

MEMORANDUM

To:	Vance Kemler David Dugger City of Denton	Date:	January 31, 2017
From:	Nevzat Turan, P.E. Matthew K. Stutz, P.E. Weaver Consultants Group	Project No:	LLCP-011-02-11-05
Re:	Proposal – Odor Control and Soil Vapor Extraction Systems City of Denton Landfill		

In accordance with the City of Denton's (City) request, Weaver Consultants Group (WCG) has prepared this Scope of Services for the installation of an odor control delivery system that consists of an approximately 3,000-foot-long odor control distribution pipe and associated components at the City of Denton Landfill. The odor control system will include one chemical delivery machine ("box") located at the southeast side of the currently operated fill area. The distribution pipe is planned to be installed between the southwest corner of the permit boundary (around GMP-13) and the north side of MW-8.

In addition, as part of ongoing LFG remediation, The City desires to expand the existing soil vapor extraction (SVE) system at the site. This expansion will increase LFG collection efficiency and reduce the potential for LFG migration. The SVE system will be connected to the site's existing landfill gas (LFG) collection and control (GCCS) system to provide vacuum to the proposed SVE wells. The proposed SVE system installation will include:

- The installation of approximately nine (9) SVE wells.
- The installation of two (2) SVE system condensate sump and associated air supply and condensate forcemain piping.
- The installation of SVE, air supply, and condensate forcemain isolation valves.
- The installation of SVE system header and lateral piping to connect the SVE wells to the existing GCCS.

Based on recent discussions with the City, as well as our understanding of the site, Weaver Consultants Group, LLC (WCG) has developed the following scope of services.

Task 1 – Design of Pipe Configuration

Under this task, a WCG staff member will visit the site prior to installation of piping to finalize the box and the distribution pipe locations. The distribution pipe height at different pipe segments will be determined during the site visit. Based on the finalized pipe layout, WCG will develop the pipe perforation spacing, orifice sizing, and configuration. This work will be completed while the field installation work is ongoing. Also under this task, WCG will coordinate for the delivery of the box to the City. WCG will plan the site visit to view the construction of the landfill perimeter road on the south side of the current fill area to determine whether a portion of the TEE posts for the odor control system piping can be installed concurrently with the road paving activities.

Task 2 – Odor Control System Installation

Under this task, WCG will perform the following work:

- Install approximately 3,000-foot-long, 4-inch-diameter HDPE SDR 32.5 pipe. The 4-inch pipe will be suspended approximately 5 feet above the existing ground using TEE posts for the portion of the pipe that will not be installed on the existing concrete wall. The pipe will be installed on top of each TEE post (where required) using metal clamps to secure the pipe to a metal saddle which is tied to the top of TEE posts using metal pipe sleeves.
- Install the box which is planned to be located at the southeast side of the currently active fill area.

Task 3 – System Startup

Under this task, WCG representatives will visit the site after the system that includes the box and the piping is installed and ready to start up (e.g., power is connected and the box is tested for proper operation). During this visit, WCG will establish the pipe orifices and startup the system. After the initial startup, WCG will verify pipe pressure and orifice flow distribution and fine tune the system for optimum operation.

Task 4 – Operations Training

Under this task, a WCG representative will visit the site 4 (four) times after the initial system startup. It is expected that these visits will be on a weekly basis following the startup day of the operation; however, each site visit will be scheduled with the City. During each site visit, WCG will replenish the chemical in the tank and will check the

“box” to ensure proper operation. Designated City personnel are expected to accompany the WCG representative for training purposes.

Task 5A – Permit Modification – SOP Revision for Dry Odor Control System

Under this task, WCG will prepare a draft permit modification under the provisions of Title 30 TAC §305.70(l) which allows minor changes to be made to the Site Operating Plan (SOP) in accordance with Title 30 TAC §305.70(d). The draft of the modification will include the proposed replacement pages to the currently approved SOP (a separate appendix). One electronic copy (PDF) of the draft permit modification will be sent to the City for review and comment. WCG will then discuss with the City any comments or questions regarding the permit modification. Once a mutually agreed upon modification has been developed, WCG will submit the permit modification to TCEQ for approval. WCG will provide 3 copies of the final document to TCEQ and 2 copies to the City. For the purpose of developing this proposal, we have assumed that TCEQ will not permit the proposed changes as a “noticed permit modification.” In an unlikely scenario if TCEQ requires a noticed permit modification process, a separate proposal will be submitted to the City for the notice.

Task 5B – TCEQ Comment Response

Under this task, WCG will prepare a comment response and any required revisions to the permit modification or provide additional information requested by the TCEQ. Based on current permitting activities in Texas, WCG is well-versed in TCEQ technical requirements and permitting procedures. Nevertheless, it is understood that the TCEQ provides comments on most every technical analysis which is reviewed. We have assumed that TCEQ will not require changes to the Site Development Plan or SOP documents that are not included in the original submittal.

Task 6 – Air Permit Update

Under this task, WCG will utilize the information currently available in-house, and if needed, will request the City for additional site-specific background data that may be required to update the air permits for the site.

The Air Standard Permit submittal will include emission calculations, necessary TCEQ checklists, and forms to update the current Standard Permit Certification. Although there are no applicable regulations that are affected by the installation of odor control system, TCEQ recommends that the GOP for the site also be revised so that sources authorized under the site’s standard permit are also addressed in the GOP. The GOP Revision will be submitted at the same time as Standard Permit submittal.

Upon completion, we will submit a draft copy to the City for review, comment, and signature. After incorporating any comments, WCG will submit the appropriate

number of copies of the completed SP Certification Update and GOP Revision to the TCEQ and to the City.

Task 7 – SVE System Design

WCG will prepare design drawings for the SVE system installation. The design will include SVE well spacing, depths, and extent of the system. A draft set of drawings will be produced and will include the piping layout, condensate management system, and SVE component details. The draft set of design drawings will be submitted to the City for review and comment. After the City's review, WCG will incorporate the review comments into the final design drawings. The final design drawings will be suitable for construction purposes and include appropriate construction notes to specify site-specific requirements for any construction materials, equipment, or workmanship.

Task 8 – TCEQ SVE Permitting

Under this task, WCG will prepare and submit a Permit Modification on behalf of the City for TCEQ approval of the proposed SVE system installation. The Permit Modification will be submitted as a revision to the site's existing Landfill Gas Management Plan (LGMP). The Permit Modification submittal will contain revised pages to the site's existing LGMP, as well as permit level drawings and a brief narrative description of the SVE system to be installed. Draft copies of the permit modification will be submitted to the City for review and comment. WCG will be prepared to discuss the draft permit modification with the City representatives via teleconference and to answer any comments or questions regarding the permit modification and the SVE design. Once the SVE design has been agreed upon and we have received City's review comments, WCG will submit the permit modification to the TCEQ for approval.

Task 9 – SVE Drilling

The Drilling subcontractor will be a licensed driller. The subcontract costs are based on drilling and completing nine (9) SVE wells to an approximate depth of 30 feet. It is anticipated that the SVE drilling will be completed in four (4) days. SVE wells will be completed with PVC casings with slotted PVC piping creating specified screen lengths for each well. Each borehole will be backfilled with pea gravel. Bentonite plugs will be installed above the pea gravel and the remaining borehole will be backfilled with the soil cuttings created during drilling. Any cuttings left over from drilling will be spread and graded in the area during the piping installation. It is assumed that no haul truck will be needed during the drilling or piping portions of this project. The driller's deliverables will also include daily well installation reports documenting his activities. This proposal assumes no wastes will be generated during this task. WCG will be responsible for performing a line locate in the area to ensure that all underground utilities are marked prior to construction. The cost for this task includes all mobilization, labor, materials, and equipment. It is assumed that the subcontractor will be working 2-ten hour days, Monday through Friday.

Task 10 – SVE Piping

Under this task WCG will complete the installation of SVE system piping and components. It is estimated that it will take 10-ten hour days, Monday through Saturday to complete the SVE piping. The following items will be completed under this task:

- Trench and install SVE header, lateral, condensate forcemain, and air supply piping per design drawings. It is assumed that no wastes will be encountered during this task. All excavated soil will be reused as backfill during the project. Any excavated soil remaining after backfilling will be spread and graded in the area prior to leaving site. It is assumed that no haul truck will be needed during the drilling or piping portions of this project
- Install SVE, condensate forcemain, and air supply isolation valves near tie-in to existing GCCS.
- Install SVE condensate sump at system low point. It is assumed that only one condensate sump will be required with the system. Actual site conditions at time of installation may vary from topographic mapping used during design and create the need for additional condensate sumps.
- Install wellheads to bring new SVE wells online. Wellheads will be left cracked during install. No wellhead tuning or monitoring is involved with this proposal.
- Tie the new SVE system into the existing GCCS to provide system vacuum to the new SVE wells. Air supply and condensate forcemain lines will be tied into the existing GCCS as well. All lines will be pressure tested prior to completing tie-ins to identify any possible leaks in the new system.
- Return all disturbed areas to pre-construction conditions or better. No seeding is included in this proposal.

Task 11 – Surveying Services

WCG will provide pre-construction staking and as-built surveying services during construction of the SVE system. As-built survey will include the horizontal and vertical coordinates for each new SVE well, piping, and components.

Schedule and Budget

The schedule of this project will be determined based on the delivery of the pipe and the machine, each of which is expected to take approximately six weeks after approval of the project by the City. The actual field work will be scheduled with the City and is expected to take approximately two weeks for each installation project. These

services will be performed on a lump sum basis. The following table details the proposed budget for this project.

Proposed Budget
Odor Control System Installation and Soil Vapor Extraction System
City of Denton Landfill

Task	Estimated Hours			Extended Cost	
	Staff	Hours	Unit Rate (\$/hr)	Subtotal	Total
Task 1 – Design of Pipe Configuration	Principal	24	\$200	\$4,800	\$5,000
	Project Reimbursables			\$200	
Task 2 – Odor Control System Installation	Senior Project Manager	80	\$155	\$12,400	\$86,240
	Environmental Specialist	80	\$68	\$5,440	
	Direct Expenses:				
	Equipment Rental			\$3,500	
	Installation Hardware (TEE posts, clamps, saddles, pipe fittings, concrete pad, etc.)			\$13,000	
	Mileage (1,200 miles at \$0.75/mile)			\$900	
	3,000 ft 4-in SDR 32.5 pipe (delivered)			\$9,000	
	Machine (delivered)			\$42,000	
Task 3 – System Startup	Principal	12	\$200	\$2,400	\$4,500
	Senior Project Manager	12	\$155	\$1,860	
	Project Reimbursables			\$240	
Task 4 – Operations Training	Senior Project Manager	24	\$155	\$3,720	\$4,200
	Project Reimbursables			\$480	
Task 5A – Permit Modification – SOP Revision for Dry Odor Control System	Principal	6	\$200	\$1,200	\$4,300
	Senior Project Manager	4	\$155	\$620	
	Project Engineer	16	\$113	\$1,808	
	Project Reimbursables			\$672	
Task 5B – TCEQ Comment Response	Principal	5	\$200	\$1,000	\$2,600
	Project Engineer	8	\$113	\$904	
	Admin/Word Processing	5	\$63	\$315	
	Project Reimbursables			\$381	
Task 6 – Air Permit Update	Principal	2	\$200	\$400	\$2,800
	Senior Project Manager	4	\$155	\$620	
	Staff Engineer	12	\$104	\$1,248	
	Admin/Word Processing	3	\$63	\$189	
	Project Reimbursables			\$343	

Proposed Budget (Continued)
Odor Control System Installation and Soil Vapor Extraction System
City of Denton Landfill

Task	Estimated Hours			Extended Cost	
	Staff	Hours	Unit Rate (\$/hr)	Subtotal	Total
Task 7 – SVE System Design	Principal	6	\$200	\$1,200	\$9,800
	Senior Project Manager	20	\$155	\$3,100	
	Staff Engineer	33	\$104	\$3,432	
	Word Processing/CAD	24	\$63	\$1,512	
	Project Reimbursables			\$556	
Task 8 – TCEQ Permitting	Principal	2	\$200	\$400	\$3,300
	Senior Project Manager	6	\$155	\$930	
	Staff Engineer	10	\$104	\$1,040	
	Word Processing/CAD	8	\$63	\$504	
	Project Reimbursables			\$426	
Task 9 – SVE Drilling	Drilling Direct Expenses:				\$19,000
Task 10 – SVE Piping	Piping Direct Expenses:				\$119,000
Task 11 – Surveying Services	Surveyor w/equipment	28	\$150	\$4,200	\$4,200
Project Sub-Total					\$264,940
Payment and Performance Bond		2.75%			\$7,285
Project Total					\$272,225

Project Assumptions and Additional Services

The preceding scope of work and budget have been developed based on the information available to WCG. The following assumptions have been made for the development of the scope of work and budget.

- It is assumed that the electricity (including breaker box) will be provided at the finalized location of the “box” by the City at no cost to WCG.
- It is assumed that HDPE SDR 32.5 pipe will be limited to 3,000 feet.

- It is assumed that pipe will cross only one road (portion of the pipe either raised to an agreed upon height or buried under ground.)
- It is assumed that all as-built LFG system information associated with the area is readily available.
- This proposal does not include clearing and grubbing.
- Chemicals used by the box are not considered under this project. It is assumed that the City will supply the chemicals provided by GOC Technologies for the operation of the box.
- Operations and maintenance (O&M) services other than the scope of work in Task 4 are not considered under the project.
- It is assumed that engineering modeling for compressible flow in the proposed chemical delivery pipe will not be required for this project.
- It is assumed that no geosynthetic materials (such as final cover geomembrane and GCL) exist within the project area.
- It is assumed that the City will identify the locations of all underground utility lines and landfill components associated with the pipe installation area.
- It is assumed that there will not be an easement crossing for the finalized pipe location. However, if any easement crossing is necessary, the City will coordinate with the easement holder and WCG will only provide a pipe layout plan.
- The City will provide all necessary information (hard copy and electronic copy) relevant to this project. Background materials requested will be available to WCG at no cost.
- City representatives will be available to answer questions and provide as much information as possible to WCG during the course of this project.
- It is assumed the design will be completed based on the latest topo or survey information provided by site.
- It is assumed that sufficient vacuum will be applied/available to the new SVE system following the completion of project.
- No pipe profile drawings are included in this project.
- Additional costs due to rain days are not accounted for in this proposal.
- The cost under Task 8 includes only the preparation of TCEQ permit modification. Providing comments to address TCEQ comments are not included in the budget.

We look forward to working with the City of Denton on this project.