



City of Savannah
Real Property Services
6 West East Bay Street
Savannah, Georgia 31401

Attn: Mr. David Keating, Director of Real Property Services
E: Dkeating@savannahga.gov
P: (912) 651 6524

Re: Landfill Redevelopment Summary
Fairgrounds Property
4801 Meding Street
Savannah, Chatham County, Georgia
Terracon Project No. ES157720

Dear Mr. Keating:

Terracon Consultants, Inc. (Terracon) appreciates the opportunity to submit this letter discuss our understanding of the current regulatory status of the buried waste materials and recommendations for potential redevelopment of the portion of the subject site containing buried waste as recreational fields. The intent of this letter is to provide you with general information regarding Terracon's understanding of Georgia Environmental Protection Division's (EPD) regulatory authority over abandoned unpermitted landfills (pre-law landfills), and to provide you with general guidance regarding landfill redevelopment.

The information presented in this letter is based on our experience with unpermitted landfills in the Chatham County area and discussions with Georgia EPD personnel regarding redevelopment project involving unpermitted pre-law landfills. The term pre-law landfill means any landfill that ceased accepting waste prior to the Georgia Comprehensive Solid Waste Management Act of 1990 being enacted.

1.0 PROJECT BACKGROUND

Terracon completed a Phase I Environmental Site Assessment (ESA), dated April 24, 2015 for the subject property and identified several Recognized Environmental Conditions (RECs) that warranted additional investigation. Based on a review of readily available database records, prior reports, historical interviews, and a site reconnaissance in which multiple locations of moderate to heavy dumping activity and construction/demolition debris disposal was observed, the potential for the burial of debris and possible contamination was identified as a Recognized Environmental Condition (REC).



Terracon Consultants, Inc. 2201 Rowland Avenue Savannah, Georgia 31404
P (912) 629 4000 F (912) 629 4001 terracon.com/offices/savannah

Environmental

Facilities

Geotechnical

Materials

Terracon recommended conducting test pits in the areas of the dumped materials to determine if subsurface debris exists on the site. Based on the field observations, Terracon indicated that environmental sample collection may be necessary during excavation of the test pits.

Based on recently completed test pits on the subject property, subsurface debris was encountered within the northern portion of the property at depths of between four (4) to seven (7) feet below ground surface covering an area of approximately nine (9) acres. The surface and subsurface debris encountered in this area consists of asphalt, concrete, wood, metal, and glass. No household waste was observed in the completed test pits. Based on a review of the historical aerial photographs of the subject property, it appears that the waste disposal activities in this portion of the subject property occurred at least from 1981 to as late as 1988.

Limited soil and groundwater sampling has been completed in the vicinity of the buried waste and analysis of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and RCRA metals. The results of the laboratory analysis of these samples did not indicate the presence of VOCs, SVOCs, or metals above any applicable regulatory standard. Additional field investigations are on-going as a result of the findings from the recently completed field work in which subsurface debris was encountered.

2.0 REGULATORY STATUS

In our experience, the Georgia EPD is reluctant to regulate unpermitted pre-law landfills unless there has been a documented release of a hazardous constituent, which would be subject to regulation under OCGA §12-8-60, *The Georgia Hazardous Waste Management Act*. An abandoned landfill for which there is no documented release of a hazardous constituent would be subject to the following:

- OCGA §8-6-1, Construction Activity Prohibition on Abandoned Landfills Act
- OCGA §44-5-48, Deeds conveying interest in real property used as commercial landfill

Under these code sections, a permit must be obtained from the local governing authority if a building or enclosed structure (to include all above or below ground structures where methane gas can accumulate) is to be constructed on a closed or abandoned landfill.

Also, all deeds conveying an interest in real property which has been used as a commercial landfill shall include the following information:

- The date of the landfill operations commenced and terminated, if known;
- A legal description of the actual location of the landfill; and

Landfill Redevelopment Summary

Fairgrounds Property ■ Savannah, Chatham County, Georgia

December 7, 2015 ■ Terracon Project No. ES157720



- A description of the type of materials which have been deposited in the landfill.

With respect to the term “commercial landfill”, OCGA §44-5-48 defines this as an area where materials have been deposited for a fee and states that the code section only applies to those parties who have knowledge of the landfill operations when conveying real property.

In addition to the above regulations, all other Georgia EPD applicable environmental acts and rules would apply to redevelopment projects in the same manner as for any other construction project, including but not limited to:

- OCGA §12-5-20, Georgia Water Quality Act
- OCGA §12-7-1, Georgia Erosion and Sedimentation Act
- Georgia DNR Environmental Rule 391-3-6, Georgia Water Quality Rules
- Georgia DNR Environmental Rule 391-3-7, Erosion and Sedimentation Rules

If waste is exposed or excavated during redevelopment activities, then the waste must be handled in accordance with Georgia Environmental Rule 391-3-4, *Rules for Solid Waste Management in Georgia* (Rules). The waste would require disposal in a Georgia EPD permitted lined subtitle D landfill such as the Savannah Regional Landfill or Superior Landfill; operated by Republic Waste Services and Waste Management, respectively.

Because of potential risks to human health, the environment, and structures from landfill gas, leachate, exposed waste, and waste settlement, the Georgia EPD recommends that a qualified, Georgia-registered P.E. and/or P.G. evaluate all sites where landfill redevelopment is proposed. The Georgia EPD recommended evaluation should include, but not be limited to:

- Reviewing historical information regarding when the landfill operated and what type of waste was disposed
- Delineating the depth and lateral limits of waste
- Determining site hydrogeologic conditions
- Performing groundwater monitoring, including the installation and sampling of groundwater monitoring wells for Appendix 1 contaminants. The groundwater sampling plan should be developed based on site-specific hydrogeologic information.
- Methane monitoring based on site-specific hydrogeologic information.

As briefly described previously, Terracon is conducting an on-going field investigation at the subject property which will address the above referenced Georgia EPD recommended evaluation tasks. The evaluation of the presence of methane at the site will be added to the current scope of work for the on-going field investigation.

3.0 SITE REDEVELOPMENT

Terracon understands the removal of the buried debris is cost prohibitive, Terracon also understands that the City of Savannah may propose to redevelop the portion of the subject site containing buried waste as recreational fields. Georgia EPD guidance recommends that based on the results of the site evaluation, design of all proposed construction at the portion of the subject site in which buried debris is present should be performed under the stamp and signature of a P.E. and/or P.G. and could include but not be limited to all provisions needed to:

- Install, monitor, and maintain permanent groundwater and methane monitoring systems that may be needed to detect any releases that may occur from the landfill, if applicable based on the results of the on-going site investigation. The need for a monitoring network will be evaluated further based on results of the on-going site investigation; however, at this time the groundwater laboratory results do not indicate contamination above any applicable regulatory standards.
- Encapsulate the existing waste in order to prevent direct human contact with the waste and prevent migration of contaminants from the waste from migrating into the air, groundwater, or surrounding soils. Prevent erosion or deterioration of landfill cover and minimize surface water infiltration into the waste mass.

To encapsulate the existing waste and prevent erosion or deterioration of the landfill cover, Terracon recommends the installation of a final cover of at least 24 inches thick across the area of buried debris to be redeveloped as recreational fields. Although the subject property is not a permitted facility, Terracon recommends that the installation of the final cover generally follow the requirements contained in the Georgia EPD guidance document titled "*Installation of the Final Cover for an Unlined Landfill*", dated January 2014.

The final cover would generally consist of 18 inches of an infiltration layer (soils with a permeability of 10^{-5} cm/sec or less) and an upper erosion layer of top soil at least 6 inches thick. A thicker upper erosion layer consisting of top soil may be warranted to accommodate growing of field turf grasses for the recreation fields.

- Adequately collect and control landfill gas, if necessary, based on field testing to be completed as part of the on-going field investigation. It is Terracon's experience that the collection and control of the landfill gas could be accomplished using either an active collection system or a passive collection system that could be readily converted into an active system if needed. Prevention of landfill gas migration along bedding or backfill material for existing or new utilities is critical to achieve adequate landfill gas collection and control.

If methane gas control is necessary based on the results of the on-going field investigation, passive methane vents could be designed in such a manner as to blend in

with the features of the recreation facility. This could be accomplished by using the foul poles, goal posts, and/or false lamp posts as methane vents.

- Install 24-hour automated methane gas monitoring equipment within occupied buildings, if necessary depending on site redevelopment plans.
- Prevent vapor intrusion through the landfill cover.
- Address geotechnical issues related to foundation support, pavement support, and any other issues that may be identified.
- Annotate the property deed to restrict future construction not addressed in the approved design and construction documents.

Again, please note that the technical recommendations in this letter are intended only as a general guide based on the current information from the recently completed field investigation. The final evaluation and design of construction/redevelopment on top of the buried debris/waste should be performed by a qualified P.E. and/or P.G. once all of the field investigation at the subject property is complete and a conceptual design of the recreation fields are known.

4.0 BROWNFIELD LIABILITY PROTECTION

As a portion of the subject property was historically used as a landfill, Terracon recommends the City of Savannah consider entering the subject site into the Georgia Brownfield Program prior to closing on the property. The Georgia Brownfield Program provides for limitation of liability from known groundwater contamination discovered at a site due to past activities unrelated to the prospective purchaser's operations.

However, it should be noted that the limitation of liability does not extend to soil contamination. As such, under the Brownfields Program, the City of Savannah would be responsible for delineating and remediating any soil contamination at the subject site above applicable EPD HSRA Notification Criteria, if found. Although, to date, no soil contamination above applicable standards has been identified within the buried waste area.

As part of the Brownfield Application, a Prospective Purchaser Corrective Action Plan (PPCAP) should include capping of the landfill as described previously in Section 3.0 as corrective action method to encapsulate the landfill. Also, the Georgia EPD will likely require additional soil and potentially groundwater sampling across the site above what has already been conducted as part of the Brownfield investigation process leading to receipt of the Limitation of Liability letter from the Georgia EPD.

Landfill Redevelopment Summary

Fairgrounds Property ■ Savannah, Chatham County, Georgia
December 7, 2015 ■ Terracon Project No. ES157720



We appreciate the opportunity to provide this information and look forward to the opportunity of working with you.

Sincerely,

Terracon Consultants, Inc.

A handwritten signature in black ink, appearing to read "Stewart A. Dixon". The signature is fluid and cursive, with the first name being the most prominent.

Stewart A. Dixon, P.G.
Environmental Services Department
Georgia P.G. No. 1682

A handwritten signature in black ink, appearing to read "William S. Anderson, III". The signature is highly stylized and cursive, with a long horizontal flourish extending to the right.

William S. Anderson, III, P.E.
Senior Principal/Office Manager
Georgia P.E. No. 16449