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**Supplemental Task Order – 2015 Balance of Services**

**Potable Plume Delineation, Biannual Potable Well Sampling, Annual Groundwater/Surface Water Monitoring, Remediation Feasibility Studies and Preliminary Remediation Design**

**Scope and Authorization to Proceed  
Former Town of Newton Gravel Pit  
AECOM Project No. 60135471 (82518)**

**A. Purpose of Task Order**

AECOM Technical Services, Inc. (AECOM) is to provide consulting and subcontractor services for the balance of the 2015 calendar year for the Former Town of Newton Gravel Pit project. AECOM proposes to perform these services as a supplemental task order under the terms of our Consulting Agreement authorized by the City of Manitowoc Common Council November 23, 2009. These costs will be tracked and invoiced as a single task under AECOM's current Project No. 60135471.

**B. Scope of Services**

The proposed scope of services is summarized in the list immediately below followed by more detailed descriptions of individual tasks:

- City Budget Preparation
- Potable Well Treatment Equipment Guidance
- Project Management
- Potable Well Sampling – 2-Year Work Plan
- Pond Groundwater Delineation
- SVE Pilot Study & Free Product Characterization
- Potable Well Plume Delineation – 3 Phases
- Annual Site Wide Groundwater Sampling
- Semi-Annual Potable Well Sampling
- Remedial System Preliminary Design
- Remedial Action Option Report (ROAR)
- Town Hall Meeting

**City Budget Preparation**

AECOM will assist the City of Manitowoc by preparing an environmental project budget for the 2016 fiscal year. The budget will include the proposed consulting tasks anticipated to be completed during the budget cycle along with estimated construction costs where applicable. Included in this task is attendance at a single budget team meeting.

**Potable Well Treatment Equipment Guidance**

AECOM will prepare a guidance document for the City's use. The goal of the guidance document will be a reference for selecting residential potable water treatment equipment based upon water analytical results as compared to guidelines for nuisance compounds that may cause aesthetic effects (such as taste, odor, or color) in drinking water. The guidance document will provide treatment equipment recommendations for situations where a potable well has been replaced as part of environmental activities associated with the Former Newton Gravel Pit or for potable wells not associated with the Former Newton Gravel Pit environmental activities but associated with the Wisconsin Department of

Natural Resources (WDNR) designated Special Well Casing Pipe Depth Area in the vicinity of the Former Newton Gravel Pit.

### **Project Management**

The Newton Pit project team (City personnel, WDNR personnel, and the AECOM project manager) typically meet on a monthly basis. Most meetings are convened at City Hall, but some meetings are conference calls. Occasionally, the City Team (City personnel and AECOM project manager) have a preparation meeting prior to the regularly scheduled monthly meeting. AECOM has budgeted 10 hours a month project management time for these meetings and other typical project management activities.

### **Potable Well Sampling – 2 Year Work Plan**

AECOM will prepare a Potable Well Monitoring Work Plan for submittal to the WDNR. The anticipated scope will be to conduct bi-annual sampling of select potable wells from the second half of 2015 and all of 2016 (a total of three future sampling events).

### **Pond Groundwater Impact Delineation Feasibility Study**

One of the groundwater remediation solutions being considered for the project is to construct a pond for the treatment of groundwater down-gradient (to the east) of the Western Source Area. To facilitate the design of the pond it is necessary to further investigate the width and depth of the impacted groundwater plume at the proposed pond location. It is anticipated that the feasibility study will include:

- Two days of well drilling to install temporary monitoring wells across the proposed location.
- Groundwater level measurements and sampling of groundwater from the temporary monitoring wells.
- A top-of-casing survey of the temporary wells based on back shots to the existing monitoring well network.
- Laboratory analysis of 10 groundwater samples by a Wisconsin Administrative Code (WAC) Chapter NR 149 certified laboratory for analyses of volatile organic compounds (VOCs) (EPA Method SW 8260B).
- A technical memo presenting the feasibility study results.
- Laboratory and drilling subcontractor costs are estimates. Final subcontractor costs will be determined through formal bids and invoiced accordingly.
- Investigation derived waste, i.e. soil cuttings from the borings, are assumed to be uncontaminated and will be disposed of on-site.

### **SVE Pilot Study & Free Product Characterization Feasibility Study**

Soil vapor extraction (SVE) and free product removal are being considered to reduce the mass of contamination within the Western Source Area. To facilitate the design of these removal systems it is necessary to conduct an SVE pilot study and to characterize the free product. It is anticipated that the feasibility study will include:

- One day of well drilling to install a 4-inch SVE extraction well and eight vapor monitoring probes.
- Provide an SVE pilot trailer w/ accessory equipment.
- Three days to setup, conduct, and demobilize the pilot study.
- Laboratory analysis of five air samples for volatile organic compound (VOCs).
- Laboratory analysis to characterize one free product sample.
- A technical memo presenting the feasibility study results.
- Laboratory and drilling subcontractor costs are estimates. Final subcontractor costs will be determined through formal bids and invoiced accordingly.

- Investigation derived waste, i.e. soil cuttings from the borings, will be drummed and stored on-site. Disposal cost for this waste is not included with this Task Order.

### Potable Well Plume Delineation

A preliminary three phase work plan has been proposed to further delineate the down-gradient groundwater contaminant plume east of Hecker Road and along CTH CR. The importance of this delineation work is related to the groundwater impacts observed on the vicinity of CTH CR, just south of the intersection with Viebahn Street, and east along Viebahn Street from the intersection with CTH CR. The goal of the delineation is to fill data gaps in the groundwater monitoring data. The delineation work is planned in three phases with the understanding that the City can choose to not proceed with subsequent phases of work at any time. The phases are:

#### Phase 1 – Historical Well Records Search and Evaluation

AECOM will review all available Well Construction Reports (WCRs) for the area of interest with the goal to match as many of the reports with current and former property owners. By doing so, we may be able to understand the depths of the existing potable wells, thus filling data gaps in the potable well sampling network.

#### Phase 2 – Existing Potable Wells

If the review of WCRs does not identify and provide potable well depths within the area of interest, AECOM proposes to conduct field measurements of the existing potable wells of interest. The anticipated scope is as follows:

- Negotiate right-of-entry with each homeowner. AECOM will assist the City with these negotiations. AECOM planned for one on-site meeting for these negotiations.
- AECOM will work with the City to hire a qualified well driller to remove well water pumps from the potable wells and measure the total depth of the wells. AECOM has budgeted for the field measurement of six potable wells. Please note; it is possible that damage to the well pumps, their wiring, or the piping associated with the pumps may occur during the measurement process through no negligence of AECOM nor the City-retained subcontract well driller. Any cost associated with repairing damage is not included in AECOM's proposed budget and may be an extra expense to the City.

#### Phase 3 – Install New Groundwater Monitoring Wells

If further investigation of the down-gradient groundwater contaminant plume is necessary, two sets of nested groundwater monitoring wells will be installed within the area of interest. It is anticipated a total of six wells will be installed. Each well nest will include three wells consisting of one water table well and two piezometers.

- Negotiate right-of-entry with each property owner. AECOM will assist the City with these negotiations. AECOM planned for one on-site meeting for these negotiations.
- Four days of field work for the installation of the wells.
- Each of the newly installed wells will be developed and sampled prior to incorporating into the annual site-wide monitoring event. As in the past, AECOM assumes that the City will assist with the disposal of development and sampling purge water.
- Laboratory analysis of seven groundwater samples by a WAC Chapter NR 149 certified laboratory for analyses of VOCs.
- The location of each newly-installed well will be surveyed (X and Y coordinates), as well as top of casing elevation.
- AECOM will complete boring logs and well construction and development documentation for each well (WDNR Forms 4400-122 and 4400-113A and 113B).
- AECOM will assist the City with reporting preliminary sampling results to the WDNR. If the delineation results are supportive of a separate delineation report, AECOM will prepare such a

report. Otherwise, the formal reporting of the well installation and sampling activities will occur in the 2015 annual groundwater and surface water sampling report.

- Laboratory and drilling subcontractor costs are estimates. Final subcontractor costs will be determined through formal bids and invoiced accordingly.
- Investigation derived waste, i.e. soil cuttings from the borings, are assumed to be uncontaminated and will be disposed of at the gravel pit site.

### **Annual Groundwater and Surface Water Sampling**

The annual site groundwater/surface water monitoring is anticipated to occur during October 2015. The scope of services includes sampling 47 existing groundwater monitoring wells, 3 staff gages in Silver Creek, and the proposed 6 new groundwater monitoring wells that may be installed during 2015. The work is anticipated to include:

- Obtaining groundwater and free product elevation measurements for use in interpreting the groundwater flow direction.
- Purge and sample groundwater for field parameter analysis (pH, dissolved oxygen, conductivity, and redox potential) along with sampling for laboratory analysis of VOCs. AECOM assumes that the City will assist with the disposal of sampling purge water.
- Conduct water sampling from Silver Creek for field parameters and VOCs consistent with groundwater sampling.
- Collect quality control samples. The quality control samples will include field duplicate and laboratory-prepared matrix spike/matrix spike duplicate samples.
- Analyze an estimated 62 water samples (includes quality control samples) to a WAC Chapter NR 149 certified laboratory for analyses of VOCs (EPA Method SW 8260B).
- Compile the data into a letter report for submittal to the City and the WDNR. The letter report will include a written summary of the sampling event, summarized laboratory results in tabular form, figures showing the results, and copies of laboratory reports.
- Laboratory subcontractor costs are estimates. Final subcontractor costs will be determined through formal bids and invoiced accordingly.

### **Semi-Annual Potable Well Sampling**

The second semi-annual potable well sampling event for 2015 is anticipated to occur during October. AECOM will sample an estimated total of 30 potable wells. The specific wells to be sampled will be determined by the Potable Well Monitoring Work Plan. The scope of services for the sampling event is expected to include:

- Notification to the potable well owners to schedule the sampling (to be conducted by the City) and coordination between AECOM, the City, and owners to determine specific sampling times for an AECOM field technician to sample the private wells.
- Collection of potable well water samples and quality control samples. The quality control samples will include field duplicate and matrix spike/matrix spike duplicate samples. The quality control samples will be determined by AECOM field personnel.
- Submit an estimated 35 water samples (includes quality control samples) to a WAC Chapter NR 149 certified laboratory for analyses of VOCs (EPA Method SW 8260B).
- AECOM will assist the City with reporting the sampling results to both the WDNR and individual potable well owners. A potable well sampling letter report will be submitted to the WDNR by AECOM. The letter report will include a written summary of the sampling event, summarized laboratory results in tabular form, a figure showing the results, and copies of laboratory reports. Well owner notification of analytical results will be performed by the City and is expected to include a cover letter explaining the results with an attached copy of the well-specific laboratory report. The WDNR will be copied on the well owner reporting.

- The proposed scope of services does not include confirmation potable well water sampling if a new/replacement potable well is installed at a residence with an impacted well. These services will be provided under a separate cover if potable well replacement activities take place.
- If sampling results indicate that updates should be made to the number of Target Zone or Sentinel Zone wells (as provided for in the Potable Well Monitoring Work Plan), those changes will be reflected in the number of potable wells sampled during subsequent sampling events.
- Laboratory subcontractor costs are estimates. Final subcontractor costs will be determined through formal bids and invoiced accordingly.

#### **Remedial System Preliminary Design**

AECOM will prepare a preliminary design to determine the viability of the proposed remedial alternative; groundwater treatment pond with Western Source Area mass reduction via SVE and free product removal. It is anticipated that the preliminary design work may include:

- Groundwater modeling for capture zone analysis to assist in determining the pond size.
- Preliminary grading plan for treatment pond with littoral vegetated treatment zone and treatment equipment operation parameters where applicable.
- SVE modeling to determine extraction well layout design, air permit requirements, and treatment equipment operation parameters.

#### **Remedial Action Option Report (ROAR)**

AECOM will prepare a WDNR required Remedial Actions Options Report (RAOR) in general accordance with WAC NR 722 *Standards for Selecting Remedial Actions*. The report will identify and evaluate three appropriate remedial action options for the site and provide a recommendation for the selected remedial action.

#### **Town Hall Meeting**

AECOM will assist with the preparation for and attend the annual Town Hall Meeting. Preparation is anticipated to include printing of large format graphics based upon existing site figures and attendance is for two AECOM staff.

### **C. Compensation**

The total cost to complete the described activities is estimated to be **\$ 218,240.00**. The sub-totals for each task are as follows:

<u>Task</u>	<u>Sub-Total</u>
City Budget Preparation	\$ 4,090
Potable Well Treatment Equipment Guidance	\$ 3,310
Project Management	\$ 15,190
Potable Well Sampling – 2-Year Work Plan	\$ 2,670
Pond Groundwater Delineation	\$ 11,410
SVE Pilot Study & Free Product Characterization	\$ 32,900
Potable Well Plume Delineation – 3 Phases	\$ 66,620
Annual Site Wide Groundwater Sampling	\$ 29,010
Semi-Annual Potable Well Sampling	\$ 16,080

Remedial System Preliminary Design	\$ 21,570
Remedial Action Option Report (ROAR)	\$ 9,990
Town Hall Meeting	\$ 5,400

Activities outside the scope of services described in this proposal will only be completed with prior written approval.

**E. Schedule**

AECOM will commence the additional activities upon written authorization to proceed. By signing below and returning to David Henderson at AECOM's Milwaukee, Wisconsin office, this letter will serve as written authorization to proceed.

The above is understood and authorization to proceed is given as noted by the undersigned:

**Approved by:**

**City of Manitowoc**

**Accepted by:**

**AECOM Technical Services, Inc.**

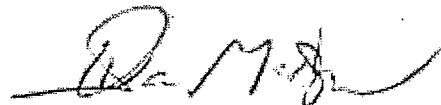
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\_\_\_\_\_  
Ivan Martysz, P.E.

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Associate Vice President  
**Title**

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June 10, 2015  
**Date**