Shaw® Shaw Environmental, Inc.

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April 21, 2009

Mr. Ram Pergadia
New York State Department of Environmental Conservation
21 South Putt Corners Road
New Paltz, New York 12561

RE: Pump Test Work Plan
Taylor's Lane Compost Site
Village of Mamaroneck, New York

Dear Mr. Pergadia:

Shaw Environmental and Infrastructure Engineering of N.Y., P.C. (Shaw) is submitting this Pump Test Work Plan (Work Plan) on behalf of the Village of Mamaroneck (Village) for the collection of subsurface data in support of the leachate mitigation project at the Taylor's Lane Compost Site (Site).

Site Background

The Taylor's Lane Compost Site is located in the Village of Mamaroneck, New York (**Figure 1**). The Site was a former municipal dump from the 1950s to early 1970s. After that, the southern portion of the Site was used to compost leaves and to dispose of tree trunks and wood chips. The northeastern corner of the Site has been used as a stockyard for a local plant nursery. A Remedial Investigation/Feasibility Study was performed for the Site. The Record of Decision (ROD) for the Site ordered the primary remedy of a final cover. The closure of the Taylor's Lane Compost Site was completed in the spring of 1997 with the completion of the final cover construction.

Activities at the Site are governed by the post-closure operations and maintenance procedures in the Post-Closure Operation and Maintenance Plan (O&M Plan). These activities include the quarterly sampling and analysis of monitoring wells downgradient of the facility along Taylor's Lane.

Currently, leachate seeps have been visually observed on the properties adjacent to the Taylor's Lane Compost Site. It is believed that a high groundwater table that resides within the refuse is contributing to the leachate outbreaks. To mitigate the leachate seeps, aquifer pumping tests were conducted in November 2008 to determine the groundwater regime and flow characteristics. Observations and groundwater elevation measurements were made over a period of a week at two new wells installed adjacent to the Markowitz residence (MW-4S and MW-4D, Figure 2). Based on discussions with the New York State Department of Environmental Conservation (NYSDEC) and the Village, a second pump test was recommended to collect additional data for a future gravity drain system to collect and remove leachate from the compost facility.

TASK 1 - Pre-Mobilization Activities

Prior to starting and field activities, Shaw will update the Health and Safety Plan (HASP) that has been developed for the Site. The updates will account for penetrating into the refuse beneath the final cover. Items to be mentioned in the HASP update will include the types of gases that may be present and their potential health hazards to humans and the environment, as well as monitoring for the gases and establishing related safety protocols.

TASK 2 - Installation of New Monitoring Well

A monitoring well, MW-4M, will be installed inside the landfill footprint (within the landfill refuse) approximately 50 feet west from the monitoring well couplet installed previously adjacent to the Markowitz's residence (**Figure 2**). Since this new monitoring well will penetrate the landfill liner, special precautions and protocols will be implemented which are described in Task 3, below.

Estimated depth for the well will be approximately 20 feet (ft) below ground surface (bgs). This well will serve as a monitoring point during the first phase of the pump test and then as the location of pumping during the second phase of the pump test, if necessary. To maximize the flow rate of the pumping system, the well will be constructed of 6-inch diameter polyvinyl chloride (PVC) casing and well screen. The well will remain on-site after the pump tests are completed.

A track-mounted drill rig will be utilized to advance 8-inch inside diameter hollow stem augers down to approximately 20 ft bgs. Split spoon samples will be collected continuously to log the subsurface material. A photoionization detector (PID) as well as a landfill multi-gas detector will be used to screen the subsurface materials and to monitor the borehole while it is advanced to 20 ft bgs. A field geologist will log the subsurface materials and record the PID and landfill multi-gas detector readings. Once the borehole has reached 20 ft bgs, the monitoring well will be installed within the 8-inch hollow stem augers. The well will be constructed with 15 ft of 0.03-inch slot sized screen. Sand backfill will be placed around the well screen to approximately two feet above the top of the well screen. A one-foot thick layer of bentonite chips will be placed above the top of the sand backfill. A steel protective casing will be placed around the 6-inch PVC well casing after the completion of Task 3 below. The steel protective casing will be set in concrete on top of the boot installed around the PVC casing (i.e., will not penetrate through the cover liner).

TASK 3 - Expose Liner and Install Boot Around Well Casing

As indicated above, the new well will be installed within the landfill refuse and therefore will penetrate the final cover system. Prior to advancing the borehole with the hollow stem augers, the drilling contractor will hand dig through the cover soils to the top of the liner. Initially, a two to three inch cut will be made through the 40 mil polyethylene flexible membrane liner to confirm that liner is not confining the groundwater. Should water start to flow upward through the liner, waterproof tape will be placed over the short cut, and bentonite paste (a mixture of bentonite powder and water) will be placed over the waterproof tape. The Village and NYSDEC will be immediately contacted to assess how to move forward with the field program. Based on groundwater hydraulic data previously obtained from the Site, there is an upward hydraulic gradient beneath the site. However, groundwater elevations appear to be a few feet lower than the corresponding ground surface elevations suggesting that water will not flow upward through the liner.

The drilling contractor will cut a hole through the liner of sufficient diameter to only allow the hollow stem augers to pass through the liner. Upon completion of the well installation, the drilling contractor will add sufficient bentonite seal so that it extends above the liner. This will prevent any gases escaping up through the liner material until a boot is installed. Within 48 hours of completing the well installation, a liner boot will be installed around the well by an experienced contractor. After installing the boot, the integrity of the seal will be confirmed with a vacuum box test (ASTM D-4437) of the seal between the skirt and the liner, and a mechanical point stressing text (ASTM D-4437) of the seal between the skirt and the well casing. Adjustments and repairs will be made as necessary to ensure that both seals meet the ASTM D-4437 criteria.

TASK 4 – Phase I Aquifer Pumping Tests

The first phase of the pump test will occur at the previous test location of groundwater monitoring well MW-14M. The test will be conducted over three consecutive 8-hour days. On the fourth day, a 24 hour continuous pumping test will occur. During the first three 8-hour days of the pump test, groundwater elevation measurements will be collected three times to the nearest 0.10 foot. Measurements will be collected once in the morning before the pumping system starts up, once in the afternoon, and once just before the pumping system is shut down. All groundwater elevation measurements will be limited to the nearest 0.10 foot because of variations in measuring equipment and technique. Groundwater elevation measurements will be collected at MW-4S, MW-4D, MW-4M (the newly installed well), and gas vents GV-4, GV-6, and GV-7 (**Figure 2**). Pumping rates will be monitored and recorded as well as total volumes pumped (at the end of the three 8-hour days and the end of the one 24-hour continuous test). Groundwater generated during all pump test activities will be discharged to the sewer manhole on Taylor’s Lane, consistent with the previous pump test in November 2008. The Westchester County Department of Environmental Facilities (DEF) will be contacted prior to initiation of the pump test to ensure that water discharge procedures meet their requirements.

TASK 5 - Phase I Evaluation and Letter Report

Data obtained from this first phase of the pump test will be put into spreadsheets to develop graphs representing the change in groundwater elevations during the testing periods. These data will be compared to data from the initial aquifer pumping tests and a brief letter report will be submitted to the Village and NYSDEC with Shaw’s findings and recommendations.

TASK 6 – Phase II Aquifer Pumping Test

If the Phase I aquifer pumping test results do not indicate a significant difference in the hydraulic conductivity of the refuse and the off-site soils along Greenhaven Lane (as evidenced by significantly different behaviors in wells MW-4M, 4S and 4D) then, a second aquifer pumping test will be conducted. The second aquifer pumping test will involve pumping from the newly installed groundwater monitoring well MW-4M. The test will take place over three consecutive 8-hour days. On the fourth day, a 24-hour continuous aquifer pumping test will be conducted. During the first three 8-hour days of the pumping test, groundwater elevation measurements will be collected three times to the nearest 0.10 foot. Measurements will be collected once in the morning before the pumping system starts up, once in the afternoon, and once just before the pumping system is shut down. All groundwater elevation measurements will be limited to the nearest 0.10 foot because of variations in measuring equipment and technique. Groundwater elevation measurements will be collected at MW-4S, MW-4D, MW-14M, and gas vents GV-4, GV-6, and GV-7. Pumping rates will be monitored and recorded as well as total volumes pumped (at the end of the three 8-hour days and the end of the one 24-hour continuous test).

TASK 7 - Phase II Evaluation and Letter Report

Data obtained from this second aquifer pumping test will be put into spreadsheets to develop graphs representing the change in groundwater elevations during the texting periods. These data will be compared to data from the other aquifer pumping tests and a brief letter report will be submitted to the Village and NYSDEC with Shaw's findings and recommendations.

TASK 8 - Presentation of Test Results at Village Meeting

Shaw will present the results of the aquifer pumping test(s) completed as part of this Work Plan. This presentation will also include Shaw's recommendations for moving forward with the leachate mitigation project. The presentation will include a question and answer session to ensure the Village understands the results and rationale for Shaw's recommendations with concurrence from NYSDEC.

Please feel free to contact me if you should have any questions.

Sincerely,

Shaw Environmental and Infrastructure Engineering of N.Y., P.C.

Michael R. Sherwood

Michael R. Sherwood
Client Program Manager

Attachments: Figure 1
Figure 2

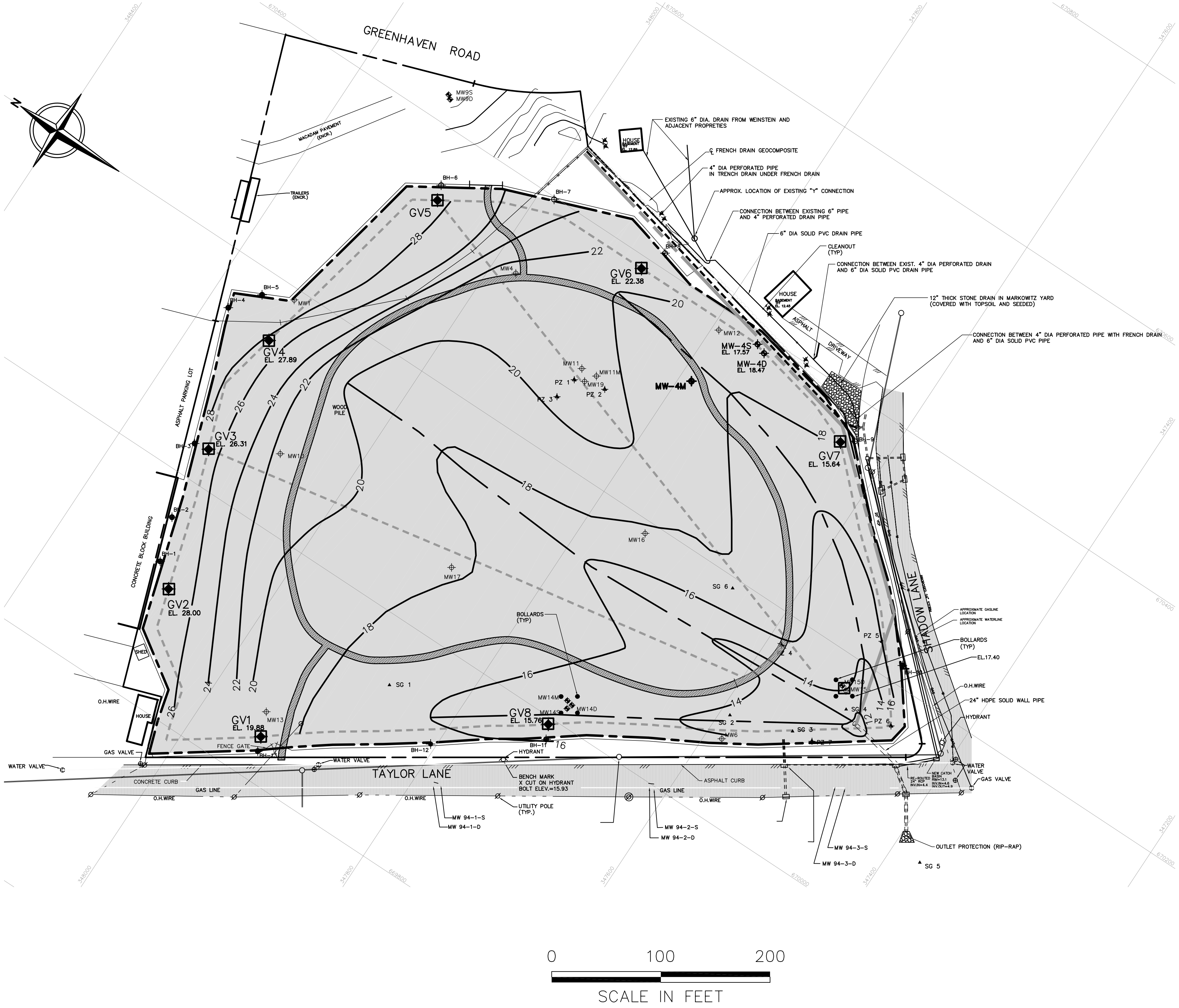
FIGURES

Shaw® Shaw Environmental, Inc.

FIGURE 1
SITE LOCATION

TAYLOR'S LANE COMPOST SITE

VILLAGE OF MAMARONECK, NEW YORK



LEGEND

○ SMH = SANITARY SEWER MANHOLE
▭ CB = CATCH BASIN
☐ FI = FLAT GRATE
RCP = REINFORCED CONCRETE PIPE
ACP = ASBESTOS CEMENT PIPE
CMP = CORRUGATED METAL PIPE
VCP = VITRIFIED CLAY PIPE
SP = STEEL PIPE
⊕ MW-1 = MONITORING WELL
○○○ = STONE WALL
— — — = VEGETATIVE DEBRIS PILE
⌀ = UTILITY POLE
— - - — = PROPERTY LINE
■■■■■■ = PERFORATED DRAINAGE PIPE
▬▬▬ = DRAINAGE SWALE
— - - - → = TRIANGULAR DRAINAGE CHANNEL
- - - - - - = GAS VENTING PIPE
——— = CONTOUR
— - — = LIMIT OF FINAL COVER
◆ = GAS VENT
⊕ = NEW MONITRORING WELL (TYP)
⊕ = MONITRORING WELL ABANDONED (TYP)
● = BAR HOLE PUNCH (TYP)
☐ = FENCE AROUNG GAS/MONITORING WELL (TYP)
▨ = FINAL COVER AREA
▒ = WALK TRAIL
✕ = PIEZOMETERS
—×—×— = FENCE

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Project Title

VILLAGE OF MAMARONECK
TAYLORS LANE
INACTIVE HAZARDOUS
WASTE SITE

LEACHATE
MITIGATION

GENERAL

Drawing Title

SITE
PLAN

071809

KEITH W. FUREY, P.E.

NO ALTERATIONS PERMITTED HEREON
EXCEPT AS PROVIDED UNDER SECTION
7209 SUBDIVISION 2 OF THE NEW YORK
STATE EDUCATION LAW

	Date	Revisions	Init

Graphic Scale
AS INDICATED

Project No. 012.05.09
Date 11/08
Drawing By KWF
Checked By KWF

FIGURE
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