



OSPREY ENVIRONMENTAL ENGINEERING, LLC

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Mr. Joseph Michelangelo, P.E., Director of Public Works
Fairfield Department of Public Works
725 Old Post Road
Fairfield, CT 06824

10 January 2019

Re: Response to DEEP Comments - Unpermitted Landfill Closure
Aggregate Recycling Yard, Fairfield, CT

DRAFT

The following is offered in response to the CT Department of Energy & Environmental Protection comments set forth in a letter dated 26 September 2018 regarding the application for the above reference project.

1. Please provide copies of the supplied engineering drawing (i.e., Drawing A-1 Landfill Closure Site Improvements and Sampling Locations, dated July 30, 2017) that depict site views, the limits of the disposal area which should be clearly delineated and labeled, including the location of any test pits, bore holes, etc. that were excavated to confirm said limits, cross sections through the site, a minimum of one parallel and one perpendicular to groundwater flow depicting existing, site preparation and proposed final grades, details on proposed sedimentation and erosion controls, cross section and construction details of site access road, and a distinct drawing that clearly depicts existing grades and proposed final grades. Please remember that the engineering drawings including any revised engineering drawing must be signed and stamped by a licensed professional engineer. The site plan must be drawn at a scale appropriate to the setting and must show a clearly labeled, detailed presentation of all significant features of the proposed project and within a 500 foot radius of the Facility.

Drawings addressing the above are attached. These include:

- a) The limits of the disposal area have been depicted on the drawing. They were determined based on an interview with the former site operations manager and an examination of aerial photographs (appended) during the period the landfill was in operation. No subsurface exploration activities (test pits, soil borings) were conducted as the area of the landfill was readily apparent from site photographs (attached) and the nature of the site (excavation in flat marsh area that was subsequently filled in) and the difficulty in accessing the landfill edge in the area of the existing steep slope along the waterway.
- b) Site cross sections, road cross sections, grading plan, erosion & sediment control plans are attached. **Joe, I believe you have these already prepared.** We have not included a landfill section as we do not know the depths of the landfill materials (access difficulties for soils exploration). The area around the site within a 500 foot radius is shown on the plan and is entirely controlled by the Town of Fairfield (transfer station, water pollution control facility, animal shelter, fire training facility, composting facility, DPW yard) and marsh area. We have proposed monitoring well locations but have not installed them as we have not received concurrence from your agency with respect to location. Depths for the wells are proposed to be to 20' below the water table. As the DPW facility was constructed on fill placed over the salt marsh and the unpermitted (and adjacent permitted) landfill consists of municipal solid waste placed within an excavation created when materials were being relocated for fill for other areas of the facility, it is reasonable to assume the groundwater under the property is a mounded water table. This will be confirmed when the monitoring wells are installed.

Berm Wall Configuration

2. Did the Town of Fairfield "the Town" complete a geotechnical investigation to evaluate the properties of the subsurface materials at the site relative to the loading conditions imposed by the construction of the berm? Please provide details of the following:

a. Site and subsurface conditions. The quality of soil such as analysis regarding test pits, test borings, surveys, geotechnical laboratory testing of the impacted soils, slope stability analyses including that of potential soil settlement and associated calculations thereof;

As was indicated above, a subsurface soils investigation was not conducted. The regrading associated with the site reconfiguration involves lowering the existing grades substantially and relocating some of the materials slightly to the south and east to create the berm. This final berm will be lower than existing site grades, and the area behind (to the north of) the berm will be further decreased in height, resulting in a substantial reduction in compression forces over the underlying landfill materials. Final side slope grades will be completed to a 4:1 slope, and materials will be composed of existing site aggregate material and cover materials. The cover materials will be composed of asphalt paving with an associated storm drainage system (behind the berm) and low permeability materials in other locations. Joe, I don't have information on the height of the pile prior to the regrading and berm installation. Can you provide some typical height reduction numbers from information you have or send me a topo drawing with elevations - does Scott (surveyor) have any data? Also, berm slopes - were they constructed to 4:1? Also, what tense do you want to use for the berm construction - do you want to acknowledge that is already in place?

b. Berm design. What is the configuration (i.e., height, length, volume of material, etc.) of the berm? Please provide information regarding the types of materials used in the construction of the berm and analytical results of representative samples of said materials demonstrating that they meet the definition of "clean fill" as defined in Section 22a-209-1 of the Regulations of Connecticut State Agencies (RCSA).

Joe: can Scott provide height/length/volume calculations on the berm

Materials used in the construction of the berm are fine to coarse aggregates consisting of sand, gravel, cobbles, crushed asphalt and Portland cement concrete materials already in place at the site. The mixture of aggregate sizes (non-uniform) and angularity of materials are very stable (as evidenced during the excavation process when relocation soils to construct the berm). Extensive chemical characterization was conducted recently of the soils and these met the criteria set forth in the DEEP Remediation Standards Regulations (RSRs) with respect to the Direct Exposure Criteria (DEC) for industrial/commercial settings, with some exceptions. These included some polynuclear aromatic hydrocarbons (PAHs), including benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and indeno(1,2,3cd)pyrene, which are always found with asphalt materials, and ETPH, normally found with the same materials. Arsenic was found in a small number of the samples at concentrations slightly above the residential and industrial/commercial DEC criteria (both the same at 10 mg/kg, and is not uncommon in naturally occurring soils in the area. This soil was mixed with other clean fill to bring the concentrations below the RSR DEC. Some minor concentrations of PCBs were present in soil samples, and these were below the PCB DEC criterion for industrial/commercial settings. In summary, the site soils being reused for the berm were consistent with the requirements relating to disposal at a landfill and soils reuse criteria. The soils are also to be capped with clean soils meeting the RSR residential DEC standards.

Please describe the geometric configurations and requirements and related calculations that were determined for construction of the berm wall, since varying soil zones in the area can influence its design. Include in your discussion the materials that were included in the making of the berm, foundation, backfill, slope stability, shear strength parameters, etc. and the sedimentation and erosion controls employed to control runoff.

No foundation backfill was emplaced as the berm footprint surfaces were well compacted during the previous usage of the site (compaction by fill piles, operation of heavy equipment during crushing and mixing operations). The berm materials were placed on stable surfaces, compacted (offloaded from dump truck and compacted through passes across surfaces by excavation equipment and trucks), and were placed at stable configurations (maximum 4:1 slope). They were covered with a topsoil mix and seeded, and a stabilizing vegetative cover has already been established.

Erosion and sediment (E&S) control measures included the installation of erosion and sediment control barriers prior to the start of construction, and containing stormwater runoff on-site with berms (sedimentation ponds) prior to being discharged through established outlets. Stormwater tests were conducted, and minor site changes were implemented to provide better suspended solids removal prior to being released from the site. Daily inspections were conducted during stormwater/runoff events to ensure that all E&S controls were properly maintained.

c. Community Outreach. Prior to implementation of the berm wall, was there any local community outreach seeking input from nearby residents?

Extensive community outreach efforts were implemented, including conducting regular public presentations to the community with opportunities for feedback, the establishment of an online information page, detailing the progress of the work and providing inspection and soils testing reports for review. Meetings were also held with DPW site personnel discussing the nature of the work, and presentations were made to Town Commissions during regularly scheduled monthly meetings. The feedback from the various sources guided the changes to the site design that was finally adopted and approved by the Fairfield Planning & Zoning Commission.

Capping of the landfill

3. *The application package includes Attachment M - Checklist for Solid Waste Disposal Areas (Landfills). Review staff were not able to find the requisite plan for the closure of the solid waste disposal area as outlined in Condition No. 14 of the referenced checklist. Please provide a plan for the closure of the solid waste disposal area which includes but is not limited to provisions for the grading of slopes, placement of final cover, and stabilization with soils and vegetation to minimize erosion, run-off and infiltration in accordance with the applicable requirements of Section 22a-209 of the RCSA.*

Plans are attached to address these requirements. Joe - plans prepared for P&Z?

4. *Has the Town evaluated how the capping will be graded? Sec. 22a-209-7 of the RCSA indicates a top slope no greater than four (4) percent and side slopes not to exceed a grade of one (1) on three (3), one vertical on three horizontal, unless otherwise approved as requested. Additionally, the Town will need to comply with the following requirements:*

The final grade of the berm side slopes was at a maximum of 4:1. The area behind the berm is proposed to be <4% and will be paved with asphalt and will drain to a detention basin for sediment removal prior to discharging to the existing site discharge point.

a. Protection of ground water monitoring. *Where will the monitoring wells be installed to observe any change in groundwater quality?*

The proposed monitoring wells are shown on the attached site plan. They will not be placed directly adjacent to the watercourse, as the existing side slopes preclude access by a drill rig.

b. Cover Material. *Please describe the cover material, whether it be soil (silty gravels, clayey gravels, silty sands, etc.) or some varying synthetic material to be used as final cover.*

Cover material will be silty sands or silty gravels, depending on availability.

Should you have any questions regarding the above, please contact me.

Sincerely,

Osprey Environmental Engineering, LLC.



Robert Grabarek, P.E., L.S., LEP
President