NEW YORK STATE OF OPPORTUNITY. | Department of Transportation

ANDREW M. CUOMO
Governor

MATTHEW J. DRISCOLL
Commissioner

TODD WESTHUIS, P.E.
Regional Director

May 27, 2016

Jamie L. Verrigni, Project Manager
NYS Department of Environmental Conservation
Division of Environmental Remediation, BURC
625 Broadway
Albany, NY 12233-7014

RE: SITE MANAGEMENT PERIODIC REVIEW REPORT
SITE NUMBER 360035
NYSDOT HARRISON SUBRESIDENCY
ROUTE 120
TOWN OF HARRISON
WESTCHESTER COUNTY

Dear Ms. Verrigni:

Attached please find the Site Management Periodic Review Report for the Harrison Sub-Residency in the Town of Harrison, Westchester County.

Please feel free to contact me at 845.431.5826 or gretchen.fitzgerald@dot.ny.gov if you have any questions or concerns.

Very truly yours,

Gretchen Fitzgerald
Regional Construction Environmental Coordinator, Region 8

Enclosures

cc: C. Kochersberger, Office of Transportation Maintenance, Main Office, NYSDOT, POD 5-4
L. MacMillan, Regional Maintenance Engineer, Region 8, NYSDOT
C. Kappeller, Maintenance Environmental Group, Region 8, NYSDOT
J. Argote, Resident Engineer, Residency 8-9, Region 8, NYSDOT

Enclosure 2
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. 360035

Site Name Harrison Subresidency

Site Address: Route 120 Zip Code: 10528
City/Town: Harrison
County: Westchester
Site Acreage: 5.0

Reporting Period: May 14, 2013 to May 14, 2016

	YES	NO
1. Is the information above correct?	☒	☐
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☒
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☒
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☒
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	☐	☒

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Closed Landfill	☒	☐
7. Are all ICs/ECs in place and functioning as designed?	☒	☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

SITE NO. 360035 **Box 3**

Description of Institutional Controls

Parcel	Owner	Institutional Control
971-22	NYS Department of Transportation	O&M Plan

The NYSDOT is conducting operation and maintenance of the landfill which includes surface water, sediment and groundwater monitoring and visual inspections of the cover material. Landfill inspections are conducted semi-annually and groundwater samples are collected every fifth quarter.

Box 4

Description of Engineering Controls

Parcel	Engineering Control
971-22	Cover System
	Fencing/Access Control

The landfill was closed in accordance with NYCRR Part 360. Closure included capping of 2.6 acres of landfill area.

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
☒	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
☒	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

IC CERTIFICATIONS
SITE NO. 360035

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Gretchen Fitzgerald (print name) at 4 Burnett Blvd., Poughkeepsie, NY 12603, (print business address)

am certifying as owner (NYSDOT) (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

Signature of Owner, Remedial Party, or Designated Representative Rendering Certification

5/27/16
Date

IC/EC CERTIFICATIONS

Box 7

Qualified Environmental Professional Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Gretchen Fitzgerald (print name) at 4 Burnett Blvd., Poughkeepsie, NY 12603 (print business address),

am certifying as a Qualified Environmental Professional for the NYSDOT (owner) (Owner or Remedial Party)

Signature of Qualified Environmental Professional, for the Owner or Remedial Party, Rendering Certification	Stamp (Required for PE)	Date
		5/27/16

Site Management Periodic Review Report
NYSDOT Harrison Sub-Residency
Harrison, New York
Site Number 360035
May 27, 2016

Introduction

The New York State Department of Transportation (DOT) Harrison sub-residency site is located east of Route 120 and west of the Westchester County Airport in the Town of Harrison, Westchester County (see Attachment 1).

Currently, there are two environmental concerns at the Harrison sub-residency:

- a 2.6 acre landfill, which is listed in the New York State Registry of Inactive Hazardous Waste Sites and is classified as a "Category 4", meaning that it has been remediated and only ongoing monitoring is required, and

- a “closed, does not meet standards” petroleum spill (#94-07349) which, at present, still requires monitoring.

Over the past 16 years, results from extensive environmental monitoring (surface water, groundwater, sediment, landfill gas, petroleum-remediation gas emissions) indicate that these areas do not represent a significant threat to the environment, including the nearby Kensico Reservoir.

Site History

The Harrison sub-residency facility was built in 1967 to support the construction and operation of Interstate 684. Roadside and highway construction debris were disposed on-site in a landfill between 1967 and 1976. The area was fenced in 1972. In April 1993 a 55-gallon drum of road striping paint was removed from the landfill during a test pit excavation. Because the paint contained toluene (a solvent), the site was placed on the New York State Registry of Inactive Hazardous Waste Sites.

DOT consulted with the New York State Department of Environmental Conservation (DEC) and the New York State Department of Health (DOH) and performed an expedited, comprehensive investigation (i.e., Preliminary Site Assessment) of the landfill and its vicinity in 1995. Several drums containing hazardous or suspected hazardous waste, mostly paint products, were encountered and removed from the landfill. Based on the results of the investigation, DEC, DOH and DOT indicated that the landfill was not a significant threat to the reservoir.

After consulting with DEC, DOH, and the New York City Department of Environmental Protection (DEP), the landfill was re-graded and capped in accordance with stringent DEC landfill closure requirements on August 31, 1999. The cap includes a durable polyethylene liner to prevent the infiltration of water and subsequent leaching of contaminants into the environment. A small stream that drains into the reservoir was rerouted around the landfill so that it could not act as a collector trench for contaminants (see Attachment 2). The plastic liner extends beneath the repositioned stream, so that any leachate generated within the fill cannot discharge into surface water. Environmental monitoring results have shown no evidence of toxic contaminants from the landfill with the potential of reaching the reservoir.

DOT also identified a petroleum spill at the vicinity of the fuel tank area. With DEC approval, in August 1994, DOT removed three underground petroleum storage tanks (two 400-gallon and one 2000-gallon), 130 cubic yards of contaminated soil, and 8,000 gallons of contaminated water. There are currently no tanks remaining on this property. Monitoring results at the petroleum spill area suggested that the spill had not migrated off-site and was not a significant threat to the reservoir.

Landfill monitoring has been conducted on a quarterly basis since 2000. In February 2010, with concurrence from DOH and DEP, DEC granted permission to DOT to change this frequency to semi-annually. These monitoring reports have been and continue to be submitted to DEC, DOH and DEP.

Beginning in 2000, DOT completed quarterly groundwater, surface water, and sediment sampling and reports at the landfill area, and groundwater sampling and reports at the petroleum spill area. The quarterly reports changed to every-5th quarter reports in October 2005. These reports have been and continue to be submitted to DEC, DOH and DEP.

At the request of DOH and in coordination with DEC, a sub-slab soil gas investigation was conducted in March 2006 at two locations within the sub-residency building beneath the concrete slab foundation. The purpose of the sub-slab soil gas investigation was to assess the potential for vapor intrusion into the sub-residency building from the potential presence of volatile organic compounds in the groundwater and/or sub-surface soil adjacent to and/or beneath the building. DEC reviewed the results of the sub-slab investigation and concluded that the low levels of site-related volatile organic compounds detected in the sub-slab vapor of the sub-residency building indicated that the potential for exposure to site-related compounds via indoor vapor intrusion was unlikely. In addition, the presence of non-site related compounds at the levels detected in the sub-slab soil vapor did not represent an exposure concern considering the current use of the building.

In October 2013, the Town of Harrison Department of Public Works was served with a Notice of Violation from DEP regarding the operation of a solid waste management facility (i.e., organic yard waste transfer station) within 1000 feet of the Kensico Reservoir and a reservoir stem. In February 2015, the Town of Harrison accepted the terms of a variance granted by DEP permitting the Town's operations. The terms included site drainage improvements to be made by the Town. In February 2016, DEP determined that all variance mitigation measures had been installed, and DEP determined that the violation has been satisfactorily resolved.

Institutional and Engineering Controls

- Air Sparge/Soil Vapor Extraction System

On October 31, 2000, DOT started operating an Air Sparge/Soil Vapor Extraction (AS/SVE) system at the petroleum spill area. This system was highly successful: a 90% overall reduction of contaminants was achieved in less than a year due to volatilization and bioremediation of the petroleum product. Because contaminant levels significantly decreased in the first year and then remained relatively constant (i.e., natural attenuation processes were/are effectively reducing and containing the plume), and it was agreed that the maximum benefits of the system had been achieved, the remedial system was taken off-line in October 2002. The pipes were plugged by DOT Maintenance in October 2006.

In March 2008, DEC determined that the remedial work performed at the site, specifically the past operations of the AS/SVE system and the monitoring program which is ongoing, had addressed the open spill number 94-07349. The spill was declared "Closed, does not meet standards". (The official spill closure date is 10/10/02, which is when the AS/SVE system was shut down). The ongoing monitoring program serves to document the status of the residual contamination.

In May - June 2008, after discussions among DOT, DEC, DOH, and DEP, thirteen wells in the petroleum spill area were “closed” or decommissioned. In June of 2008, two new wells, MW-12 and MW-13, were installed (see Attachments 6, 7, 15).

In November 2011 and May 2012, again after discussions among DOT, DEC, DOH, and DEP, five more wells were “closed” or decommissioned (three in the petroleum spill area, one in the landfill area, and one “outlier”). The existing well in the petroleum spill area which has been left open is MW-11 (see Attachments 8, 16).

- Fence

The Harrison sub-residency site is secured with a fence and a locked gate. There is also a fence surrounding the entire perimeter of the landfill, which is also locked. The Town of Harrison operates a leaf transfer station at the Harrison sub-residency. The Town operates out of the old sub-residency garage that is on-site. While the Town is not involved in the groundwater monitoring or landfill inspections, they are responsible for maintaining the area where they work. Any damage to the landfill fence is noted on the semi-annual landfill inspection reports. Any necessary repairs to the fence are made by DOT. On occasion, the Town of Harrison has been asked to fix portions of the fence that have been damaged by their operations.

- Landfill Cap

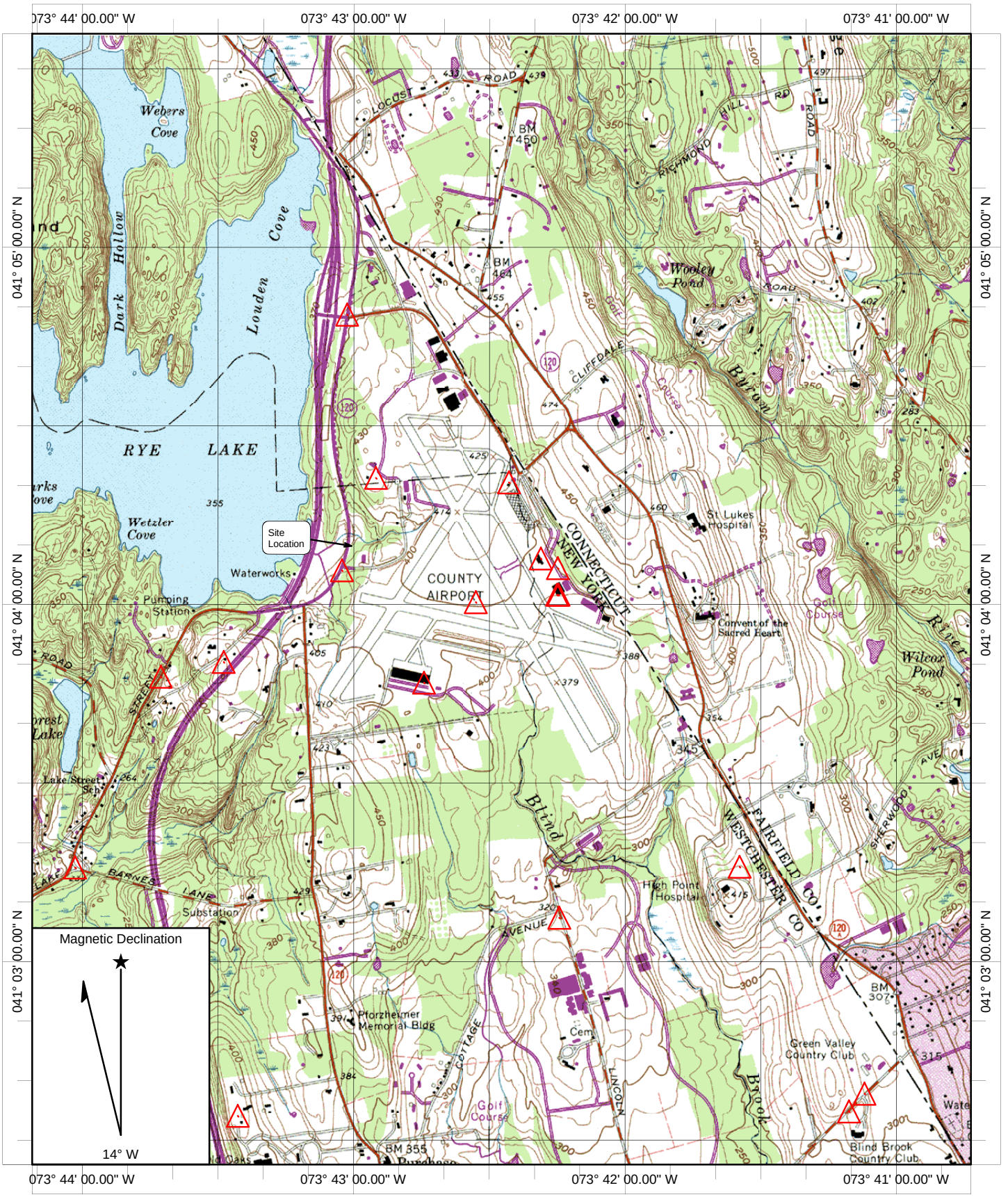
The landfill was re-graded and capped in accordance with stringent DEC landfill closure requirements on August 31, 1999. The cap includes a durable polyethylene liner to prevent the infiltration of water and subsequent leaching of contaminants into the environment. Minor erosion on the western slope of the landfill became an issue in 2006. DOT Region 8 Maintenance applied wood chips to the area in the Spring of 2007. A permanent fix to the erosion/soil slump took place in May 2009 when it was repaired by DOT Residency 8-9 personnel. Approximately 6 inches of #2 crushed stone (NYSDOT Standard Spec. 623.12) was placed on the slump then covered with approximately 12 inches of fine stone fill (NYSDOT Standard Spec. 620.02). Repair suggestions were provided by the DOT Region 8 Geotechnical Group.

- Operations and Maintenance Plan

An Operations and Maintenance (O+M) plan was developed by DOT when well sampling and landfill monitoring began. The O+M plan has been updated throughout the years as necessary and is always shared with and agreed upon by DEC, DOH, and DEP. The most current O+M plan is dated February 2010 (see Attachment 10).

Please see the following attachments for more information:
Attachment 1 - Site Location Map
Attachment 2 - Site Map
Attachment 3 - Landfill Groundwater Sample Locations
Attachment 4 - Landfill Surface Water and Sediment Sample Locations
Attachment 5 - Landfill Gas Vent Locations
Attachment 6 - Petroleum Spill Area Historic Well Locations
Attachment 7 - Landfill and Petroleum Spill Area Monitoring Well Locations as of June 2008
Attachment 8 - Landfill and Petroleum Spill Area Monitoring Well Locations as of May 2012
Attachment 9 - Petroleum Spill Area Monitoring Well Locations as of May 2012
Attachment 10 - Operations and Maintenance Plan for the Landfill and Petroleum Spill Area - February 2010
Attachment 11 - Groundwater Data Summary for the Petroleum Spill Area - January 2015
Attachment 12 - Groundwater Data Summary for the Landfill - January 2015
Attachment 13 - Surface Water Data Summary for the Landfill - January 2015
Attachment 14 - Sediment Data Summary for the Landfill - January 2015
Attachment 15 - Plugging Report for Well Closures in May and June 2008
Attachment 16 - Plugging Report for Well Closures in November 2011 and May 2012

Attachment 1



Map source: USGS 7.5 min. Quadrangle Series, Glenville, NY
Date: 1/23/2008

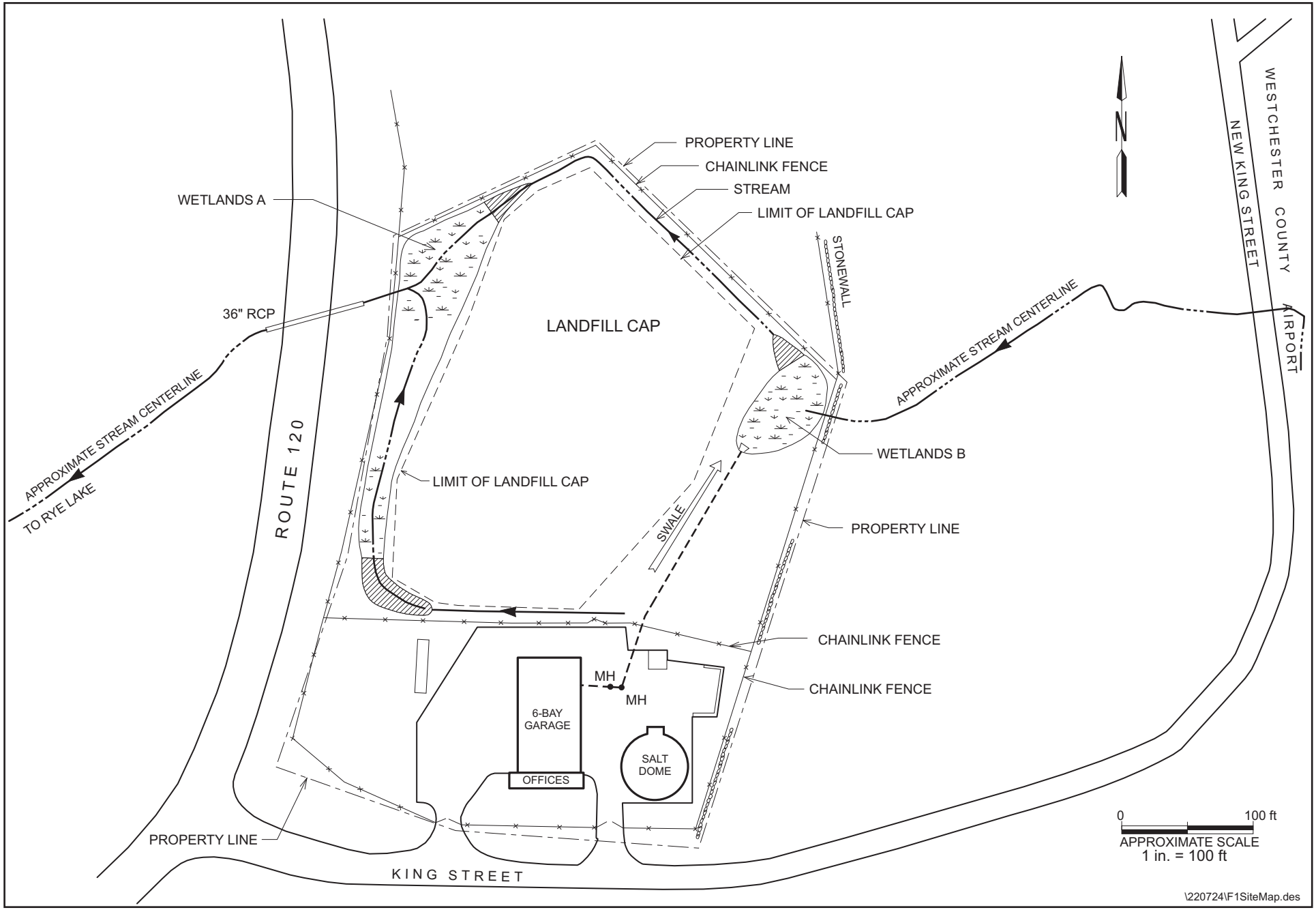
0 2000 ft
SCALE (ft)

Location: 041° 04' 00.92" N 073° 42' 27.38" W NAD 27

\220724\F1_SiteLocation.ai

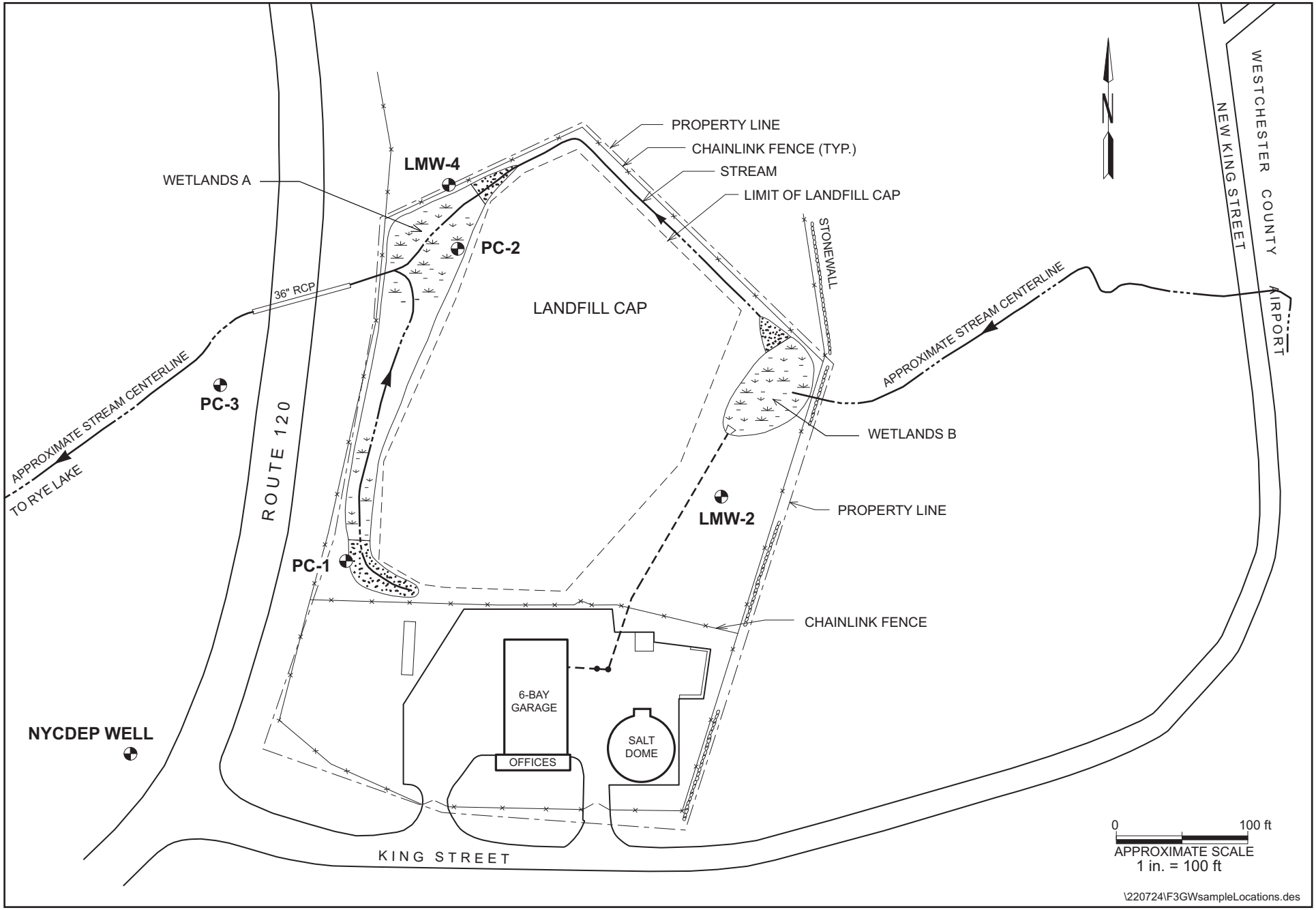
HDR Engineering, Inc. 1 International Blvd. Mahwah, NJ 07495	**Site Location** HARRISON SUBRESIDENCY POST-CLOSURE FIFTH QUARTERLY MONITORING REPORT NYSDOT PIN: 8806.51.301	**Figure 1**

Attachment 2



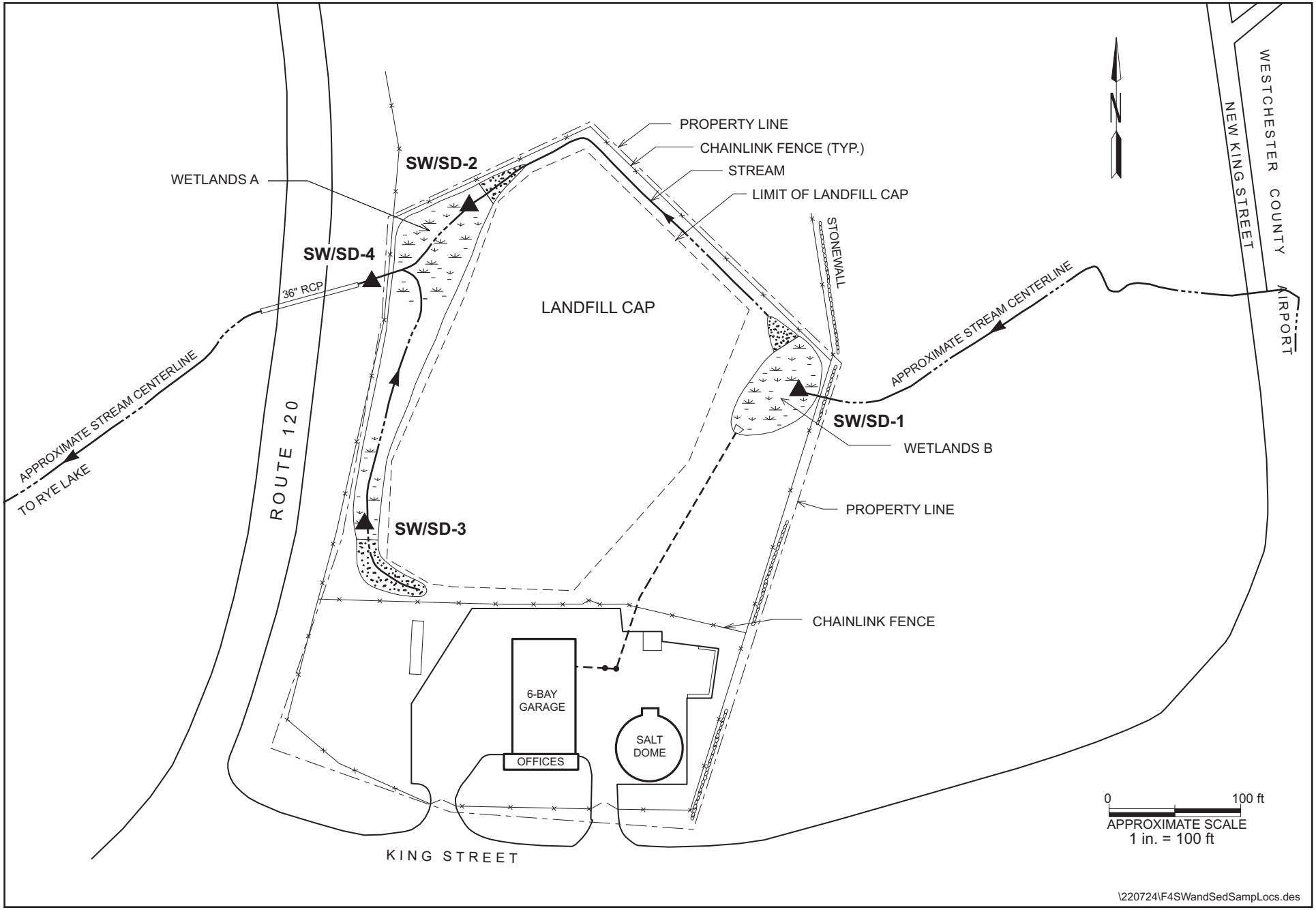
HDR Engineering, Inc. 1 International Blvd. Mahwah, NJ 07495	**Site Map** **HARRISON SUBRESIDENCY POST-CLOSURE FIFTH QUARTERLY MONITORING REPORT**	**NYSDOT PIN: 8806.51.301**	**Figure 2**

Attachment 3



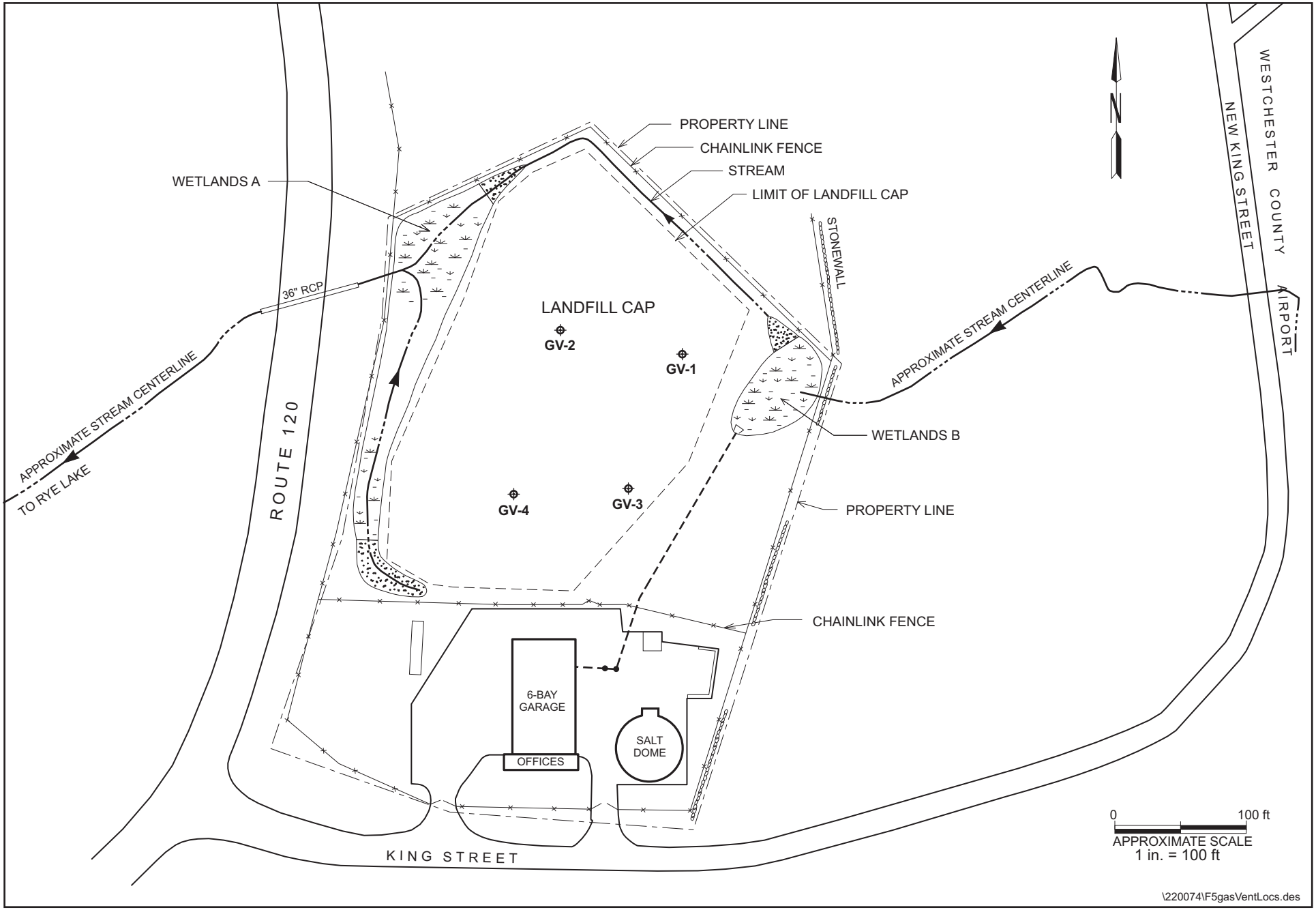
HDR Engineering, Inc. 1 International Blvd. Mahwah, NJ 07495	**Groundwater Sample Locations** **HARRISON SUBRESIDENCY POST-CLOSURE FIFTH QUARTERLY MONITORING REPORT**	**NYSDOT PIN: 8806.51.301**	**Figure 3**

Attachment 4



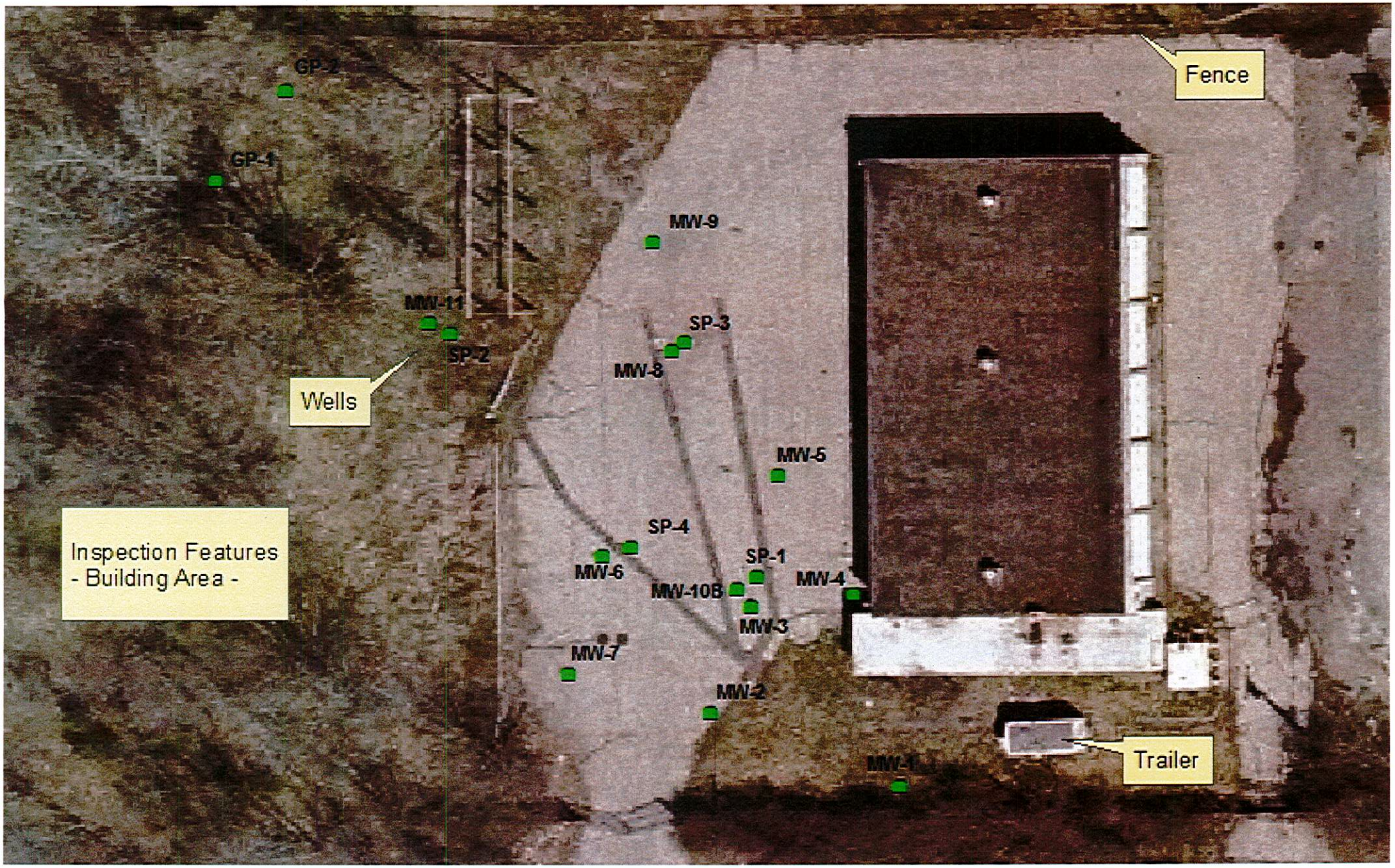
HDR Engineering, Inc. 1 International Blvd. Mahwah, NJ 07495	**Surface Water and Sediment Sample Locations** **HARRISON SUBRESIDENCY POST-CLOSURE FIFTH QUARTERLY MONITORING REPORT**	**NYSDOT PIN: 8806.51.301**	**Figure 4**

Attachment 5



HDR Engineering, Inc. 1 International Blvd. Mahwah, NJ 07495	**Gas Vent Locations** **HARRISON SUBRESIDENCY POST-CLOSURE FIFTH QUARTERLY MONITORING REPORT**	**NYSDOT PIN: 8806.51.301**	**Figure 5**

Attachment 6



NYSDOT HARRISON SUBRESIDENCY WESTCHESTER CO.

Attachment 7

Monitoring Well Locations May 2009

Monitoring Wells
Vents

NYSDOT HARRISON SUBRESIDENCY WESTCHESTER CO.

Attachment 8

Monitoring Well Locations May 2012

LMW-4
PC-2
V-3
V-2
PC-3
V-4
V-1
LMW-2
PC-1
MW-11

N
W
E
S

0 50 100 200 Feet

Monitoring Wells selection
Vents

LEGEND

⊕ Monitoring well location

NOTE:

Monitoring Well PC-1 is located north of the site within the Landfill Area

Source: NYSDOT

0 60 ft

APPROX. SCALE (ft)

\M\Graphics\\\HarrisonGarageFigure_Rev15Dec08.des

HDR
Henningson, Durham & Richardson
Architecture and Engineering, P.C.
One Blue Hill Plaza
Pearl River, NY 10965

Spill Site Monitoring Well Locations

NYSDOT • Harrison, NY

Figure 2

Semi-annual (DOT)
1. Inspect monitoring wells.
2. Landfill cap (including cap vegetation) inspection.
3. Inspect landfill gas vents.
4. Inspect perimeter fence, gates, and signs.

Every 5 Quarters (Consultant)
5. Measure water level from monitoring wells.

Landfill Area Only:
6. Vector and vermin inspection.
7. Perimeter drainage swales.
8. Gas monitoring at gas vents and property line perimeter.
9. Sample ground- and surface- water for field parameters: Temperature, turbidity, DO, pH, and specific conductivity. In addition, sample groundwater only for: Eh (or ReDox; field parameter). (*See* **Note 1** *below)*.
10. Sample all the media for TCL VOCs, SVOCs, TAL-Metals (including cyanide and chloride). (*See* **Note 2, Note 3,** *and* **Note 4** *below*).

Petroleum Spill Area Only:
11. Sample groundwater for field parameters: Temperature, turbidity, DO, pH, and specific conductivity, and Eh. (*See* **Note 1** *below)*.

12. Sample groundwater for BTEX, MTBE, and natural attenuation parameters: Iron (dissolved; Fe-II), Manganese (dissolved; Mn-II), Bicarbonate Alkalinity (reported as HCO3), Alkalinity (Total), Nitrate (NO3), and Sulfate (SO4). Parameters can be modified based on discussions with DEC.

Other (DOT):
13. Twice a year during the growing season (e.g., End of June, Mid September): mow cap grass to a height of no lower than 15 cm.
14. After major rainfall events (5-year storms): inspect cap and drainage swales.

- ***Well purge water can be discharged immediately downgradient from the well.***

Note 1: A flow cell meter must be used to measure all field parameters.

Note 2: *Groundwater*: filter samples for TAL-Metal analyses. *Surface Water*: unfiltered samples; filter samples for TAL-Metal analyses if ***samples have been significantly disturbed*** (e.g., the consultant dug a hole to collect a sample and water turbidity resulted from digging the hole; no unfiltered "disturbed" samples are to be collected for TAL-Metal analyses).

Note 3: Testing for pesticides and PCBs has been suspended after October 2005, because we have no evidence of any disposal of these contaminants at the site, and levels of these contaminants have not been detected or not significantly detected at site monitoring points.

Note 4: If field duplicate samples are collected, they will be performed on water samples only (not on sediment samples), since water samples are expected to be more homogeneous.

Attachment 11

TABLE 1
GROUNDWATER DATA SUMMARY
Fifth Quarter Sampling - Harrison Spill Site
January 2015

PARAMETER	*Downgradient/Sidegradient* MW-11 1/21/2015	PC-1 1/21/2015	*Duplicate PC-1* PC-10 1/21/2015	Trip Blank 1/21/2015	NYSDEC Class GA Standards (a)
Volatile Organic Compounds (ug/l)					
Benzene	ND	ND	ND	ND	**1**
Ethylbenzene	**13**	ND	ND	ND	**5**
Toluene	ND	ND	ND	ND	**5**
m&p-Xylenes	1.4	ND	ND	ND	**5**
o-Xylenes	ND	ND	ND	ND	**5**
Total BTEX	14.4	ND	ND	ND	**100**
Methyl tert butyl ether (MTBE)	ND	ND	ND	ND	**50 GV**
Metals (ug/l)					
Iron	ND	ND	ND	♦	**300**
Manganese	280	67	64	♦	**300**
Natural Attenuation Parameters (mg/l)					
Total Alkalinity	220	320	320	♦	**NS**
Bicarbonate Alkalinity	220	320	320	♦	**NS**
Nitrate	ND	ND	ND	♦	**10**
Sulfate	20	24	24	♦	**250**
Field Parameters					
Temperature (°C)	7.59	2.71	NA	♦	**NS**
pH	6.7	6.6	NA	♦	**NS**
Specific conductivity (uS)	1	1.3	NA	♦	**NS**
Oxidation-Reduction Potential (mV)	-53	102	NA	♦	**NS**
Dissolved Oxygen (mg/l)	8.7	4.3	NA	♦	**NS**
Turbidity (NTUs)	1.9	11.4	NA	♦	**NS**

GV - Guidance value.
♦ - Not analyzed.
NS - No standard.
ND - Not detected.
NA - Not applicable.

Attachment 12

TABLE 1

GROUNDWATER DATA SUMMARY

Fifth Quarter Sampling - Harrison Subresidency Landfill Area

January 2015

PARAMETER	*Site Background* LMW-2 1/21/15	LMW-4 1/21/15	PC-1 1/21/15	PC-2 1/21/15	PC-3 1/21/15	*Duplicate PC-1* PC-10 1/21/15	Field Blank 1/21/15	Trip Blank 1/21/15	NATURAL AMBIENT GROUNDWATER RANGES (n)	NYSDEC CLASS GA STANDARDS (a)
Metals (ug/L)										
Aluminum	ND	ND	ND	ND	ND	ND	ND	*	**<5.0 - 1000**	**NS**
Antimony	ND	ND	ND	ND	ND	ND	ND	*	**NA**	**3**
Arsenic	ND	ND	ND	ND	ND	ND	ND	*	**<1.0 - 30**	**25**
Barium	92	100	79	66	77	74	ND	*	**10 - 500**	**1000**
Beryllium	ND	ND	ND	ND	ND	ND	ND	*	**<10**	**3.0 GV**
Cadmium	ND	ND	ND	ND	ND	ND	ND	*	**<1.0**	**5**
Calcium	67,000	36,000	99,000	68,000	40,000	95,000	ND	*	**1000 - 150000**	**NS**
Chromium	ND	ND	ND	ND	ND	ND	ND	*	**<1.0 - 5.0**	**50**
Cobalt	ND	**15**	ND	1.5	1.2	ND	ND	*	**<10**	**NS**
Copper	ND	ND	ND	ND	ND	ND	ND	*	**<1.0 - 3**	**200**
Iron	ND	**51,000**	ND	**26,000**	ND	ND	ND	*	**10 - 10000**	**300 (m)**
Lead	ND	ND	ND	ND	ND	ND	ND	*	**<15**	**25**
Magnesium	24,000	15,000	16,000	16,000	11,000	15,000	ND	*	**1000 - 50000**	**35000 GV**
Manganese	190	**9,700**	67	**9,000**	**380**	64	ND	*	**<1.0 - 1000**	**300 (m)**
Mercury	ND	ND	ND	ND	ND	ND	ND	*	**<1.0**	**0.7**
Nickel	ND	ND	ND	ND	ND	ND	ND	*	**<10 - 50**	**100**
Potassium	3,300	2,700	2,700	2,600	3,800	ND	ND	*	**1000 - 10000**	**NS**
Selenium	ND	ND	ND	ND	ND	ND	ND	*	**<1.0 - 10**	**10**
Silver	ND	ND	ND	ND	ND	ND	ND	*	**<5**	**50**
Sodium	**22,000**	**20,000**	**79,000**	**26,000**	**46,000**	**72,000**	ND	*	**500 - 120000**	**20000**
Thallium	ND	ND	ND	ND	ND	ND	ND	*	**NA**	**0.5 GV**
Vanadium	ND	ND	ND	ND	ND	ND	ND	*	**<1.0 - 10**	**NS**
Zinc	ND	ND	ND	ND	ND	ND	ND	*	**<10 - 2000**	**2000 GV**
Chloride (mg/l)	19	13	190	17	110	200	ND	*	**NA**	**250**
Cyanide (mg/l)	ND	ND	ND	ND	ND	ND	ND	*	**NA**	**200**
Volatile Organic Compounds (ug/L)	ND	ND	ND	ND	ND	ND	ND	ND		
Semivolatile Organic Compounds (ug/L)										
bis(2-thylhexyl)phthalate	3.4B	2.9B	**7.3B**	ND	3.7B	2.1	ND	*	**NA**	**5**
Caprolactam	91	50	2.6	ND	ND	3.8	ND	*	**NA**	**NA**
Di-n-butylphthalate	1.3	1.1	1.8	ND	1.1	0.73	1.1	*	**NA**	**50**

(a) - NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1). June 1998, revised April 2000.
GV - Guidance Value.
(m) - Sum of Iron and Manganese not to exceed 500 ug/L.
(n) - Dragun, J., The Soil Chemistry of Hazardous Materials.
NA - Not applicable.
ND - Not detected at analytical detection limit.
J- Detected below the detection limit.
NS - No standard.
* - Not analyzed.
# - All other compounds

Attachment 13

TABLE 2

SURFACE WATER DATA SUMMARY

Fifth Quarter Sampling - Harrison Subresidency Landfill Area

January 2015

PARAMETER	*Site Background* SW-1 1/20/15	SW-2 1/20/15	SW-3 1/20/15	SW-4 1/20/15	Duplicate SW-1 SW-10 1/20/2015	Trip Blank 1/20/2015	NATURAL AMBIENT GROUNDWATER RANGES (n)	NYSDEC CLASS GA STANDARDS (a)	NYSDEC CLASS A STANDARDS (a)
Metals (ug/L)									
Aluminum	ND	ND	ND	**250**	ND	*	**<5.0 - 1000**	**NS**	**100** [2]
Antimony	ND	ND	ND	ND	ND	*	**NA**	**3**	**3** [1]
Arsenic	ND	ND	ND	ND	ND	*	**<1.0 - 30**	**25**	**50** [1], **150** [2], **340** [3]
Barium	ND	ND	ND	ND	ND	*	**10 - 500**	**1000**	**1,000** [1]
Beryllium	ND	ND	ND	ND	ND	*	**<10**	**3.0 GV**	**3 GV** [1]
Cadmium	ND	ND	ND	ND	ND	*	**<1.0**	**5**	**5** [1]
Calcium	24,000	23,000	42,000	20,000	25,000	*	**1000 - 150000**	**NS**	**NS**
Chromium	ND	ND	ND	ND	ND	*	**<1.0 - 5.0**	**50**	**50** [1]
Cobalt	ND	ND	ND	ND	ND	*	**<10**	**NS**	**5** [2]
Copper	ND	ND	ND	ND	ND	*	**<1.0 - 3**	**200**	**200** [1]
Iron	170	ND	ND	**380**	170	*	**10 - 10000**	**300 (m)**	**300** [2, 4]
Lead	ND	ND	ND	ND	ND	*	**<15**	**25**	**50** [1]
Magnesium	7,300	7,100	9,300	6,300	7,700	*	**1000 - 50000**	**35000 GV**	**35,000** [1]
Manganese	**340**	41	62	70	**360**	*	**<1.0 - 1000**	**300 (m)**	**300** [4]
Mercury	ND	ND	ND	ND	ND	*	**<1.0**	**0.7**	**0.7** [1], **7e-4** [5], **0.77** [2], **1.4** [3], **0.0026** [6]
Nickel	ND	ND	ND	ND	ND	*	**<10 - 50**	**100**	**100** [1]
Potassium	ND	ND	ND	ND	ND	*	**1000 - 10000**	**NS**	**NS**
Selenium	ND	ND	ND	ND	ND	*	**<1.0 - 10**	**10**	**10** [1], **4.6** [2]
Silver	ND	ND	ND	ND	ND	*	**<5**	**50**	**50** [1]
Sodium	6,100	8,900	**39,000**	16,000	6,700	*	**500 - 120000**	**20000**	**NS**
Thallium	ND	ND	ND	ND	ND	*	**NA**	**0.5 GV**	**0.5 GV** [1], **8** [2]
Vanadium	ND	ND	ND	ND	ND	*	**<1.0 - 10**	**NS**	**14** [2]
Zinc	ND	ND	ND	ND	ND	*	**<10 - 2000**	**2000 GV**	**2,000 GV** [1], **5,000 GV** [4]
Chloride (mg/l)	5.5	10	74 [DF 2:1]	23	5.6	*	**NA**	**250**	**250,000** [1]
Cyanide (mg/l)	ND	ND	ND	ND	ND	*	**NA**	**200**	**200** [1], **9,000** [5], **5.2** [2], **22** [3]
Volatile Organics (ug/L)									
Total VOCs	ND	ND	ND	ND	ND	ND	**NA**	**5**	**NA**
Semi-Volatile Organics (ug/L)									
Total SVOCs	ND	ND	ND	ND	ND	*	**NA**	**50**	**NA**

(a) - NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1). June 1998, revised April 2000.
(m) - Sum of Iron and Manganese not to exceed 500 ug/L.
(n) - Dragun, J., The Soil Chemistry of Hazardous Materials.

Class A Standards for Surface Water as a source of Drinking Water[1] as these are tributaries to Kensico Reservoir.

Other Class A Standards are for Fish Propagation[2] Fish Survival[3] Aesthetic [4] Human Consumption of Fish [5], and Wildlife Protection [6]

DF - Dilution Factor.
GV - Guidance Value.
ND - Not detected at analytical detection limit.
NS - No Standard.
NA - Not applicable.

Note - results in **bold** exceed one or more of the standards.
- select Class A standards are specific to sample conditions and require hardness concentrations; therefore, these were not included.

Attachment 14

TABLE 3

SEDIMENT DATA SUMMARY

Fifth Quarter Sampling - Harrison Subresidency Landfill Area

January 2015

PARAMETER	*Site Background* SD-1 1/20/15	SD-2 1/20/15	SD-3 1/20/15	SD-4 1/20/15	Sediment Criteria (a) LEL[1]	SEL[2]
Metals (mg/kg)						
Aluminum	7,700	9,300	18,000	12,000	**NA**	NA
Antimony	ND	ND	ND	ND	**2**	25
Arsenic	5.9	5.3	5.8	1.3	**6**	33
Barium	150	560	110	80	**NA**	NA
Beryllium	ND	ND	ND	ND	**NA**	NA
Cadmium	ND	ND	ND	ND	**0.6**	9
Calcium	3,100	48,000	140,000	9,600	**NA**	NA
Chromium	18	17.0	**29**	21	**26**	110
Cobalt	8.0	ND	12	8.8	**NA**	NA
Copper	13	**29**	**45**	**20**	**16**	110
Iron	**22,000**	**35,000**	**47,000**	**34,000**	**20000**	40000
Lead	15	30	**78**	13	**31**	110
Magnesium	3,200	19,000	73,000	9,800	**NA**	NA
Manganese	**2,200**	**10,000**	**930**	**1,800**	**460**	1100
Mercury	ND	ND	ND	ND	**0.15**	1.3
Nickel	15	**17**	**38**	**26**	**16**	50
Potassium	2,200	1,900	4,900	1,400	**NA**	NA
Selenium	ND	ND	ND	ND	**NA**	NA
Silver	ND	ND	ND	ND	**1**	2.2
Sodium	ND	ND	790	ND	**NA**	NA
Thallium	ND	ND	ND	ND	**NA**	NA
Vanadium	29	ND	33	28	**NA**	NA
Zinc	70	**160**	**140**	**150**	**120**	270
Chloride	ND	ND	110	ND	**NA**	NA
Cyanide	ND	ND	ND	ND	**NA**	NA
Volatile Organic Compounds (mg/kg)					Sediment Criteria (a)	Water Qual.
Total VOCs	ND	ND	ND	ND	NA	
Semivolatile Organic Compounds (mg/kg)						
Benzo[a]anthracene	0.081	ND	ND	ND	0.0013	
Benzo[a]pyrene	0.087	ND	ND	ND	0.0013	
Benzo[b]fluoranthene	0.12	ND	ND	ND	0.0013	
Benzo[g,h,i]perylene	0.085	ND	ND	ND	NA	
bis(2-Ethylhexyl)phthalate	0.49	0.91	0.51	0.42	NA	
Chrysene	0.11	ND	ND	ND	0.0013	
Di-n-butylphthalate	0.086	0.16	0.094	0.074	NA	
Fluoranthene	0.14	ND	ND	ND	NA	
Indeno[1,2,3-cd]pyrene	**0.064**	ND	ND	ND	0.0013	
Phenanthrene	0.073	ND	ND	ND	NA	
Pyrene	0.17	ND	ND	ND	NA	

(a) - NYSDEC Technical Guidance for Screening Contaminated Sediments November 1993, revised January 1999
Sediment criteria refer to the Human Health Bioaccumulation Criteria for Fresh Water and are based on TOC.

1 - Lowest Effect Level

2 - Severe Effect Level

ND - Not detected at analytical detection limit.

NA - No applicable criterion.

Note - results exceeding the LEL and SEL are shown in **bold** and underlined, respectively.

PLUGGING REPORT Page 1 of 2

SPILL NO. 94-07349 **SITE: HARRISON** **COUNTY: WESTCHESTER**

Plugging Date: May and June, 2008 **Plugged By: Greg P. & Eric D.**

Well Number	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8
Date Drilled	3-Apr-95	3-Apr-95	3-Apr-95	27-Oct-95	27-Oct-95	27-Oct-95	See Below
Inside Diameter of well	4"	4"	4"	4"	4"	4"	
Length of Riser	2.0 Ft.	2.0 Ft.	2.0 Ft.	2.0 Ft.	5.0 Ft.	5.0 Ft.	
Length of Screen	10.0 Ft.	10.0 Ft.	10.0 Ft.	10.0 Ft.	10.0 Ft.	10.0 Ft.	
Total Depth	12.0 Ft.	12.0 Ft.	12.0 Ft.	12.0 Ft.	15.0 Ft.	15.0 Ft.	
Surface Equipment	Flush Mount	Flush Mount	Flush Mount	Flush Mount	Flush Mount	Flush Mount	
Minimum Volume of Grout Required	9.9 Gal.	9.9 Gal.	9.9 Gal.	9.9 Gal.	12.4 Gal.	12.4 Gal.	

Well Number	MW-9	MW-10B*	SP-01	SP-02	SP-3	SP-4
Date Drilled	17-Mar-99	16-Mar-99	14-Apr-97	14-Apr-97	17-Mar-99	17-Mar-99
Inside Diameter of well	1.5"	1.5"	2"	2"	1.5"	1.5"
Length of Riser	4.0 Ft.	22.5 Ft.	Unknown	Unknown	18.0 Ft.	19.0 Ft.
Length of Screen	10.0 Ft.	4.0 Ft.	Unknown	Unknown	2.5 Ft.	2.5 Ft.
Total Depth	14.0 Ft.	26.5 Ft.	20.0 Ft.	20.0 Ft.	20.5 Ft.	21.5 Ft.
Surface Equipment	Flush Mount	Flush Mount	Flush Mount	Flush Mount	Flush Mount	Flush Mount
Minimum Volume of Grout Required	1.6 Gal.	3.0 Gal.	4.6 Gal.	4.6 Gal.	2.3 Gal.	2.4 Gal.

Remarks

A review of GEB records shows the following:

The above listed wells were plugged in May and June of 2008 using 160 gallons of grout.

MW-8 was probably 4" in diameter with a 15 Ft. Depth. This information is from the attached cross section.

The cross section shows MW-8 having the same depth as MW-7.

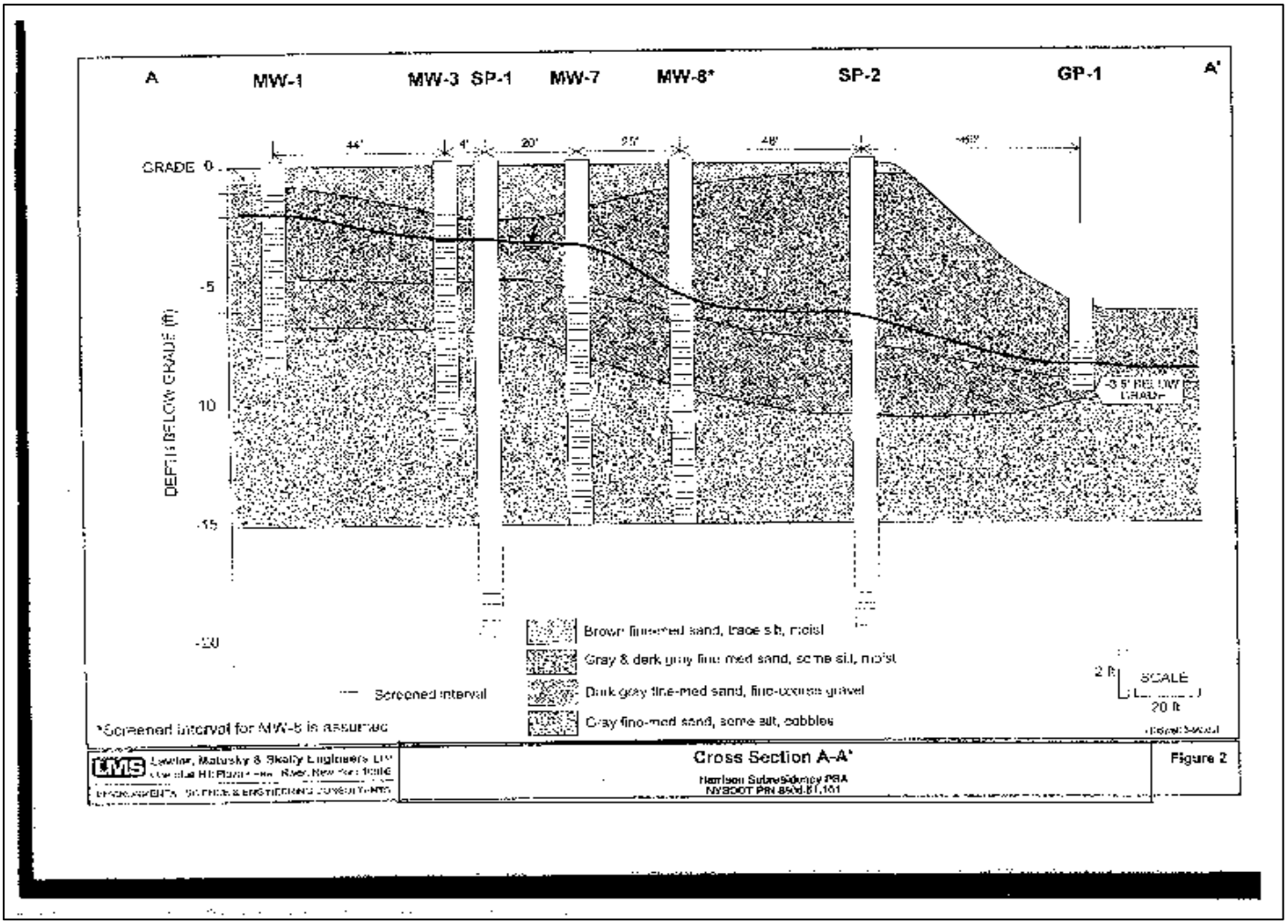
* MW-10B was drilled as SP-1B

The following wells remained unplugged MW-1, MW-11, GP-1 and GP-2

MW-12 and MW-13 were installed in June 2008 and also remained.

SPILL NO. 94-07349 **SITE: HARRISON** **COUNTY: WESTCHESTER**

Plugging Date: May and June, 2008 **Plugged By: Greg P. & Eric D.**



PLUGGING REPORT

SPILL NO. 94-07349 **SITE: HARRISON** **COUNTY: WESTCHESTER**

Plugging Date: 29 Nov 2011 and 2 May 2012 **Plugged By: NYS DOT, Bob Rickard**

Well Number	MW-1	MW-12	MW-13	GP-1	GP-2	
Inside Diameter of well	4"	2"	2"	1 1/2"	2"	
Length of Riser	1 Ft.	8.2 Ft.	6.2 Ft.	5.1 Ft.	3.5 Ft.	
Length of Screen	7.5 Ft.	10.3 Ft.	10.3 Ft.	1.5 Ft.	2.0 Ft.	
Total Depth	8.5 Ft.	15.5 Ft. BGS	13.5 Ft. BGS	3.45 Ft. BGS	3.5 Ft. BGS	
Surface Equipment	Flush Mount	Protective Cover	Protective Cover	None	None	
Minimum Volume of Grout Required	7.0 Gal.	3.7 Gal.	3.1 Gal.	0.4 Gal.	0.8 Gal.	

Remarks

29 Nov 2011 Pluggings:

MW-13: The protective cover was extracted using a farm jack. The PVC had separated at the intersection of the screen and riser (3.2 Ft. BGS). The soil was excavated to the top of the screen and 4.5 gallons of grout was tremie poured, allowed to settle, then topped off.

GP-1 and GP-2: The PVC pipe was removed using a farm jack. Three gallons of grout were then top poured in the voids, allowed to settle, then topped off.

2 May 2012 Pluggings:

MW-12: The protective cover and PVC were extracted using a farm jack. Six gallons of grout was then tremie poured, allowed to settle, then topped off.

MW-1: The PVC pipe was removed using a farm jack. Eight gallons of grout were then tremie poured, allowed to settle, then topped off. The flush mount cover and concrete pad were then removed using a jackhammer and hand tools.

The surface for both wells was then restored using compacted topsoil.