
SITE REMEDIATION WORK PLAN

190 West Shore Road

Kings Point, New York

NPV No. 21382

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Site Remediation Work Plan

190 West Shore Road

Oyster Bay Cove, New York

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Site Remediation

Work Plan

**190 West Shore Road
Oyster Bay Cove, New York**

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**Phase II
Environmental Site Assessment (ESA)
Report**

**190 West Shore Road
Oyster Bay Cove, New York**

1.0 PURPOSE AND SUMMARY

1.1 PURPOSE

This work plan has been prepared by Nelson, Pope & Voorhis, LLC (NP&V) at the request of the Nassau County Department of Health (NCDH) in a letter dated March 21, 2024 to address environmental conditions identified during previous Phase II Environmental Site Assessment activities conducted at the subject property. This work plan outlines the methods, procedures and protocols proposed for conducting remedial activities and mitigation measures at the subject property.

1.2 SITE CONDITIONS

The subject property is located in the Village of Kings Point, County of Nassau, New York. The subject property consists of a 10.4± acre parcel of partially developed land, located at 190 West Shore Road. The subject property is situated southwest side of West Shore Road, approximately 400 feet southeast of Martin Court South. The property is more particularly described on the Nassau County Tax Map as Section 1, Block 150, Lot 29.

The subject property is currently occupied by a residential estate which is situated in the western end of the property as well as an attached garage, indoor pool, boat dock, and tennis court. Prior to the development of the existing manor, which occurred sometime between 1953 and 1961, the subject property consisted of cleared vacant land. The portion of the subject property east of the estate consists of lawn, peripheral woodlands and the site access driveway.

1.3 PREVIOUS INVESTIGATION SUMMARIES

July 27, 2023 Phase II ESA

A Phase II ESA was conducted to address the requirements for investigation issued by the NCDH in their letter dated March 15, 2023, following their review of the Phase I ESA, dated December 20, 2021, prepared by NPV. A Phase II ESA Work Plan, dated April 17, 2023 was prepared to outline the methods and procedures required to assess the environmental quality related to open space surface soils as well as to determine if any previously unknown subsurface structures were present that may require investigation. The sampling and analysis plan

consisted of soil quality testing using analytical test methods consistent with expected parameters and agency soil cleanup objectives. The following presents an evaluation of the results of this investigation.

1. The GPR survey detected the presence of the formerly utilized fuel oil storage tank that was located in the northern end of the driveway, north of the garage. No other anomalies were detected that would indicate the presence of previously unknown underground storage tanks, leaching pools or other subsurface structures that would require additional investigation.
2. The analytical results for the 0-3 inch sample intervals detected the presence of several pesticides as well as metals in all of the surface soil samples collected. No herbicides were detected in any of the eight (8) surface soil samples scheduled for this analysis.

Of the pesticide compounds detected, only the concentrations of aldrin (102ug/kg) and dieldrin (130 ug/kg) in the 0-3 inch sample collected from location 2B were found to exceed their respective Part 375 SCOs for residential use.

With respect to metals, arsenic was found to exceed its respective Part 375 SCO for residential use in twenty-three (23) of the thirty-two (32) surface soil samples collected. The following provides a list of those samples that exceeded the arsenic standard:

1A1 (29.9 mg/kg)	4A2 (23.5 mg/kg)	6A1 (30.5 mg/kg)
1A2 (27.6 mg/kg)	4A3 (22.6 mg/kg)	6A2 (132 mg/kg)
1B (38.5 mg/kg)	4A4 (58.4 mg/kg)	6A3 (43 mg/kg)
2A2 (39.7 mg/kg)	4B (33.1 mg/kg)	6A4 (80.4 mg/kg)
2A4 (46.2 mg/kg)	5A2 (26.9 mg/kg)	7A (128 mg/kg)
2B (113 mg/kg)	5A3 (16.1 mg/kg)	8A1 (181 mg/kg)
3A2 (44.4 mg/kg)	5A4(95.9 mg/kg)	8A2 (148 mg/kg)
3A4 (19 mg/kg)	5B (16.5 mg/kg)	

In addition, several additional metals were detected in surface soil sample 2B that also exceeded their respective Part 375 SCOs for residential use and consisted of barium (598 mg/kg), chromium (220 mg/kg), manganese (4,960 mg/kg), nickel (221 mg/kg and mercury (1.04 mg/kg). Also, cadmium (3.13 mg/kg) and mercury (1.21 mg/kg) were found to exceed their respective Part 375 SCOs in surface soil sample 7A.

3. Based on the 0-3 inch results, the 10-12 and 24-26 inch intervals for the sample locations noted above were analyzed for their respective exceeding constituents. A review of the 10-12 inch interval results for the pesticide constituents detected in the 0-3 inch interval in surface soil sample location 2B did not detect the presence of aldrin or dieldrin in either the 10-12 inch or 24-26 inch interval samples.

With respect to metals, arsenic was detected above its respective Part 375 SCO for residential use in seven (7) 10-12 inch interval samples and in two (2) 24-26 inch interval samples. The following provides a list of those samples that exceeded the arsenic standard:

2A2 10-12 (33.5 mg/kg)	6A1 10-12 (48.4 mg/kg)	7A 24-26 (19.4 mg/kg)
5A4 10-12 (85 mg/kg)	6A3 10-12 (17.5 mg/kg)	8A1 10-12 (26.7 mg/kg)
5A4 24-26 (29.6 mg/kg)	7A 10-12 (61.4 mg/kg)	8A2 10-12 (86.7 mg/kg)

The only other metal that exceeded its respective Part 375 SCO for residential use in the 10-12 or 24-26 inch interval samples analyzed consisted of mercury in the 10-12 inch interval at 2B at a concentration of 0.2 mg/kg.

February 20, 2024 Supplemental Phase II ESA

A Supplemental Phase II ESA was conducted at the request of the NCDH in a letter dated August 15, 2023 to delineate the extent of impacts related to agricultural chemicals detected during a previous Phase II ESA sampling event, during which, elevated levels of arsenic were detected at 20 locations across the subject property as well as pesticides at one location above their respective Part 375 SCORU. All work was conducted in accordance with the Supplemental Phase II ESA Work Plan dated September 21, 2023 which was approved by the NCDH in their letter dated October 4, 2023.

Review of the delineation sampling results revealed that impacts related to arsenic were found to extend beyond the original sample noted in all of the locations investigated. Arsenic impacts were found to only extend 25 feet from the original sample nodes in two of the areas investigated (4A3 & 1B). Arsenic impacts were found to extend at least 50 feet from the original sample nodes in the remaining 18 areas investigated. Impacts were also found to range in depth from three inches to 26 inches across all of the areas investigated. In addition, at one location (2B) where elevated levels of pesticides were detected, delineation results revealed that they were isolated to the original sample node.

Overall, arsenic impacts were horizontally delineated in only two of the 20 areas investigated (4A3 & 1B). Vertically, impacts were delineated in only 11 of the 20 areas investigated (1A1, 1A2, 2A2, 2A4, 3A2, 3A4, 4A2, 4A3, 5A4, 1B & 2B).

Based on the delineation sampling conducted as part of this sampling program, it is estimated that at least approximately 3,700 cubic yard of impacted soil are present at the subject property.

2.0 REMEDIATION EQUIPMENT, METHODS AND PROTOCOLS

The areas to be addressed as part of this work plan consists of soils that were found to exceed the NYSDEC Part 375 Soil Cleanup Objectives (SCO's) for residential use in the surface soils present on the subject property. Details regarding the remediation of each of these areas of impact are presented in the sections below.

2.1 OPEN AREA SURFACE SOIL REMEDIATION

The NCDH required that twenty (20) grid areas which were found to have elevated concentrations of arsenic or pesticides be addressed through remediation. Supplemental sampling within these grids was conducted to delineate the extent of contamination impacts and revealed that all had concentrations of arsenic or pesticides which extended vertically and horizontally beyond the original central sampling node.

Prior to excavation activities, the NCDH will be notified at least five (5) business days in advance in order to coordinate regulatory oversight. An excavator and/or front end loader will be used for excavation of impacted material. Excavation activities will advance horizontally and vertically to remove impacted soils that were noted to exceed the NYSDEC Part 375 SCOs for residential use.

Each grid where central sample nodes were found to exhibit exceedances of NYSDEC Part 375 SCOs were divided into north, south, east and west quadrants where supplemental samples were collected to attempt to delineate the extent of contamination impacts. The entire area of each quadrant where exceedances of the NYSDEC Part 375 SCOs for residential use were recorded will be excavated to a depth ranging from ten (10) to fifty (50) inches bgs and will extend to approximately fifteen (15) feet past each exceeding delineation node.

A summary of the node locations to be excavated as well as direction, distance and depth ranges is provided in **Table 1**. Please note that some areas within the same grid will vary in depth based on the delineation sample results.

If necessary, based on endpoint sample results, additional excavation may be required to remove any soils which exceed NYSDEC Part 375 SCOs for residential use and the protection of groundwater.

A depiction of the extent of the excavation has been included as **Figure 1**.

Table 1 Excavation Area Directions, Distances and Depths					
Area	Direction and Distance	Depth Range	Area	Direction and Distance	Depth Range
1A1	S(65) & E(65)	10 to 20 inches	5A3	N(65), S(65), E(65) & W(65)	10 to 30 inches
1A2	NE(65), SE(40) & SW(65)	20 inches	5A4	NE(65), NW(65), SE(65) & SW(65)	10 to 50 inches
2A2	W(65)	10 to 20 inches	6A1	NE(65), NW(65), SE(65) & SW(65)	10 to 30 inches
2A4	NE(65), NW(65), SE(65) & SW(65)	10 to 20 inches	6A2	N(65), S(40), E(65) & W(65)	10 to 30 inches
3A2	N(65), E(65) & W(65)	10 to 20 inches	6A3	N(40), S(65), E(65) & W(65)	10 to 30 inches
3A4	NE(40), NW(40), SE(65) & SW(40)	10 to 20 inches	6A4	NE(65), NW(65) & SE(65)	20 to 30 inches
4A2	N(65), (65)S, E(40) & W(65)	10 to 20 inches	1B	N(40), S(40), E(40) & W(40)	10 to 20 inches
4A3	N(40), E(40) & W(40)	10 to 20 inches	2B	E(40) & W(65)	10 to 20 inches
4A4	NE(65), NW(65), SE(65) & SW(65)	10 to 30 inches	4B	N(65), E(65) & W(65)	10 to 30 inches
5A2	N(65), S(65), E(65) & W(65)	10 to 30 inches	5B	N(65) & E(65)	10 to 30 inches

Notes: N-North, S-South, E-East & W-West
(40)-Excavation extent 40 feet from original sample node
(65)-Excavation extent 65 feet from original sample node

The following provides a description of the overall anticipated work plan to remove and backfill the area of identified contamination on the subject property.

1. Work horizontally and vertically to remove impacted soils that were noted to exceed the NYSDEC Part 375 SCOs for residential use for each constituent of concern.
2. Stockpile soils on-site for later transportation to an approved disposal facility.
3. Collect waste characterization samples for disposal facility.
4. Obtain approval from the disposal facility receiving the soil.
5. Transport and dispose of soils at the approved disposal facility.
6. Endpoint samples will be collected from each sidewall and the bottoms of each excavation (i.e. four (4) sidewall samples and one (1) bottom sample from each

excavation). Samples from each excavation will be analyzed for the specific metal constituent for which the exceedance was recorded using USEPA Method 6010.

7. Excavations will be backfilled using only certified clean fill which meets the Unrestricted SCOs as listed in Table 375-6.8(a) of 6 NYCRR Part 375. All fill will be certified by a professional engineer or geologist licensed in the State of New York.

2.2 PERSONNEL

Project as well as Health and Safety oversight will be provided by NP&V personnel over the course of site remediation activities. The project manager assigned for the project will be Eric C. Arnesen with Steven J. McGinn as a designated alternative. Both have a combined experience of over 50 years in environmental investigations and site remediation and possess up to date OSHA 40 hour HAZWOPER and OSHA 8 hour HAZWOPER refresher training in accordance with OSHA 29 CFR 1910.120.

2.3 SAMPLING AND ANALYSIS PROGRAM (SAP)

Waste Characterization Samples

The purpose of these samples would be to gain access to a disposal facility. Sample parameters would include VOC, SVOC, Herbicide/Pesticide, PCB, Metals, pH and TPH analysis per Package B requirements, if required. The number and type of samples collected will be in accordance with the requirements of the selected disposal facility.

End Point Samples

Once the impacted material has been excavated end point samples will be collected. End point samples will be collected in accordance with the provisions of Section 5.4(b)(5) of the NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation from bottom and side slopes of excavation areas (estimated 450 samples). Samples will be collected by NP&V OSHA trained staff and all proper sampling protocols will be observed. All samples collected will be submitted to a certified laboratory for analysis. The selected laboratory will be required to be an Environmental Laboratory Approval Program (ELAP) certified laboratory with current New York State certifications.

Backfill Sampling

Specifically, soil imported to the property will be free of extraneous debris or solid waste, should be recognizable as soil and will be subject to sampling and chemical analysis. Results of analytical testing will demonstrate that imported fill or soil does not exceed the allowable constituent levels established in Part 375.

Sampling will be conducted in compliance with the provisions established in 6NYCRR Part 360.13(d)

Table 1 describes the required sampling regime for the quantity of soil imported to the site. Documentation detailing the source of fill imported to the site should be provided for future reference as well as for any municipal and regulatory approvals that may be required. The documentation should include the following:

- name of the person providing the documentation and relationship to the source of the fill;
- the location where the fill was obtained;
- identification of any State or local approvals as a fill source;
- if no prior approval is available for the source, a brief history of the use of the property which is the source of the fill; and
- bills of lading should be provided to document the source of the fill.

Table 1
SAMPLING REGIME SUMMARY

Fill Quantity	Testing for Volatiles	Testing for Semi-Volatiles, Inorganics, Pesticides & PCBs
Soil Quantity (CY)	Discrete Samples	Composite Samples
0-300	2	1
301-1,000	4	2
1,001-10,000	6	3
10,000+	Two for every additional 10,000 CY or fraction thereof	One for every additional 10,000 CY or fraction thereof

Note: Composite samples comprised of 3-5 discrete samples collected from different locations in the fill proposed for import.

All certified clean fill will meet the Residential Use Soil Cleanup Objectives listed in Table 375-6.8(a) of 6 NYCRR Part 375.

2.4 ANALYTICAL TEST METHODS

Endpoint samples will be analyzed for each areas exceeding metal constituent and and/or pesticide compound as appropriate for each section of the excavations based on previous Phase II ESA analytical results by a NYSDOH ELAP-certified laboratory.

2.5 PROTOCOLS

The protocols used to direct the end point samples will be based upon the following documents: the New York State Department of Environmental Conservation (NYSDEC) Environmental Remediation Program Part 375, the NYSDEC Policy CP-51 Soil Cleanup Guidance

for Petroleum-Contaminated Soils and NYSDEC, Sampling Guidelines and Protocols, Technology Background and Quality Control/Quality Assurance for NYSDEC Spill Response Program and NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation.

3.0 QUALITY ASSURANCE/QUALITY CONTROL PLAN (QA/QC)

The sampling protocol will be conducted in accordance with USEPA accepted sampling procedures for hazardous waste streams (Municipal Research Laboratory, 1980, Sampling and Sampling Procedures for Hazardous Material Waste Streams, USEPA, Cincinnati, Ohio EPA-600/280-018) and ASTM Material Sampling Procedures. All samples will be collected by or under the auspices of USEPA trained personnel having completed the course Sampling of Hazardous Materials, offered by the Office of Emergency and Remedial Response.

Separate QA/QC measures will be implemented for each of the instruments used in the Sampling and Analysis Program. Sampling instruments will include: stainless steel hand auger, stainless steel trowel and sample vessels.

Prior to arrival on the site and between sample locations, the probes sections will be decontaminated by washing with a detergent (alconox/liquinox) and potable water solution with distilled water rinse. The PID will be calibrated prior to sampling using a span gas of known concentration. All sample vessels will be "level A" certified decontaminated containers. Samples will be placed into vessels consistent with the analytical parameters. After acquisition, samples will be preserved in the field. All containerized samples will be refrigerated to 4° C during transport.

A sample represents physical evidence, therefore, an essential part of liability reduction is the proper control of gathered evidence. To establish proper control, the following sample identification and chain-of-custody procedures will be followed.

Sample Identification

Sample identification will be executed by use of a sample tag, log book and manifest. Documentation provides the following:

1. Project Code
2. Sample Laboratory Number
3. Sample Preservation
4. Instrument Used for Source Soil Grabs
5. Composite Medium Used for Source Soil Grabs
6. Date Sample was Secured from Source Soil
7. Time Sample was Secured from Source Soil
8. Person Who Secured Sample from Source Soil

Chain-of-Custody Procedures

Due to the evidential nature of samples, possession will be traceable from the time the samples were collected until they were received by the testing laboratory. A sample will be considered under custody if:

- It was in a person's possession, or
- It was in a person's view, after being in possession, or
- It was in a person's possession and they were to lock it up, or
- It is in a designated secure area.

When transferring custody, the individuals relinquishing and receiving will sign, dated and note the time on the Chain-of- Custody Form.

Laboratory Custody Procedures

A designated sample custodian will accept custody of the shipped samples and verify that the information on the sample tags match that on the Chain-of-Custody records. Pertinent information as to shipment, pick-up, courier, etc. will be entered in the "remarks" section. The custodian will then enter the sample tag data into a bound logbook which will be arranged by project code and station number.

The laboratory custodian will use a sample tag number or assigned a unique laboratory number to each sample tag and assure that all samples will be transferred to the proper analyst or stored in the appropriate source area.

The custodian will distribute samples to the appropriate analysts. Laboratory personnel will be responsible for the care and custody of samples from the time they are received until the sample is exhausted or returned to the custodian.

All identifying data sheets and laboratory records will be retained as part of the permanent site record. Samples received by the laboratory will be retained until after analysis and quality assurance checks are completed.

FIGURES

