated with private-side I/I sources.
- Assist in the development of a private property I/I source removal policy.
- Conduct 2 meetings with City to review findings and draft policy.
- Prepare for and present at one City Council meeting to discuss Private I/I Source Removal.
- Develop construction standards, including rehabilitation or replacement of the private portion of laterals and disconnection of inflow sources such as roof leaders and foundation drains.
  - Review existing details and standards.
  - Develop draft details related to I/I reduction that adhere to City Code. 6 standard details are assumed.
  - Review City standard construction specifications and revise 4 specification sections to include products and performance requirements related to I/I reduction.
  - Conduct 1 workshop with the City to review and solicit comments on details and specifications.
  - Deliver details and specifications in electronic (Civil 3D and MS Word) format.

## Task 4 – 2018 and 2019 Designs (Requires Written Authorization)

To develop construction bid packages for immediate needs project (to be constructed in 2019) and 2 additional capital projects (to be constructed in 2020) as the first phase of the I/I reduction program. A general budgetary placeholder has been developed for each of the three design packages and subsequent construction management and support. Murraysmith will develop a detailed scope and fee once the projects become more defined. No work will be done under this task without prior written authorization from the City.

### 4.1 *Near-Term Projects (2019 and 2020)*

- Develop design package for an immediate needs (2019) project. Identify construction contracting mechanisms, including work that can be conducted by City crews. For the

purposes of this scope and fee, it is assumed that an immediate needs project will address sources of high inflow in the public right-of-way, and that the estimated construction cost for the project is less than \$200,000. Design efforts will include:

- Development of 50%, 90%, and Final Plans, Specifications, and Engineer's Estimate (PSE). No geotech explorations will be included in this effort.
  - Bidding Assistance
  - Engineering Services During Construction
  - Construction Management and Support
- 2020 open-cut I/I reduction project. For the purposes of this scope and fee, it is assumed this project will involve reconstruction or installation of new storm and/or sanitary sewer in the public right-of-way, and that the estimated construction cost for the project is less than \$500,000. Design efforts in 2019 will include:
  - Field data collection, including topographic survey, geotechnical, and utility exploration.
  - Development of 30%, 60%, 90%, and Final PSE.
  - Bidding Assistance
- One 2020 rehabilitation I/I reduction projects utilizing primarily trenchless technologies. For the purposes of this scope and fee, it is assumed this project will involve the use of trenchless technologies to address structurally deficient and leaking sewers and that the estimated construction cost for the project is approximately \$300,000. No new easements will be required. Design efforts in 2019 will include:
  - Field data collection, including topographic survey, geotechnical, and utility exploration.
  - Development of 30%, 60%, 90%, and Final PSE.
  - Bidding Assistance

### *Assumptions*

The following assumptions are made:

- City shall coordinate all public outreach and permitting activities. No time has been budgeted for consultant assistance with coordination of third-party agencies, permitting agencies, or private property coordination.

- The City will advertise the project and manage printing and/or electronic distribution of construction contract documents.
- The City will receive, open and review bids, and notify bidders of intent to award.
- The City will manage the contract execution with the successful bidder.
- A six-week active construction period is assumed for the 2018 Immediate Needs project, and Murraysmith will provide part-time construction observation in addition to construction management and engineering services during construction.

## Fee Estimate

Murraysmith proposes to complete this work as detailed above on a time and expenses basis as summarized on the attached Fee Spreadsheet. Agreed “not-to-exceed” amounts are to be based on the scope of work incorporated herein and will not be exceeded without approval and written authorization by the City.

## Schedule

We are prepared to begin work immediately upon your authorization. The general program framework and scoping of a 2019 immediate needs project is anticipated be developed within 6 weeks of receiving authorization to proceed.

- 2020 design projects are budgeted through advertisement; no services during construction or construction management have been budgeted for the two 2020 design projects.

I/I PROGRAM SUPPORT (FY18/19)  
CITY OF OREGON CITY, OREGON  
PROPOSED FEE ESTIMATE

							ESTIMATED FEES					
	Principal Engineer III RKL \$217	Engineering Designer V JRL \$149	Engineering Designer I GJB \$120	Technician IV DKH \$141	Administrative II KLP \$92	Hours	Labor	Subconsultants		Subconsultant Total	Expenses	Total
								Survey	Geotech			
Task 1 - Project Management and Coordination						0	\$ -			\$ -	\$ -	\$ -
Task 1.1 - Project Setup and Invoicing	13				26	39	\$ 5,213			\$ -	\$ -	\$ 5,213
Task 1.2 - Biweekly Progress Meetings	22					22	\$ 4,774			\$ -	\$ -	\$ 4,774
Task 1.3 - Internal Coordination, PMP, and QAQC Plan	8	12	2	2		24	\$ 4,046			\$ -	\$ 36	\$ 4,082
Task 1.4 - Kickoff Meeting	4	4	3			11	\$ 1,824			\$ -	\$ 50	\$ 1,874
Task 1.5 - Technical Advisory Meetings	12					12	\$ 2,604			\$ -	\$ -	\$ 2,604
Task 1 Subtotal	59	16	5	2	26	108	\$ 18,461	\$ -	\$ -	\$ -	\$ 86	\$ 18,547
Task 2 - Data Review						0	\$ -			\$ -	\$ -	\$ -
Task 2.1 - O&M interviews	6	8				14	\$ 2,494			\$ -	\$ 90	\$ 2,584
Task 2.2 - City Records (SSOs, flooding, complaints)	4	8	16			28	\$ 3,980			\$ -	\$ 25	\$ 4,005
Task 2.3 - Obtain and compile CCTV, SSMP, and SWMP data	4	4	12			20	\$ 2,904			\$ -	\$ -	\$ 2,904
Task 2.4 - GIS Overlay Mapping	8	12	24			44	\$ 6,404			\$ -	\$ -	\$ 6,404
Task 2 Subtotal	22	32	52	0	0	106	\$ 15,782	\$ -	\$ -	\$ -	\$ 115	\$ 15,897
Task 3 - Develop I/I Program						0	\$ -			\$ -	\$ -	\$ -
Task 3.1 - Program definition and basin prioritization	40	44	60			144	\$ 22,436			\$ -	\$ 200	\$ 22,636
Task 3.2 - City Workshop	20	20	8			48	\$ 8,280			\$ -	\$ 200	\$ 8,480
Task 3.3 - Develop 5-Year CIP	32	40	60			132	\$ 20,104			\$ -	\$ -	\$ 20,104
Task 3.4 - I/I Program Technical Memorandum	20	24	40			84	\$ 12,716			\$ -	\$ -	\$ 12,716
Task 3.5 - Private I/I Policy	44	20	12			76	\$ 13,968			\$ -	\$ -	\$ 13,968
Task 3.6 - Develop Construction Standards	32	60	60	24		176	\$ 26,468			\$ -	\$ 432	\$ 26,900
Task 3 Subtotal	188	208	240	24	0	660	\$ 103,972	\$ -	\$ -	\$ -	\$ 832	\$ 104,804
TOTAL - ALL TASKS	269	256	297	26	26	874	\$ 138,215	\$ -	\$ -	\$ -	\$ 1,033	\$ 139,248
Task 4 - 2018 and 2019 Designs (requires written authorization)						0	\$ -			\$ -	\$ -	\$ -
Task 4.1 - 2019 Immediate Needs Design	40	60	75	60		235	\$ 35,080	\$ 11,000		\$ 11,000	\$ 1,255	\$ 47,335
Task 4.2 - 2019 Immediate Needs CM	16	32	150	8		206	\$ 27,368			\$ -	\$ 819	\$ 28,187
Task 4.3 - 2020 Open-Cut Design	70	120	160	120		470	\$ 69,190	\$ 27,500	\$ 22,000	\$ 49,500	\$ 2,510	\$ 121,200
Task 4.4 - 2020 Open-Cut CM (not budgeted in 2018/2019)	N/A	N/A	N/A	N/A		0	\$ -			\$ -	\$ -	\$ -
Task 4.5 - 2020 Trenchless Design	60	100	140	80		380	\$ 56,000	\$ 16,500	\$ 11,000	\$ 27,500	\$ 1,740	\$ 85,240
Task 4.6 - 2020 Trenchless CM (not budgeted in 2018/2019)	N/A	N/A	N/A	N/A		0	\$ -			\$ -	\$ -	\$ -
Task 4 Subtotal	186	312	525	268	0	1291	\$ 187,638	\$ 55,000	\$ 33,000	\$ 88,000	\$ 6,324	\$ 281,962