

October 28, 2011

P1396209

Mr. Simon Lobdell, P.E.
City of Durham
Water Management Department
1600 Mist Lake Drive
Durham, North Carolina 27704

**RE: REVISED PROPOSAL FOR PROFESSIONAL ENVIRONMENTAL AND ENGINEERING SERVICES FY 2011-2012 THROUGH FY 2014-2015
CITY OF DURHAM CLOSED LANDFILL, PERMIT NUMBER 32-01
DURHAM, NORTH CAROLINA**

Dear Simon:

Golder Associates NC, Inc. (Golder) is pleased to submit this revised proposal and cost estimate for environmental monitoring program management services and general professional consulting services for fiscal years (FYs) 2011-2012 through 2014-2015 at the Closed Municipal Solid Waste Landfill in Durham, North Carolina, Permit Number 32-01. This revised proposal incorporates comments and suggestions made during a phone conversation between the City of Durham (City) and Golder on October 13, 2011. Golder proposes to be responsible for managing and coordinating field, laboratory, and routine reporting activities associated with the facility's semi-annual groundwater monitoring program and quarterly landfill gas monitoring program, plus additional services as requested by the City to ensure compliance with the North Carolina Solid Waste Management Regulations (NCSWMR) and the facility's permit, and adherence with project scope and schedule. Below is a brief description of these services.

1.0 PHASE 100: SEMI-ANNUAL WATER QUALITY MANAGEMENT

Phase 100 activities consist of coordinating and performing the groundwater and surface water sampling and reporting services required under the NCSWMR and the facility's permit for eight semi-annual events (November 2011 through May 2015).

1.1 Field Activities

Field activities required for groundwater/surface water monitoring consist of scheduling field activities; coordinating with the analytical laboratory; and performing/documenting the groundwater and surface water sampling services required under the applicable regulations and the facility permit for Assessment Monitoring. The following activities are included:

- Coordinating with the City and analytical laboratory to schedule each event in accordance with the semi-annual sampling schedule (May-November); the appropriate bottleware for each monitoring event will be verified with the laboratory prior to shipment
- Checking the sample kit coolers in the office prior to mobilizing to the site for sampling to ensure that appropriate bottles and paperwork were shipped and are intact
- Gauging and recording static groundwater levels in the 6 compliance groundwater monitoring wells (MW-2, MW-3, MW-4R, MW-5, MW-9R, and MW-10) and 8 additional wells and piezometers (MW-1, MW-6R, MW-7R, MW-8, P-1, P-2, P-3, and P-4) during each semi-annual groundwater event
- Purging and sampling the groundwater monitoring wells during each semi-annual groundwater event for analysis of the appropriate parameters; purging data will be recorded on field forms
- Sampling the 4 surface water monitoring points (S-1, S-2, S-3, and S-4) during each semi-annual event for analysis of the appropriate parameters

- Collecting a QA/QC field/equipment blank for analysis of appropriate parameters during each semi-annual groundwater event
- Having a QA/QC trip blank analyzed for Appendix I VOCs during each semi-annual groundwater event
- Completing a well inspection form, which documents the conditions of the wells, pumps, and other relevant site features that may affect compliance and/or sample integrity, along with any recommended actions, during each semi-annual groundwater event

In accordance with the applicable regulations and based on recent sampling data, groundwater and surface water will be sampled in accordance with the .1634 Rules, with analysis of the full Appendix II list of parameters each spring and the Appendix I plus detects list each fall. Based on recent reports, no additional detects are required during the fall event. Surface water samples will be analyzed for Appendix I parameters.

Wells will be purged and sampled using purging techniques in accordance with approved North Carolina Department of Environment and Natural Resources (NCDENR) and United States Environmental Protection Agency (EPA) techniques. Samples will be collected in a manner that minimizes turbidity (i.e., low-flow micropurge sampling techniques using dedicated pumps). Golder will obtain field measurements of pH, specific conductance, temperature, dissolved oxygen, oxidation reduction potential, and turbidity. Following collection, the samples will be placed in a cooler on ice under chain-of-custody control to be shipped to the laboratory. Prior to use, the water quality monitoring field equipment will be calibrated in the field in accordance with the manufacturer's specifications. Calibration information will be recorded in the field book. The monitoring wells will be purged from upgradient to downgradient. Golder will maintain copies of field notes, field logs, and calibration logs on file for future reference, and will incorporate the field information logs, well inspection forms, and chain-of-custody forms into the semi-annual groundwater reports as described below.

1.2 Reporting Activities

Based on the information requested in the RFQ, we are proposing the following reporting service activities for the facility. Following coordination with the laboratory and receipt of the laboratory analytical results, Golder will review the laboratory-provided QA/QC data using our internal Standard Operating Guidelines (SOG), and qualify relevant data as appropriate in accordance with published EPA protocol. After reviewing the laboratory data for quality assurance and potential detections of concern, Golder will promptly advise the City of any such detections, and at that time, will provide appropriate recommendations [e.g., re-sampling, Alternate Source Demonstration (ASD)]. Any necessary verification sampling or ASDs would be performed under a change order upon written authorization to proceed from the City.

Following receipt of the complete data package (inclusive of any re-sampling activities), Golder will prepare a combined semi-annual groundwater monitoring report for the facilities. As required under the NCSWMR, each semi-annual groundwater monitoring report will contain:

- A site location map
- A discussion of field activities including procedures and QA / QC protocols
- A summary table of laboratory analytical results for groundwater and surface water
- A summary table of static groundwater level measurements
- Documentation of field activities/sampling forms
- Comparisons to groundwater protection and surface water standards
- A discussion of statistical evaluation methods (if utilized)
- Statistical evaluation worksheets (if utilized)
- A groundwater contour map and evaluation of the rate and direction of groundwater flow
- The laboratory certificates of analysis and chain-of-custody form
- Conclusions and recommendations, as applicable

Historical data summaries can also be provided if data is provided in a database format (e.g., Excel) by the City. Based on the April 1, 2011, revision to the NC Solid Waste Management Regulation (SWMR), statistical analysis is no longer required. However, in cases where metals are detected in samples from downgradient monitoring wells above applicable groundwater standards, we propose to use statistical analysis to determine if the constituents may be naturally occurring. In accordance with the NCDENR policy memo dated October 27, 2006, and updates dated February 23, and October 16, 2007, electronic deliverables, including a full report and field and analytical data in the specified Excel format, will be prepared for each event. Also, according to NCDENR policy, each groundwater report will be prepared and signed by a licensed geologist in North Carolina, following internal QA/QC review SOG.

Draft copies of each report will be submitted to the City for review within 60 days of each sampling event. If the City has not approved the draft report within 30 days of receiving the report, Golder will ask the City to release the report for submittal to NCDENR. Upon the City's authorization, final copies of each groundwater report will be submitted to NCDENR and the City. If verification re-sampling is required for a sampling event, the re-sampling will occur as soon as practicable after approval by the City.

1.3 Proposed Fees

The proposed annual fee for Phase 100 is a lump sum of \$19,300 for the first fiscal year (FY 2011-2012), and will be billed on a per event, percent complete basis. The breakdown of costs is \$7,800 for the second semi-annual event (Appendix I plus detects) event and \$11,500 for the first semi-annual (Appendix II) event in 2012. Fees for all four years of the contract are shown in the summary table at the end of the proposal, and include an escalation (similar to CPI adjustment) of 2% per year. The proposed total fee for Phase 100 for all four years is a lump sum of **\$79,350**. These annual costs are guaranteed for a period of four years, with the limitations noted in Section 5.0. If the facility returns to a detection monitoring program and samples are analyzed for the Appendix I list only during each semi-annual event in a given year, the budget will be revised to reflect the cost breakdown presented above, which would result in savings of approximately \$3,700 per year.

2.0 PHASE 200: QUARTERLY LANDFILL GAS MANAGEMENT

Phase 200 activities consist of coordinating and performing quarterly landfill gas monitoring at the closed MSW landfill and associated reporting of landfill gas monitoring results required under the NCSWMR and the facility's permit for 15 quarterly events (November 2011 through May 2015).

2.1 Field Activities

Field activities required for quarterly landfill gas monitoring consist of coordinating with the Water Management Engineer; scheduling field activities; and performing/documenting the landfill gas monitoring services required under the applicable regulations and the facility permit. The following activities are included:

- Coordinating with the City to schedule the quarterly sampling events
- Monitor the twenty-one landfill gas monitoring wells for the presence of methane gas, to ensure that the concentration of methane does not exceed the lower explosive limit of 5% at the facility property boundary
- The quarterly landfill gas monitoring will be performed by Golder staff using monitoring equipment (i.e., GEM) provided by the City. The maintenance of monitoring equipment will be performed by the City's personnel or their agents. Golder personnel will calibrate the monitoring equipment prior to each event utilizing calibration gas and equipment provided by the City.

2.2 Reporting Activities

Reporting activities required for quarterly landfill gas monitoring consists of providing the City with a summary table of results in the City's recommended format. Golder will submit the table to the City for site records and/or to NCDENR, if appropriate.

2.3 Proposed Fees

The proposed annual fee for Phase 200 is a lump sum of \$3,800 for FY 2011-2012 (\$800 per event for the events combined with water quality monitoring and \$1,100 per event for the stand-alone events) and will be billed on a per event, percent complete basis. Fees for all four years of the contract are shown in the summary table at the end of the proposal, and include an escalation (similar to CPI adjustment) of 2% per year. The proposed total fee for Phase 200 for all four years is a lump sum of **\$15,500**. These annual costs are guaranteed for a period of four years, with the limitations noted in Section 5.0.

3.0 PHASE 300: 2011-2015 GENERAL CONSULTING

Phase 300 is proposed to provide a readily available billing phase for time and materials allocated by Golder personnel as directed by the City on items specific to this project but not covered under the preceding activity phases. These activities will be performed on an as-needed basis as directed. Such items may include:

- Well and pump redevelopment and repair activities
- Installation and development of new monitoring wells, as required
- Conducting verification sampling as needed
- Consulting services related to groundwater corrective action, including potential revisions to the Groundwater Monitoring Plan
- Meetings with NCDENR

If Golder personnel discover that groundwater monitoring wells, landfill gas monitoring wells, or dedicated pumps need minor repairs during routine monitoring events, the City will be contacted during the event, informed of the needed repairs, and given an approximate cost of the repair within a reasonable timeframe.

Proposed Fees

The proposed fee for the above activities for Phase 300 is **\$5,000** per year, for a total of **\$20,000** over the contract term. These charges will be billed on a time-and-materials basis as directed and approved by the City and in accordance with our annual Professional Rate Schedule (our 2011 Professional Rate Schedule is attached for your reference and future schedules will be provided annually). If other significant items are identified that may increase the overall budget for this phase, we will notify the City of any anticipated charges and will prepare a change order.

Based on our September 9, 2011, meeting, it is our understanding that the City will also require periodic services described below.

Biennial Landfill Cap Inspections

As part of Phase 300, we propose to perform visual biennial (once every two years) inspections of the closed landfill's cap. We recommend budgeting an additional **\$2,500** per event for this service totaling **\$5,000** over the course of four years. This function will be performed on a time and materials basis on two (2) separate occasions over the course of four years. Golder will prepare a table summarizing the results of the inspection and will provide recommendations. Golder will also include pictures and locations of potential issues on a site map. Golder will also stake and flag areas needing repairs so that landfill staff can locate the areas. If significant improvements requiring detailed engineering calculations and/or designs are required, additional fees will be required.

Semi-Annual Landfill Gas Extraction System Review

As part of Phase 300, we propose to provide the City with inspection/auditing services related to the overall operation and maintenance of the landfill gas extraction system at the closed municipal landfill on a time and materials basis. We recommend budgeting an additional **\$1,900** per event for a total of 8 events over four years, for a total of **\$15,200**. As part of this service, we will review records and reports associated with the monitoring, tuning, and overall efficiency of operation related to the landfill gas

extraction system every six months. We have based our costs on this task requiring approximately one day of review time. Golder will provide a letter report that will make general recommendations to the City of any efficiencies the City may gain in future maintenance events and/or any technical concerns related to systems operations. If detailed design modifications are required, additional fees will apply. This phase will not include any field work unless requested by the City; Golder can provide field assistance during routine operations and maintenance activities as part of this phase if required by the City.

4.0 LIMITATIONS

Golder understands that the City of Durham will provide any required site drawings in AutoCAD format, all historical data files in Excel format, landfill gas data from Methane Power, and other information as it pertains to these services. If change orders are required during the course of this project (e.g., re-sampling, well redevelopment, pump repairs/maintenance, and ASDs), a detailed scope and justification will be provided to the City, and written approval received prior to initiating any out-of-scope (Phase 300) work. Also, if the required parameters (e.g., additional detected constituents) or number of monitoring points in the approved WQMP change during the contract term, costs will need to be adjusted. The laboratory fees are guaranteed with the exception of any unforeseen rise in laboratory supplies such as containers, solvents, etc. We anticipate that our annual adjustment should cover these types of fees unless they are significant. Prices for methane monitoring do not include any equipment, as the City has offered the use and calibration of their GEM for this purpose.

If the site proceeds to corrective action, we anticipate that additional parameters will be required and costs will need to be adjusted accordingly. Based on recent data, consulting services related to corrective action may be required. It is difficult to scope out these fees for the next four years at this time, since the scope of services will be specific to the nature and extent of contamination, the risks posed by the release, and the feasibility of remedial alternatives to mitigate the release. Depending on the nature and extent of the groundwater contaminant plume, corrective action costs can be significant. Such corrective items may include additional items related to the Nature and Extent Study, an Assessment of Corrective Measures, and a Corrective Action Plan. If these or other environmental or engineering services are required and approved by the City, they will be billed in accordance with our annual rate schedule, which will be provided annually to the City.

The Scope of Services for Phase 400 includes responding to minimal comments, if any, from the NCDENR following submittal of the ASD. If significant comments are received from NCDENR, including those that would require additional field or analytical work, Golder will provide the City with a proposal for the requested Scope of Services at that time. For Phase 400, soil sampling locations will be located using a hand-held Global Positioning System (GPS); no survey costs have been included as part of this proposal. No costs for regulatory meetings have been included in this proposal; should a regulatory meeting be required for Phase 400, we can provide costs at that time.

5.0 HEALTH AND SAFETY

Most of our professional staff and all of our field staff have received OSHA's 40-Hour Health and Safety Training and annual refresher for work on sites with hazardous materials, and OSHA's 10-Hour Safety Training for Construction Sites, First Aid and CPR training, and employees participate in a medical monitoring program. Although OSHA training is not required for services in this proposal, Golder has a strong commitment to the health and safety of its professionals. Prior to commencing field activities related to this proposal, Golder will prepare at no additional cost a Health and Safety Plan and provide a copy to the City, if requested. A trained and qualified Health and Safety Coordinator has been dedicated to this project, and will provide support and guidance to the team.

SUMMARY

Below is a table summarizing the fees associated with this proposal for the next four years:

	FY11-12	FY12-13	FY13-14	FY14-15
Phase 100: Semi-Annual Water Quality Management	\$19,300	\$19,650	\$20,000	\$20,400
Phase 200: Quarterly Landfill Gas Management	\$3,800	\$3,850	\$3,900	\$4,000
Phase 300: General Consulting	\$5,000	\$5,000	\$5,000	\$5,000
Phase 300: Biennial Landfill Cap Inspections	---	\$2,500	---	\$2,500
Phase 300: Semi-Annual Landfill Gas Extraction System Review	\$3,800	\$3,800	\$3,800	\$3,800
TOTALS	\$31,900	\$34,800	\$32,700	\$35,700

NOTE: Totals for Phases 100 and 200 include annual escalations of 2%. See section 5.0 for limitations.

We have attached the proposed terms and conditions provided by the City attorney for your signature. Upon approval by both parties, the services described in this proposal will be provided in accordance with these terms and conditions. Thank you for this opportunity to work with the City of Durham. Should you have any questions or require additional information or modifications to this proposal, please contact the undersigned at 336-852-4903.

Sincerely,
GOLDER ASSOCIATES NC, INC.



David "Dusty" Y. Reedy II, P.G.
Senior Project Hydrogeologist



Rachel P. Kirkman, P.G.
Associate and Senior Geologist

C: Chris Marriott, City of Durham, Solid Waste Management Department, 1833 Camden Avenue, Durham, North Carolina 27704.

Attachments: 2011 Professional Rate Schedule
Proposed Terms and Conditions

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AUTHORIZATION TO PROCEED

Golder Associates NC, Inc. is authorized to proceed with the activities summarized herein (Proposal No. P1396209, dated September 22, 2011). These activities will be performed and invoiced in accordance with the terms and conditions referenced above.

Authorized Signature

Signature: _____

Printed Name: _____

Date: _____