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Alternative Analysis Report

For 34 Woodridge Lane
(Block L, Lots 38, 81, 148, 149 and 150)
Sea Cliff, New York
BCP Site #C130203

June 2014

Prepared for:
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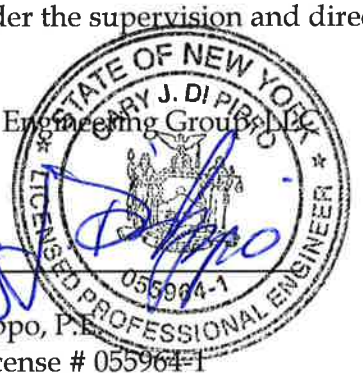
REPORT CERTIFICATION

Alternative Analysis Report

For 34 Woodridge Lane
Sea Cliff, New York

The material and data in this report were prepared under the supervision and direction of the undersigned.

Cornerstone Engineering Group, LLC



Gary J. DiPippo, P.E.
N.Y. P.E. License # 055964-1

I, Gary J. DiPippo, certify that I am currently a NYS registered professional engineer and that this Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

Leslie A. Sparrow, P.G.
Senior Project Manager

TABLE OF CONTENTS

List of Tables & Figures

Tables

Figures

1 INTRODUCTION

The subject property (Site) is located at 34 Woodridge Lane in the Village of Sea Cliff, Long Island, New York. Specifically, the Site is designated as Section 21, Block L, Lots 38, 81, 148, 149 and 150 in the Village of Sea Cliff, Town of Oyster Bay, Nassau County, New York. The location of the site is shown on Figure 1-1. The five lots are shown on Figure 1-2. A Phase I Environmental Site Assessment (ESA) was completed for the Site in April 2004, which disclosed indications of filling and the presence of surface debris. Subsequent sampling of waste material, visually identified as coal ash, demonstrated the presence of heavy metal contaminination, primarily arsenic, on the Site which exceeded the Part 375 unrestricted use standards.

An application to include Lot 150, as well as the four adjacent lots, under the Brownfield Cleanup Program (BCP) was approved by the New York State Department of Environmental Conservation (NYSDEC) on August 31, 2010 for Lot 150 only. Adjacent Lots 38, 81, 148 and 149 were not approved by Department due to insufficient data at the time of the application. Subsequently, soil sampling was conducted in December 2010 on the four adjacent lots, and an application to reconsider these lots for inclusion into the BCP was submitted to Department on December 22, 2010. An amendment to add the remaining Lots 38, 81, 148 and 149 to the BCP Site was approved by the Department on February 9, 2011.

Saeid E. Jalayer, who is an owner of the Site, is a Volunteer as defined in ECL 27-1405(1)(b). The Brownfield Site Cleanup Agreement (BCA) requires that a Remedial Investigation (RI) be conducted, and a work plan detailing the scope of work to be conducted be submitted to the Department for approval.

A draft Remedial Investigation Work Plan (RIWP) for the five lots dated July 2011 was approved by the Department on July 15, 2011. The final Remedial Investigation Report (RIR), was prepared to address comments to the draft RIR presented in a letter from NYSDEC dated October 1, 2013. The final RIR submitted on December 6, 2013, was approved on April 2, 2014.

This Alternatives Analysis Report (AAR) has been prepared in accordance with the NYDEC requirements and will be followed by the Remedial Action Work Plan (RAWP).

1.1 Site Description and History

1.1.1 Site Description

The Site is located on the corner of Bryant Avenue and Prospect Avenue, with access onto Woodridge Lane via a driveway for a vacant house on Lot 38 and on Bryant Avenue via a concrete entranceway to a vacant Lot 150. It is located on part of a peninsula surrounded on the west by Hempstead Harbor, which is part of Long Island Sound.

The Site is located in a suburban residential setting, with single-family homes to the north and east. A single-family home is located on Lot 38, while the remaining lots are currently vacant. The Site rises from approximately 10 feet to 60 feet above sea level, and slopes westward towards Hempstead Harbor, which is approximately 50 feet away.

The topography of the Site is uneven, due to the history of fill placement. The western half of the property drops down approximately 30 feet from the top of a cliff located about 15 feet east of Prospect Avenue. At the northern boundary of the Site, the property drops off sharply to the north toward the adjacent property's fenceline. Several soil and debris piles are present at the top of the cliff. A previously excavated area is situated along the eastern boundary of the concrete entranceway on Lot 150. The previously excavated area is approximately 40 feet wide, 60 feet long, and 8 feet deep.

Land use within a half mile radius of the Site is shown on Figure 1-3. Shown are the Site's proximity to residences, parks, wetlands and surface water bodies, as well as the location of an emergency water supply well operated by Aqua New York of Sea Cliff (NYSDEC Well No. N-0091). Aqua New York is the water purveyor for the Village of Sea Cliff. A more detailed discussion of the Site's environmental and public health assessments are presented in Section 2.2.

1.1.2 Site Historical Information

A single-family residential home is located on Lot 38. Lots 148, 149 and 150 (originally part of Lot 72), as well as adjacent Lot 81, were undeveloped parcels that sloped steeply towards Prospect Avenue. Interviews with neighbors indicated that filling of these parcels had occurred from about the 1950's through the 1970's. In addition, records from the Village Building Inspector show numerous letters to the (former) property owner demanding that illegal dumping cease on the property (Lot 38, former Lot 72 and Lot 81 inclusive).

An in-ground swimming pool was constructed on the Site (current Lot 150) by the former property owner, after the filling had occurred. A driveway accessing the pool from Bryant Avenue was also constructed. Only the driveway currently remains.

1.1.3 Current Operations

As stated in Section 1, the property is currently owned by Saeid E. Jalayer and his family with four lots being vacant, and the fifth (Lot 38) having a single family residence.

2 SUMMARY OF REMEDIAL INVESTIGATION AND EXPOSURE ASSESSMENT

2.1 Summary of Remedial Investigation

The results of the Site-wide soil and groundwater investigation found contaminants in both soil and groundwater above their respective Standards, Criteria and Guidance values (SCGs). From the test pit investigation, Semi-Volatile Organic Compounds (SVOCs) above Unrestricted Use/Residential Soil Cleanup Objectives (SCOs) were detected in three of the nineteen test pits. Four SVOCs, benzo(a)anthracene, benzo(b)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene were detected above Unrestricted Use/Residential SCOs at TP-105 test pit location. Two SVOCs, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene, were detected above Unrestricted Use/Residential SCOs at TP-102, and one SVOC, benzo(b)fluoranthene was detected above Unrestricted Use/Residential SCOs at TP-106. The exceedances were not confined to one particular soil type or depth. One PCB, Arochlor-1254, from the top soil fill sample at test pit TP-114, exceeded the Residential SCO, and one pesticide, dieldrin, was detected above Residential SCO from the top soil fill sample taken from TP-106. One or more pesticides were detected above Unrestricted Use SCOs in fifteen of the nineteen test pits, in 34 of the 64 soil samples. The exceedences were not restricted to any one soil type, but were found in the top soil fill, construction debris fill, coal ash and native sand samples. For metals, one or more exceedances of arsenic, barium, chromium and hexavalent chromium were detected above Residential SCOs in fifteen of the nineteen test pits. Twelve of the eighteen arsenic samples and eight of the nine barium samples with results above Residential SCOs were detected in coal ash samples. Three of the four chromium samples and the one hexavalent chromium sample detected above Residential SCOs were from the top two inches of top soil fill. Except for arsenic detected above the Residential SCO in the shallow fill top soil sample from TP-112, located in the front yard of the vacant house, the remaining exceedances were found in test pits advanced in areas where past dumping activities may have occurred. Results of the test pit investigation are summarized on Figures 2-1 and 2-2.

Because the groundwater within the unconfined aquifer beneath the Site likely discharges to Hempstead Harbor, located directly downgradient, data were compared to Surface Water Quality Standards for saline surfacewaters (SWQS-SA). The pesticide dieldrin exceeded SWQS-SA in temporary well point WPD-4 and monitoring well MW-2. In addition, 4,4'-DDT exceeded SWQS-SA in temporary well point WP-3. In the dissolved metals samples, four metals, iron, manganese, selenium and sodium were detected above GWQS. No SWSQ-SA criteria exist for these four metals, thus no dissolved metals were detected above SWQS-SA. While the presence of the detected pesticides in the soil could be attributable to past dumping activities on the Site, the source of these pesticides in the Site groundwater may be from a regional or upgradient source. The water table beneath the interior of the Site, above the cliff is over 38 feet below ground surface. Also, both MW-2 and WPD-4, which detected dieldrin above SWQS-SA, are on the edges of the property,

where off-site influences are immediately upgradient. Other Site soil contaminants, the metals (arsenic, barium, chromium and hexavalent chromium) detected above Residential SCOs, were not detected in groundwater beneath the Site (from dissolved metals samples).

It is anticipated that further refinement in the horizontal and vertical extent of the coal ash (area shown on Figure 2-3) would be conducted as part of a pre-design phase of the selected remedy for the site. Areas to the west of TP-106, TP-107, and TP-108, east of TP-116, north and east of TP-111, and in the interior at TP-117, would be investigated with a Geoprobe to refine the limits of the coal ash to define potential excavation or treatment areas. This AAR includes the pre-design costs for proposed remedies. The details of the pre-design program applicable to the selected and approved remedy will be presented in the RAWP that will be prepared following this AAR.

Per Guidance Document DER-10: Technical Guidance for Site Investigation and Remediation (NYSDEC, 2010) (DER-10), Section 4.4(d)2, this report presents the applicable alternatives that would achieve the Cleanup Track and intended use identified for the Site, as well as the analysis of one alternative to achieve unrestricted use relative to soil contamination, without the use of institutional controls. This AAR includes evaluation of each presented remedy and recommendation of a remedy that meets the Remedial Action Objectives for the Site.

2.2 Exposure Assessment

2.2.1 Human Health

Based upon the current use of the Site, and findings of the Qualitative Human Health Exposure Assessment (included in the RIR) there is a potential for trespasser exposure to chemicals of potential concern (COPC) in Site soils above Residential Use SCOs by dermal contact or incidental ingestion. The only COPC from test pits in areas of the Site not currently fenced is arsenic. The test pit located in the front yard of the house (shown on Figure 2-1) detected arsenic above the Residential Use SCO in the top 2 inches of soil.

Under current and future scenarios for the Site, the potential for human (adult, adolescent and child) exposure to COPCs in groundwater above SWQS-SA (e.g. dieldrin) may exist through ingestion of fish and shellfish from Hempstead Harbor directly downgradient of the Site. It is not known if current restrictions or warnings exist regarding eating of fish and shellfish from this area of Hempstead Harbor. Restrictions are determined by NYSDEC and may change seasonally.

Given the availability of municipal water source at the Site, and the brackish quality of the groundwater, routine direct human contact or ingestion is unlikely, and direct groundwater exposure pathways for on-Site receptors are not considered relevant and are not part of this report.

As presented in the RIR, an overview of the human exposure assessment is presented in Table 2-1.

2.2.2 Fish and Wildlife

Based on an analysis of the chemicals of potential ecological concern (COPEC), exposure pathways and potential ecological receptors, two pesticides, dieldrin and 4,4'-DDT, detected in Site groundwater discharging to Hempstead Harbor could potentially be adversely affecting local aquatic life and wildlife living in Hempstead Harbor or feeding on aquatic life in the vicinity of the Site. However, given the type of the COPECs (not acute or chronic based), there are no imminent ecological threats that would potentially require an interim remedial measure (IRM). Background concentrations of these COPECs are unknown and there is no indication that the Site is the source or sole source of potential contamination in the Harbor. With the approval of the Remedial Investigation Report by the NYSDEC, groundwater analysis is deemed complete.

3 REMEDIAL GOALS AND REMEDIAL ACTION OBJECTIVES

3.1 Remedial Action Goals

The statutory and regulatory remedial action goals for remedial actions undertaken pursuant to DER-10, are set forth in 6 NYCRR Part 375 (Part 375) and applicable BCP requirements for Volunteers.

3.2 Remedial Action Objectives

The final remedial actions for the Site must satisfy the Remedial Action Objectives (RAOs) identified for each of the contaminated media identified in the Remedial Investigation (RI). These RAOs are based upon the findings of the RI and the anticipated future use of the Site. Based on the results of the RI and approved RI Report, the only contaminated media requiring remediation are on-site soils.

Future use of the Site as a single-family residential property would require mitigation of the soil with contaminant concentrations above Residential Use SCOs. Based on the current zoning of the Site by the Village of Sea Cliff in a Residential B District, this is the expected future use fo the Site. DER-10 also states that the AAR considers an Unrestricted Use alternative, which would require mitigation of the soil with contaminant concentrations above Unrestricted Use SCOs. Further, Part 375-1.8(g)(5)(ii) allows for consideration of a future use of the Site that does not conform with the current applicable zoning laws, provided that, prior to the Department's approval, it can be shown to the Department's satisfaction that zoning changes are or will be sought, and the change is achieved prior to issuance of a Certificate of Completion. Alternatives have therefore also been evaluated based on the future use of the Site as multi-family residential. For these alternatives, mitigation of the soil would be required to Restricted-Residential Use requirements. A "no action" alternative is also evaluated, to provide a baseline for comparison against the other alternatives.

Based on the results of the RI, the remedial actions evaluated for the Site address the presence of VOCs, SVOCs, metals, pesticides and PCBs found in the on-Site shallow and subsurface soils. For the future uses evaluated or considered for the Site (i.e. Unrestricted Use, Single-Family Residential, or Multi-Family Residential), the following RAO have been established for Site media:

- To prevent exposure of human receptors to contaminants detected in on-Site soil via dermal contact or incidental ingestion.
- Selected remedy must be protective of public health and the environment.

4 DEVELOPMENT AND ANALYSIS OF ALTERNATIVES

An alternative analysis evaluates each proposed remedial alternative developed for the BCP Site, using the selection factors set forth in 375-1.8(f) and DER-10. As defined in Section 4.2 of DER-10, remedial alternatives have been evaluated based on the following criteria:

- Overall Protection of Public Health and the Environment - An evaluation of the remedy's ability to protect the public health and the environment by assessing how risks posed through each existing or potential pathway of exposure are eliminated, reduced, or controlled through removal, treatment, engineering controls, or institutional controls and the duration of their effectiveness.

- Compliance with SCGs - Compliance with SCGs addresses whether a remedy will meet applicable environmental laws, regulations, standards, and guidance.

- Long-Term Effectiveness and Permanence - Evaluates the long-term effectiveness of the remedy after implementation. In the event that residual impacts will remain as part of the alternative, then the risks such as human exposures, and impact to the environment are to be evaluated.

- Short-Term Impact and Effectiveness – An evaluation of the potential short-term adverse impacts and risks of the remedy upon the community, the workers, and the environment during construction and/or implementation.

- Reduction of Toxicity, Mobility or Volume of Contamination Through Treatment - Evaluates the ability of the remedy to reduce the toxicity, mobility, or volume of Site contamination through treatment.

- Implementability - Evaluates the technical and administrative feasibility of implementing the remedy.

- Cost Effectiveness - Capital, operation, maintenance, and monitoring costs are estimated for the remedy in order to assess whether or not the remedy cost is proportional to the overall effectiveness.

- Land Use - Evaluates the proposed remedial approach against the current, intended, and reasonably anticipated future use of the land and its surroundings.

- Community Acceptance – This criterion is evaluated after the public review of the remedy selection process as part of the final DER selection/approval of a remedy for a site. Proposed remedies are evaluated based on possible issues or limitations to local acceptance of the proposed remedy or aspects of that remedy.

4.1 Identification of Alternatives

The following alternatives were developed to address the Site's RAO, namely to prevent exposure of human receptors to contaminants detected in on-Site soil via dermal contact or incidental ingestion, and be protective of public health and the environment. Based on the results of the RI, the alternatives evaluated for the Site address the presence of VOCs, SVOCs, metals, pesticides and PCBs found in the on-Site shallow and subsurface soils, including the coal ash material. Future uses evaluated or considered for the Site are Unrestricted Use, Single-Family Residential, or Multi-Family Residential. As discussed in Section 3.2, a "no action" alternative is also evaluated, to provide a baseline for comparison against the other alternatives.

In order to characterize the coal ash material for potential off site disposal, a grab sample was collected on April 24, 2014 by Applemon Corporation of New City, New York. One representative coal ash sample was taken and analyzed for PCBs, RCRA Metals, Mercury, RCRA Characteristics (ignitability, corrosivity, reactivity-cyanide, reactivity-sulfide, paint filter test), SPLP-Arsenic and TCLP (Metals, SVOCs and Pesticides). Based on the TCLP and RCRA Characteristics results, the coal ash is considered non-hazardous waste per Part 376. Total metals results for the coal ash sample were representative of coal ash samples collected during the test pit program, and were biased on the high end of the concentrations previously detected, indicating that the coal ash sample is a reasonable estimate of the overall material that would be potentially excavated. Analytical results from the coal ash sample are presented in Appendix A. Disposal costs associated with alternatives that include excavation and off-site disposal are based on non-hazardous waste disposal, and are further based on preliminary indications that the material would be classified for beneficial use in Pennslyvania.

As shown on Figures 2-1 and 2-2, minor exceedences above Residential Use SCO were found in TP-104 (chromium) and TP-105 (4 PAHs) at a depth of 14.0 – 14.5 feet. Given the depth at nearly 15 feet (Track 1 requirement for Residential SCO), and the low concentrations slightly above criteria (PAHs are also estimated "J" concentrations), no remedial action is proposed for soils at these locations. Should future site redevelopment include soil removal in these areas, the Site Management Plan would include procedures to address these soils.

4.1.1 Alternative A – No Action

Utilizing this alternative, the Site would undergo no remedial action and therefore would remain in its current state. Soils above Residential Use SCO would remain in place. There would be no remedial costs, nor operation, maintenance, or monitoring costs incurred with the utilization of this alternative.

This alternative would not meet the RAO or applicable standards and is used as a baseline for comparison of other atlernatives.

4.1.2 Alternative B1 – Excavation and Removal to Residential Use Criteria

This alternative consists of the excavation and removal of soil and coal ash with contaminant concentrations above Residential Use SCOs, and backfilling the excavated area with clean fill. In order to meet Residential Use SCOs for the entire Site (5 lots), the removal of the contaminated material would require the excavation of approximately 14,000 cubic yards of material and off-site disposal to a designated off-site facility. Figure 4-1 presents the location and depth of the excavation areas required to achieve Residential Use Criteria. This alternative meets the requirements of a BCP Track 2 Cleanup, per Subpart 375-3.

This alternative permanently removes contaminants found in soil as deep as 15-feet and eliminates the exposure pathways to potential human receptors (i.e., meets the RAO). This alternative allows for single-family residential redevelopment as it pertains to future land use of the Site. The Site would be restored to current site conditions. Future redevelopment of the site would be required to follow requirements of the environmental easement and Site Management Plan. This environmental easement would be allowed, pursuant to Part 375-3.8(e)(2)(iii)(b), 375-1.8(g)(2)(i) and 375-1.8(g)(6)(iii), since it would only restrict soils below 15 feet.

Expenses encountered while implementing this alternative may include pre-design site work, excavation, hauling, disposal, backfilling, vegetative cover placement, control measures, site restoration and cleanup, initiating a Community Air Monitoring Program (CAMP), preparation of an environmental easement and site management plan, and engineering costs. The estimated cost for this alternative is projected to amount to $3,800,000. A breakdown of the preliminary cost estimate for Alternative B1 is presented in Table 4-1.

4.1.3 Alternative B2 – Excavation and Removal to Residential Use Criteria Using Proposed Redevelopment Site Elevations

This alternative consists of the excavation and removal of soil and coal ash with contaminant concentrations above Residential Use SCOs, and limited backfilling of deeper excavation areas with clean fill. For this alternative, instead of restoring the Site to current site conditions (Alternative B1), excavation and backfilling will take into account an alternate Site elevation that would likely be necessitated for future construction of a single-family home on each lot. Appendix B presents a possible site plan that shows current site contours and proposed elevations for possible future structures, based upon plans submitted to the Village of Sea Cliff when resubdivision was approved. The proposed elevations were utilized to calculate additional excavation volumes that would be required to meet the Track 2 requirements. By taking into account possible future redevelopment into this alternative, contaminated material that would likely require excavation and handling at the time of site redevelopment, under the Site Management Plan, would be excavated as part of the remedy.

For this alternative, a pre-design Geoprobe investigation would be used to further refine the depth of coal ash in areas that exceeded the reach of the backhoe utililized in the remedial investigation. For the purposes of this cost analysis, it was assumed that the areas that were excavated to a depth of 15 feet for Alternative B1, would now be excavated to a depth of 25 feet. Backfilling would only be required for excavation areas greater than 10 feet below current grade. In order to meet Residential Use SCOs for the entire Site (5 lots), under future redevelopment elevations, the removal of the contaminated material would require the excavation of approximately 21,800 cubic yards of material and off-site disposal to a designated off-site facility. Figure 4-2 presents the location and depth of the excavation areas required to achieve Residential Use Criteria. This alternative meets the requirements of a BCP Track 2 Cleanup, per Subpart 375-3.

This alternative permanently removes contaminants found in soil and coal ash and eliminates the exposure pathways to potential human receptors. This alternative allows for single-family residential redevelopment as it pertains to future land use of the Site.

Expenses encountered while implementing this alternative may include pre-design site work, excavation, hauling, disposal, limited backfilling and vegetative cover placement, control measures, site restoration and cleanup to redevelopment conditions, initiating a Community Air Monitoring Program (CAMP), preparation of an environmental easement and site management plan, and engineering costs. The estimated cost for this alternative is projected to amount to $4,740,000. A breakdown of the preliminary cost estimate for Alternative B2 is presented in Table 4-2.

4.1.4 Alternative C – Excavation and Removal to Unrestricted Use Criteria

This alternative consists of the excavation and removal of soil and coal ash with contaminant concentrations above Unrestricted Use SCOs, and backfilling the excavated area with clean fill. In order to meet the Unrestricted Use Soil Cleanup Objectives for the entire Site (5 lots), the removal of the contaminated material would require the excavation of approximately 29,000 cubic yards of material and off-site disposal to a designated off-site facility. Figure 4-3 presents the location and depth of the excavation areas required to achieve Unrestricted Use Criteria. The pre-design site investigation would determine the depth of coal ash that exceeds Unrestricted Use SCOs in those areas where the test pits did not exceed 15 feet due to limitiation of the reach of the backhoe. For purposes of the cost estimate for this alternative, it is assumed that the maximum depth of soils to be excavated is 20 feet. This alternative meets the requirements of a BCP Track 1 Cleanup, per Subpart 375-3.

This alternative permanently removes contaminants found in soil to depths indicated by the pre-design investigation and eliminates the exposure pathways to potential human receptors. This alternative allows for unrestricted use redevelopment as it pertains to future land use of the Site.

Expenses encountered while implementing this alternative may include pre-design site work, excavation, hauling, disposal, backfilling, vegetative cover placement, control

measures, site restoration and cleanup, initiating a Community Air Monitoring Program (CAMP) and engineering costs. The estimated cost for this alternative is projected to amount to $7,540,000. A breakdown of the preliminary cost estimate for Alternative C is presented in Table 4-3.

4.1.5 Alternative D1 – Limited Excavation, Rezoning and Capping of 4 Lots

This alternative would be conducted as a Track 4 Cleanup, and would require rezoning a majority of the Site from single-family residential to multi-family residential. As an alternative to rezoning, a use variance could be granted, which would have the same effect. The portion of the Site that would be rezoned to multi-family residential, or the subject of a use variance, encompasses Lots 38, 148, 149, and 150 and is depicted on Figure 4-4 as Area 1. Area 2 (Lot 81) on this figure would require limited excavation of shallow soils and would remain as a single-family residential property. Excavated material would be disposed of off-site at an approved facility. Because Part 375-1.8(g)(2)(i) and 375-1.8(g)(6)(iii) prohibit the use of engineering and institutional controls as part of the remedy for Residential Use (the only category that includes single-family housing) in the top 15 feet of soil, and this alternative would require such controls, it cannot be used for residential development in compliance with the current zoning. Part 375-1.8(g)(5)(ii) would require that the rezoning or use variance be obtained prior to issuance of a Certificate of Completion.

Although this alternative would require an institutional and engineering control for the four lots, it would eliminate the need to excavate and dispose of the bulk of the contaminated soils. Restricted-Residential Use prohibits single-family housing and projects that disturb the surface, such as vegetable gardens, which might heighten the possibility of human exposure. Typically the exposure pathway is eliminated by placing a minimum twenty-four-inch cover soil cap over the contaminated area. The cover system will remain in place permanently and would require an environmental easement on the properties. Due to the limited amount of soil that would require mitigation to meet Residential Use Criteria on Lot 81, this alternative includes the excavation and removal of the shallow soils along Prospect Avenue. Figure 4-5 presents the location and extent of the limited excavation on Lot 81, and the area that would require capping or other engineering control on Lots 38, 148, 149 and 150. This alternative meets the requirements of a BCP Track 2 Cleanup for Lot 81, and Track 4 Cleanup for Lots 38, 148, 149 and 150, per Subpart 375-3.

Provided rezoning or a use variance for the four lots can be successfully achieved, this alternative eliminates the exposure pathways to potential human receptors on Lot 81, and controls exposure to potential human receptors through engineering and institutional controls on the remaining four lots. This alternative allows for single-family residential redevelopment on Lot 81 and multi-family residential on Lots 38, 148, 149 and 150 as it pertains to future land use of the Site.

Expenses encountered while implementing this alternative may include excavation, hauling, disposal, backfilling with sub soil, 24-inch soil cap and demarcation layer, vegetative cover, site restoration and cleanup, control measures, initiating a CAMP,

engineering costs, preparation of a site management plan, and obtaining the deed notice from the municipality. The estimated cost for this alternative is projected to amount to $370,000. A breakdown of the preliminary cost estimate for Alternative D1 is presented in Table 4-4.

4.1.6 Alternative D2 – Limited Excavation, Rezoning and Capping of 3 Lots

This alternative would include rezoning or a use variance for 3 of the 5 lots of the Site from single-family residential to multi-family residential. The portion of the Site that would be rezoned to multi-family residential encompasses Lots 148, 149, and 150 and is depicted on Figure 4-6 as Area 1. Area 2 on this figure would require limited excavation of shallow soils (Lot 81) and excavation of both shallow soils and coal ash on Lot 38, and would allow both to remain as a single-family residential property. Excavated material would be disposed of off-site at an approved facility.

Although this alternative would require an institutional and engineering control for the three lots, it would eliminate the need to excavate and dispose of the bulk of the contaminated soils. Restricted-Residential Use prohibits single-family housing and projects that disturb the surface, such as vegetable gardens, which might heighten the possibility of human exposure. Typically the exposure pathway is eliminated by placing a minimum twenty-four-inch cover soil cap over the contaminated area. The cover system will remain in place permanently and would require an environemtnal easement on the properties. Figure 4-7 presents the location and extent of the limited excavation on Lot 81,the location and extent of the areas requiring excavation on Lot 38, and the area that would require capping or other engineering control on Lots 148, 149 and 150. This alternative meets the requirements of a BCP Track 2 Cleanup for Lots 38 and 81, and Track 4 Cleanup for Lots 148, 149 and 150, per Subpart 375-3.

Provided rezoning or a use variance for the three lots can be successfully obtained, this alternative eliminates the exposure pathways to potential human receptors on Lots 38 and 81, and controls exposure to potential human receptors through engineering and institutional controls on the remaining three lots. This alternative allows for single-family residential redevelopment on Lots 38 and 81 and multi-family residential on Lots 148, 149 and 150 as it pertains to future land use of the Site.

Expenses encountered while implementing this alternative may include excavation, hauling, disposal, backfilling with sub soil, 24-inch soil cap and demarcation layer, vegetative cover, site restoration and cleanup, control measures, initiating a CAMP, engineering costs, preparation of a site management plan, and obtaining the deed notice from the municipality. The estimated cost for this alternative is projected to amount to $980,000. A breakdown of the preliminary cost estimate for Alternative D2 is presented in Table 4-5.

4.1.7 Alternative D3 – Excavation and On-site Placement, Rezoning and Capping of 1 Lot

This alternative would include excavation of both shallow soils and coal ash from four of the five lots, placement of the excavated material on the remaining lot, with capping of the excavated material, and rezoning of that lot to multi-family residential. The portion of the Site that would be designated for multi-family residential (pursuant to rezoning or a use variance) or restricted to green space encompasses Lot 148 and is depicted on Figure 4-8 as Area 1. Area 2 on this figure (Lots 38, 81, 149 and 150) would require excavation of shallow soils, coal ash and other fill material and would remain as a single-family residential property.

Although this alternative would require an institutional and engineering control for Lot 148, it would allow four lots to remain as residential lots, and eliminate the need for off-site disposal of the contaminated soils. Restricted-Residential Use prohibits single-family housing and activites that disturb the surface, such as vegetable gardens, which might heighten the possibility of human exposure. It would allow site use for active recreational uses, which are public uses with a reasonable potential for soil contact. Typically the exposure pathway is eliminated by placing a minimum twenty-four-inch cover soil cap over the contaminated area. The cover system would remain in place permanently and would require a deed notice on the properties. Figure 4-9 presents the location and extent of the excavation on Lots 38, 81, 149 and 150, and the area that would require capping or other engineering control on Lot 148. This alternative meets the requirements of a BCP Track 2 Cleanup for Lots 38, 81, 149 and 150, and a Track 4 Cleanup for Lot 148, per Subpart 375-3.

Provided rezoning or a use variance for Lot 148 can be successfully achieved, or it can be restricted to green space, this alternative eliminates the exposure pathways to potential human receptors on Lots 38, 81, 149 and 150, and prevents exposure to potential human receptors through engineering and institutional controls on the remaining Lot 148. This alternative allows for single-family residential redevelopment on Lots 38, 81, 149 and 150, and Track 4 redevelopment on Lot 148 as it pertains to future land use of the Site. It would however require extensive site preparation, regrading, and engineering to design the configuration of the on-site placement and capping of the soils. Based on the volume of excavated soils, estimated at 9,200 cubic yards, and accounting for a 2-foot soil cap, as required for the Track 4 Cleanup, the height of the soil pile above the existing site elevation would be over 15 feet high. This does not account for appropriate engineering slopes, thus the actual final elevation in the center of the on-site soils could exceed 20 feet. While potentially feasible, this option changes the character of Lot 148, as is discussed further in Section 5.

Expenses encountered while implementing this alternative may include excavation, backfilling with sub soil, 24-inch soil cap and demarcation layer, vegetative cover, site restoration and cleanup, control measures, initiating a CAMP, engineering costs, preparation of a site management plan, and obtaining the deed notice from the

municipality. The estimated cost for this alternative is projected to amount to $1,230,000. A breakdown of the preliminary cost estimate for Alternative D3 is presented in Table 4-6.

5 DETAILED COMPARATIVE ANALYSIS OF RETAINED REMEDIAL ALTERNATIVES

5.1 Alternatives Evaluation

5.1.1 Overall Protection of Public Health and the Environment

5.1.1.1 Alternative A – No Action

This alternative is not protective of the public health or the environment. Since the current state of the site retains the potential for trespasser exposure to the contaminants found in soil, mostly arsenic, this alternative does not satisfy the human health RAO.

5.1.1.2 Alternative B1 – Excavation and Removal to Residential Use Criteria

This alternative consists of the excavation of impacted soils and the backfilling of the excavated area with clean fill that meet the Residential Use SCOs. This alternative is protective of the public health and the environment.

5.1.1.3 Alternative B2 – Excavation and Removal to Residential Use Criteria Using Proposed Redevelopment Site Elevations

This alternative consists of the excavation of impacted soils and the backfilling of the excavated area with clean fill that meet the Residential Use SCOs. This alternative removes more material than Alternative B1 and is protective of the public health and the environment.

5.1.1.4 Alternative C – Excavation and Removal to Unrestricted Use Criteria

This alternative also consists of excavation of impacted soils, however to depths of 20-feet below ground surface, and the backfilling of the excavated area with clean fill that meets the Unrestricted Use SCOs. This alternative is protective of the public health and the environment.

5.1.1.5 Alternative D1 – Limited Excavation, Rezoning and Capping of 4 Lots

This alternative would allow the Site to meet Restricted-Residential SCOs, provided rezoning or a use variance for the Area 1 (see Figure 4-4) lots (Lots 38, 148, 149 and 150) could be obtained through the municipality. This would require implementation of a soil or building structure cap that would protect public health and the environment from the contamination within the soil. This alternative is protective of the public health and the environment.

5.1.1.6 Alternative D2 – Limited Excavation, Rezoning and Capping of 3 Lots

This alternative would allow the Site to meet Restricted-Residential SCOs, provided rezoning or a use variance for the Area 1 (see Figure 4-6) lots (Lots 148, 149 and 150) could be obtained through the municipality. This would require implementation of a soil or

building structure cap that would protect the public health and the environment from the contamination within the soil. This alternative is protective of the public health and the environment.

5.1.1.7 Alternative D3 – Excavation and On-site Placement, Rezoning and Capping of 1 Lot

This alternative would allow the Site to meet Restricted-Residential SCOs, provided rezoning or a use variance for the Area 1 (see Figure 4-8) lot (Lot 148) could be obtained through the municipality. This would require implementation of a soil or building structure cap that would protect the public health and the environment from the contamination within the soil. This alternative is protective of the public health and the environment.

5.1.2 Compliance with Standards, Criteria, and Guidance (SCGs)

5.1.2.1 Alternative A – No Action

This alternative does not address the soil concentrations found above the SCGs. This alternative does not satisfy NYDEC criteria or the established RAO.

5.1.2.2 Alternative B1 – Excavation and Removal to Residential Use Criteria

This alternative consists of the excavation of impacted soils up to 15 feet below ground surface and would bring the Site into compliance with the Residential Use SCOs. This alternative satisfies the established RAO and SCGs.

5.1.2.3 Alternative B2 – Excavation and Removal to Residential Use Criteria Using Proposed Redevelopment Site Elevations

This alternative consists of the excavation of impacted soils up to 25 feet below ground surface and would bring the Site into compliance with the Residential Use SCOs. This alternative satisfies the established RAO and SCGs.

5.1.2.4 Alternative C – Excavation and Removal to Unrestricted Use Criteria

This alternative consists of excavation of impacted soils 20 feet below ground surface would bring the Site into compliance with the Unrestricted Use SCOs. This alternative satisfies the established RAO and SCGs.

5.1.2.5 Alternative D1 – Limited Excavation, Rezoning and Capping of 4 Lots

This alternative would require rezoning of four of the five lots to a multi-family residential property as opposed to a single-family residential property, or a use variance to achieve the same result. The Restricted-Residential SCOs would be the applicable soil criteria for the multi-family residential property (Lots 38, 148, 149, and 150), and Residential SCOs would be the applicable soil criteria for Lot 81. These standards allow for the capping of the contaminated area as long as the cap remains in place permanently undisturbed. As long as the cap is in place and requirements outlined in 6 NYCRR Part 375-6 and NYDEC NYS Brownfield Cleanup Development of Soil Cleanup Objectives document Section 5.2.1.3 are met, this alternative will satisfy the established RAO and SCGs.

5.1.2.6 Alternative D2 – Limited Excavation, Rezoning and Capping of 3 Lots

This alternative would require rezoning of three of the five lots to a multi-family residential property as opposed to a single-family residential property, or a use variance to achieve the same result. The Restricted-Residential SCOs would be the applicable soil criteria for the multi-family residential property (Lots 148, 149, and 150), and Residential SCOs would be the applicable soil criteria for Lots 38 and 81. These standards allow for the capping of the contaminated area as long as the cap remains in place permanently undisturbed. As long as the cap is in place and requirements outlined in 6 NYCRR Part 375-6 and NYDEC NYS Brownfield Cleanup Development of Soil Cleanup Objectives document Section 5.2.1.3 are met, this alternative will satisfy the established RAO and SCGs.

5.1.2.7 Alternative D3 – Excavation and On-site Placement, Rezoning and Capping of 1 Lot

This alternative would require rezoning of the property to a multi-family residential property as opposed to a single-family residential property, or a use variance to achieve the same result. The Restricted-Residential SCOs would be the applicable soil criteria for the multi-family residential property (Lot 148). These standards allow for the capping of the contaminated area as long as the cap remains in place permanently undisturbed. As long as the cap is in place and requirements outlined in 6 NYCRR Part 375-6 and NYDEC NYS Brownfield Cleanup Development of Soil Cleanup Objectives document Section 5.2.1.3 are met, this alternative will satisfy the established RAO and SCGs.

5.1.3 Long-Term Effectiveness and Permanence

5.1.3.1 Alternative A – No Action

This alternative involves no controls, excavation, or installation of any kind, therefore provides no long-term effectiveness toward achieving the goals set forth in the RAO.

5.1.3.2 Alternative B1 – Excavation and Removal to Residential Use Criteria

This alternative consists of excavation of impacted soils up to 15 feet below ground surface. Per DER-10, the soils below 15 feet are generally considered inaccessible, although an environmental easement would be necessary to restrict access to these materials from an intrusive activity such as site regrading. The removal of the contaminated material is permanent. The institutional control provides long-term effectiveness through maintenance of the restrictions.

5.1.3.3 Alternative B2 – Excavation and Removal to Residential Use Criteria Using Proposed Redevelopment Site Elevations

This alternative consists of excavation of impacted soils up to 25 feet below ground surface. Per DER-10, the soils below 15 feet are generally considered inaccessible, although an environmental easement would be necessary to restrict access to these materials from an intrusive activity such as site regrading. The removal of the contaminated material is permanent. The institutional control provides long-term effectiveness through maintenance of the restrictions.

5.1.3.4 Alternative C – Excavation and Removal to Unrestricted Use Criteria

This alternative also consists of excavation of impacted soils. The excavated area would be backfilled with clean fill that would act as a permanent soil cap. This alternative would provide the long-term effectiveness and permanence necessary to satisfy the RAO and SCGs.

5.1.3.5 Alternative D1 – Limited Excavation, Rezoning and Capping of 4 Lots

This alternative involves capping as the primary control. An earthen cap has an unlimited life-span provided it is properly maintained, and therefore, would provide long-term effectiveness with maintenance. However, this alternative does not permanently remove contaminants from the Site, as would be the case for excavation and off-site disposal of contaminated materials. This alternative also includes excavation of shallow impacted soils on Lot 81. The removal of the contaminated material on these lots is permanent.

5.1.3.6 Alternative D2 – Limited Excavation, Rezoning and Capping of 3 Lots

This alternative involves capping as the primary control. An earthen cap has an unlimited life-span provided it is properly maintained, and therefore, would provide long-term effectiveness with maintenance. However, this alternative does not permanently remove contaminants from the Site, as would be the case for excavation and off-site disposal of contaminated materials. This alternative also includes excavation of impacted soils on Lots 38 and 81 up to 15 feet below ground surface. The removal of the contaminated material on these lots is permanent.

5.1.3.7 Alternative D3 – Excavation and On-site Placement, Rezoning and Capping of 1 Lot

This alternative involves capping as the primary control. An earthen cap has an unlimited life-span provided it is properly maintained, and therefore, would provide long-term effectiveness with maintenance. However, this alternative does not permanently remove contaminants from the Site, as would be the case for excavation and off-site disposal of contaminated materials. This alternative also includes excavation of impacted soils on Lots 38, 81, 149 and 150 up to 15 feet below ground surface. The removal of the contaminated material on these lots is permanent.

5.1.4 Short-Term Impact and Effectiveness

5.1.4.1 Alternative A – No Action

This alternative does not create any adverse impacts or risks for the community, workers, or the environment during remedial implementation because there is no action.

5.1.4.2 Alternative B1 – Excavation and Removal to Residential Use Criteria

This alternative has the potential for increased exposure to the community, workers, and environment during the excavation process due to the management of the contaminated material and the potential for creation of dust during earthmoving activities. As excavation and removal take place, environmental controls will be in effect limiting the potential for adverse impacts. Additional short term impacts include truck traffic (approximately 2,000

truck trips for excavation and backfill) and construction noise. Thse adverse impacts would be controlled by normal limitations on construction work hours.

5.1.4.3 Alternative B2 – Excavation and Removal to Residential Use Criteria Using Proposed Redevelopment Site Elevations

This alternative has the potential for increased exposure to the community, workers, and environment during the excavation process due to the management of the contaminated material and the potential for creation of dust during earthmoving activities. As excavation and removal take place, environmental controls will be in effect limiting the potential for adverse impacts. Additional short term impacts include truck traffic (approximately 2,000 truck trips for excavation and backfill) and construction noise. Thse adverse impacts would be controlled by normal limitations on construction work hours.

5.1.4.4 Alternative C – Excavation and Removal to Unrestricted Use Criteria

This alternative has the potential for increased exposure to the community, workers, and environment during the excavation process due to the management of the contaminated material and the potential for creation of dust during earthmoving activities. As excavation and removal take place, environmental controls will be in effect limiting the potential for adverse impacts. Additional short term impacts include truck traffic (approximately 4,500 truck trips for excavation and backfill) and construction noise. Thse adverse impacts would be controlled by normal limitations on construction work hours.

5.1.4.5 Alternative D1 – Limited Excavation, Rezoning and Capping of 4 Lots

This alternative involves a small amount of excavation and hauling, therefore a small degree of potential increased exposure to the workers, the community, and the environment. The duration of the adverse impact caused by this alternative is shorter than that of Alteratives B1, B2 and C because overall less material is managed. The construction would still involve truck traffic, although to a lesser degree (on the order of 150-200 truck trips). Construction noise would also occur, but for a shorter period of time. Both of these latter potential impacts would also be controlled by normal limitations on construction work hours.

5.1.4.6 Alternative D2 – Limited Excavation, Rezoning and Capping of 3 Lots

This alternative involves a limited amount of excavation and hauling, therefore a small degree of potential increased exposure to the workers, the community, and the environment. The duration of the adverse impact caused by this alternative is slightly longer than that of Alternative D1 because more material is managed. The construction would still involve truck traffic, on the order of 500-600 truck trips. Construction noise would also occur, also slightly longer than that of Alternative D1. Both of these latter potential impacts would also be controlled by normal limitations on construction work hours.

5.1.4.7 Alternative D3 – Excavation and On-site Placement, Rezoning and Capping of 1 Lot

This alternative involves a limited amount of excavation, and all soils are managed on-site, therefore a small degree of potential increased exposure to the workers, the community, and the environment. The duration of the adverse impact caused by this alternative is shorter than that of the two alteratives above because all material is managed onsite. The construction would still involve truck traffic to bring backfill and soil cap material to the Site, on the order of 800-900 truck trips. Construction noise would also occur, also slightly longer than that of Alternative D1 or D2. Both of these latter potential impacts would also be controlled by normal limitations on construction work hours.

5.1.5 Reduction of Toxicity, Mobility or Volume of Contamination

5.1.5.1 Alternative A – No Action

This is the no action alternative and therefore, there would not be any reduction in toxicity, mobility, or volume.

5.1.5.2 Alternative B1 – Excavation and Removal to Residential Use Criteria

Because this alternative consists of the removal of impacted soils up to 15 feet below ground surface, the majority of the contamination will be removed. Therefore, the volume will be decreased substantially when the contaminated material is disposed of. Mobility and toxicity through the direct contact pathway will be reduced by alternative. This alternative will not reduce the toxicity or mobility of the contaminants that remain at depth above Residential Use SCOs.

5.1.5.3 Alternative B2 – Excavation and Removal to Residential Use Criteria Using Proposed Redevelopment Site Elevations

Because this alternative consists of the removal of impacted soils up to 25 feet below ground surface, the majority of contamination above Residential Use SCOs will be removed. Therefore, the volume will be decreased substantially when the contaminated material is disposed of. Mobility and toxicity through the direct contact pathway will be reduced by alternative. This alternative will not reduce the toxicity or mobility of the contaminants that remainat depth on site above Residential Use SCOs.

5.1.5.4 Alternative C – Excavation and Removal to Unrestricted Use Criteria

This alternative consists of the removal of impacted soils up to 20 feet below ground surface, therefore the contamination above Unrestricted Use SCOs will be removed and disposed of off-site. Therefore, the volume, mobility and toxicity of contamination above Unrestricted Use SCOs will be removed completely.

5.1.5.5 Alternative D1 – Limited Excavation, Rezoning and Capping of 4 Lots

This alternative will nominally reduce the volume of the contaminated material through the limited excavation and off-site disposal. Mobility and toxicity through the direct contact pathway will be reduced by the construction of the cap. However, mobility, toxicity, or volume will not be reduced by this alternative through treatment.

5.1.5.6 Alternative D2 – Limited Excavation, Rezoning and Capping of 3 Lots

This alternative will nominally reduce the volume of the contaminated material through the limited excavation and off-site disposal. Mobility and toxicity through the direct contact pathway will be reduced by the construction of the cap. However, mobility, toxicity, or volume will not be reduced by this alternative through treatment.

5.1.5.7 Alternative D3 – Excavation and On-site Placement, Rezoning and Capping of 1 Lot

This alternative will reduce the volume of the contaminated material on four of the 5 lots, but overall does not reduce the volume of contaminated material for the Site as a whole. Mobility and toxicity through the direct contact pathway will be reduced by the construction of the cap. However, mobility, toxicity, or volume will not be reduced by this alternative through treatment.

5.1.6 Implementability

5.1.6.1 Alternative A – No Action

This alternative poses no administrative, technical, or other implementability issues as no action will be taken.

5.1.6.2 Alternative B1 – Excavation and Removal to Residential Use Criteria

This alternative involves pre-design delineation, excavation, transportation, disposal, general backfill, topsoil, vegetative cover, cleanup and control measures, and analytical analysis of the post-excavation soils on Site. The work required for this alternative consists of conventional activities and resources common in the marketplace, and therefore, this alternative is readily implementable.

5.1.6.3 Alternative B2 – Excavation and Removal to Residential Use Criteria Using Proposed Redevelopment Site Elevations

This alternative involves pre-design delineation, excavation, transportation, disposal, general backfill, topsoil, vegetative cover, cleanup and control measures, and analytical analysis of post-excavation soils on Site. The work required for this alternative consists of conventional activities and resources common in the marketplace, and therefore, this alternative is readily implementable.

5.1.6.4 Alternative C – Excavation and Removal to Unrestricted Use Criteria

This alternative involves pre-design delineation, excavation, transportation, disposal, general backfill, topsoil, vegetative cover, cleanup and control measures, and analytical analysis of post-excavation soils on Site. The work required for this alternative consists of conventional activities and resources common in the marketplace, and therefore, this alternative is readily implementable.

5.1.6.5 Alternative D1 – Limited Excavation, Rezoning and Capping of 4 Lots

This alternative involves rezoning or obtaining a use variance for 4 lots, followed by excavation, sub soil fill, demarcation layer, top soil fill, vegetative cover, cleanup and

control measures, analytical analysis of post-excavation soils, and execution of a deed restriction or environmental easement. The site work required for this alternative consists of conventional activities and resources common in the marketplace, and therefore, the site activities are readily implementable. However, this alternative requires rezoning or a use variance for four of the five lots. Given that the current surrounding use is single family residential, confirmation by the municipality of the ability to rezone or acquire a use variance the 4 lots would be necessary for this alternative to be implemented. Court proceedings may be required to challenge local zoning decisions, which would delay or prevent implementation of this alternative.

5.1.6.6 Alternative D2 – Limited Excavation, Rezoning and Capping of 3 Lots

This alternative involves rezoning or obtaining a use variance for 3 lots, followed by excavation, sub soil fill, demarcation layer, top soil fill, vegetative cover, cleanup and control measures, analytical analysis of post-excavation soils, and execution of a deed restriction or environmental easement. The site work required for this alternative consists of conventional activities and resources common in the marketplace, and therefore, the site activities are readily implementable. However, this alternative requires rezoning or a use variance for three of the five lots. Given that the current surrounding use is single family residential, confirmation by the municipality of the ability to rezone or acquire use variance for the 3 lots would be necessary for this alternative to be implemented. Court proceedings may be required to challenge local zoning decisions, which would delay or prevent implementation of this alternative.

5.1.6.7 Alternative D3 – Excavation and On-site Placement, Rezoning and Capping of 1 Lot

This alternative involves rezoning or obtaining a use variance for 1 lot, followed by excavation, sub soil fill, demarcation layer, top soil fill, vegetative cover, cleanup and control measures, analytical analysis of post-excavation soils, and execution of a deed restriction or environmental easement. The site work required for this alternative consists of conventional activities and resources common in the marketplace, and therefore, the site activities are readily implementable. However, this alternative requires rezoning or use variance for one of the five lots, or its restriction to green space. Given that the current surrounding use is single family residential, confirmation by the municipality of the ability to rezone or acquire use variance for the 1 lot would be necessary for this alternative to be implemented. Court proceedings may be required to challenge local zoning decisions, which would delay or prevent implementation of this alternative.

5.1.7 Cost Effectiveness

5.1.7.1 Alternative A – No Action

There would be no remedial costs, nor operation, maintenance, or monitoring costs incurred for this alternative.

5.1.7.2 Alternative B1 – Excavation and Removal to Residential Use Criteria

As stated in the description above, expenses encountered while implementing this alternative may include pre-design delineation, excavation, hauling, disposal, backfilling, vegetative cover, control measures, site cleanup and restoration, and other engineering costs,. As presented in Table 4-1, the estimated costs for this alternative are projected to be approximately $3,800,000.

5.1.7.3 Alternative B2 – Excavation and Removal to Residential Use Criteria Using Proposed Redevelopment Site Elevations

The cost for this alternative, as presented in Table 4-2, is estimated at $4,740,000 and is approximately 20% greater than alternative B1. This alternative provides greater flexibility and cost savings during redevelopment of the site property, but the additional costs do not materially affect the protectiveness of this remedy.

5.1.7.4 Alternative C – Excavation and Removal to Unrestricted Use Criteria

Expenses encountered while implementing this alternative may include pre-design delineation, excavation, hauling, disposal, backfilling, vegetative cover, control measures, site cleanup and restoration, and other engineering costs. As presented in Table 4-3, the estimated costs for this alternative are projected to be approximately $7,540,000. This Alternative has the highest cost of any of the alternatives and based on the projected use of the property, and does not offer any meaningful benefits relative to protectiveness. The incremental costs, therefore, are not considered to be cost-effective.

5.1.7.5 Alternative D1 – Limited Excavation, Rezoning and Capping of 4 Lots

Expenses encountered while implementing this alternative may include excavation, hauling, disposal, backfilling with sub soil, demarcation layer and top soil, vegetative cover, site cleanup and restoration, control measures, and other engineering costs. As presented in Table 4-4, the estimated costs for this alternative are projected to be approximately $370,000. This alternative is the least costly of the alternatives (other than No Action), and provides for single-family residential use of one lot, and multi-family use on the remaining lots. However, it is contingent on obtaining rezoning approval or a use variance from the municipality. Given that the costs are more than an order of magnitude less than either B1 or B2, this alternative would be considered the most cost-effective alternative, provided the rezoning or use variance could be granted.

5.1.7.6 Alternative D2 – Limited Excavation, Rezoning and Capping of 3 Lots

Expenses encountered while implementing this alternative may include excavation, hauling, disposal, backfilling with sub soil, demarcation layer and top soil, vegetative cover, site cleanup and restoration, control measures, and other engineering costs. As presented in Table 4-5, the estimated costs for this alternative are projected to be approximately $980,000. This alternative is the second least costly of the alternatives (other than No Action), and provides for single-family residential use of two lots, and multi-family use on the remaining lots. However, it is contingent on obtaining rezoning approval or a use variance from the municipality. This alternative would be considered a cost-effective alternative that

allows for the existing residential character to remain for the lot with the unoccupied home, provided the rezoning or use variance could be granted for the three lots.

5.1.7.7 Alternative D3 – Excavation and On-site Placement, Rezoning and Capping of 1 Lot

Expenses encountered while implementing this alternative may include excavation, hauling, disposal, backfilling with sub soil, demarcation layer and top soil, vegetative cover, site cleanup and restoration, control measures, and other engineering costs. As presented in Table 4-6, the estimated costs for this alternative are projected to be approximately $1,230,000. This alternative is the third least costly of the alternatives (not including No Action), and provides for single-family residential use of four lots, and multi-family use or limitation to green space on one lot only. However, it is contingent on obtaining rezoning approval or a use variance from the municipality. Alternatively, it can be achieved by a restriction to green space, but this would eliminate the economic use of ths lot (the cost of which has not been included in the calculations). This alternative would be considered a cost-effective alternative that allows for the existing residential character to remain on most of the lots, provided the rezoning or a use variance could be granted for the remaining lot, or it could be restricted to green space.

5.1.8 Land Use

5.1.8.1 Alternative A – No Action

This alternative does not address the issues pertaining to the current or future land use of the Site. The Site is currently out of compliance with Residential criteria and plans to either remain single-family residential or become multi-family residential. Based on the planned land use, remedial action would be necessary for consistency with land use.

5.1.8.2 Alternative B1 – Excavation and Removal to Residential Use Criteria

This alternative would remove the contaminated material from the Site in order to meet the Residential land use. Therefore, the Site would be eligible to maintain the current zoning allowing single-family residential property housing consistent with current zoning and surrounding land use.

5.1.8.3 Alternative B2 – Excavation and Removal to Residential Use Criteria Using Proposed Redevelopment Site Elevations

This alternative would remove the contaminated material from the Site in order to meet the Residential land use. Therefore, the Site would be eligible to maintain the current zoning allowing single-family residential property housing consistent with current zoning and surrounding land use.

5.1.8.4 Alternative C – Excavation and Removal to Unrestricted Use Criteria

This alternative would remove the contaminated material from the Site in order to meet the Unrestricted Use criteria. Therefore, the Site would be eligible to maintain the current zoning allowing single-family residential property housing consistent with current zoning

and surrounding land use, andwould be unrestricted by any future land use plans. As all contaminated soils to Unrestricted Use would be removed, no environmental easement would be required.

5.1.8.5 Alternative D1 – Limited Excavation, Rezoning and Capping of 4 Lots

This alternative would require a change in zoning or a use variance, and a modest change in land use from single family residential to multi-family residential for 4 of the 5 lots.

5.1.8.6 Alternative D2 – Limited Excavation, Rezoning and Capping of 3 Lots

This alternative would require a change in zoning or a use variance, and a modest change in land use from single family residential to multi-family residential. This alternative would allow for the existing residential character to remain for the lot with the unoccupied home (Lot 38), as well as the vacant lot (Lot 81) closest to other residential homes, and thus would be consistent with current surrounding land use.

5.1.8.7 Alternative D3 – Excavation and On-site Placement, Rezoning and Capping of 1 Lot

This alternative would require a change in zoning or a use variance to one lot, and a modest change in land use of that lot from single family residential to multi-family residential. This alternative would allow for the existing residential character to remain for the lot with the unoccupied home (Lot 38), as well as the vacant lot (Lot 81) closest to other residential homes, and thus would be consistent with current surrounding land use. Alternatively, the land use for the lot used for placement of the excavated soil, would potentially be used as green space, which is consistent with its current status as vacant land.

5.1.9 Community Acceptance

5.1.9.1 Alternative A – No Action

This alternative is not likely to be accepted by the community as it does not address potential impacts to human health and the environment.

5.1.9.2 Alternative B1 – Excavation and Removal to Residential Use Criteria

This alternative would be likely to satisfy the community, as it prevents exposure to contaminated soil via dermal contact or incidental ingestion, and removes a majority of the material from the property. This alternative would also maintain the single-family residential character of the neighborhood. Alternative B1 does include significant short term impacts due to truck traffic, that could sway community acceptance to the alternatives D1, D2 or D3, with limited excavation and off-site disposal.

5.1.9.3 Alternative B2 – Excavation and Removal to Residential Use Criteria Using Proposed Redevelopment Site Elevations

This alternative would be likely to satisfy the community, as it prevents exposure to contaminated soil via dermal contact or incidental ingestion, and removes a majority of the material from the property. This alternative would also maintain the single-family residential character of the neighborhood.As with Alternative B1, alternative B2 does

include significant short term impacts due to truck traffic, that could sway community acceptance to the alternatives D1, D2 or D3, which have limited excavation and off-site disposal.

5.1.9.4 Alternative C – Excavation and Removal to Unrestricted Use Criteria

This alternative would be likely to satisfy the community, as it prevents exposure to contaminated soil via dermal contact or incidental ingestion, and removes a majority of the material from the property. This alternative would also maintain the single-family residential character of the neighborhood. Alternative C does include significant short term impacts due to truck traffic, which would be twice as much as alternatives B1 or B2, which could be a deterrent to community acceptance.

5.1.9.5 Alternative D1 – Limited Excavation, Rezoning and Capping of 4 Lots

This alternative has a lower probability of satisfying the community, as the contaminated material would remain on site, albeit below a cap, and it would alter the character of the neighborhood locally within these four lots from single-family residential to multi-family housing units.

5.1.9.6 Alternative D2 – Limited Excavation, Rezoning and Capping of 3 Lots

This alternative has a lower probability of satisfying the community, as the contaminated material would remain on site, albeit below a cap, and it would alter the character of the neighborhood locally within these three lots from single-family residential to multi-family housing.

5.1.9.7 Alternative D3 – Excavation and On-site Placement, Rezoning and Capping of 1 Lot

This alternative would be largely consistent with the single family residential character and zoning of the lots, which would likely be a positive element relative to community acceptance. However, the contaminated material would be stockpiled on one lot, change the character of that lot, and be evident to the surrounding community (i.e., a mound), and therefore, may not gain community acceptance.

6 RECOMMENDED REMEDIAL ALTERNATIVE

Based on the foregoing evaluation, the alternative recommendation is based on a primary and contingent alternative. The primary alternative is D1, for the following reasons:

- The remedy is protective and uses proven conventional technology.
- The remedy will generally be consistent with the character of the surrounding residential areas, with only a modest change from single family residential to multi-family residential.
- The remedy is the lowest cost, effective alternative.

However, this remedy is contingent upon rezoning or a use variance being obtained, and if not obtained this alternative would not be implementable. Consequently, the recommended contingent remedy is Alternative B1, excavation to restore the site to existing grades and permit continued use/zoning as single family residential. This is the most cost-effective alternative that does not require rezoning and meets the RAO and local zoning requirements.

LIMITATIONS

The work product included in the attached was undertaken in full conformity with generally accepted professional consulting principles and practices and to the fullest extent as allowed by law we expressly disclaim all warranties, express or implied, including warranties of merchantability or fitness for a particular purpose. The work product was completed in full conformity with the contract with our client and any reliance on this work product by an unapproved outside party is at such party's risk.

The work product herein (including opinions, conclusions, suggestions, etc.) was prepared based on the situations and circumstances as found at the time, location, scope and goal of our performance and thus should be relied upon and used by our client recognizing these considerations and limitations. Cornerstone shall not be liable for the consequences of any change in environmental standards, practices, or regulations following the completion of our work and there is no warrant to the veracity of information provided by third parties, or the partial utilization of this work product.

REFERENCES

New York State Department of Environmental Conservation. (May 3, 2010). DEC Program Policy: DER-10/ Technical Guidance for Site Investigation and Remediation. Retrieved May 15, 2014 from: http://www.dec.ny.gov/docs/remediation_hudson_pdf/der10.pdf

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TABLES

Table 2.1 Overview of Human Exposure Assessment

Environmental Media & Exposure Route	Human Exposure Assessment
Direct contact with surface soils (and incidental ingestion)	- People can come into contact if they trespass on areas of the Site around the vacant house - People are not coming into contact with the majority of the Site because public access to the Site is restricted by fencing. - People can come into contact if they complete ground-intrusive work at the site but this would be mitigated by the use of appropriate PPE.
Direct contact with subsurface soils (and incidental ingestion)	- People can come into contact if they complete ground-intrusive work at the site, but this would be mitigated by the use of appropriate PPE.
Ingestion of groundwater	- Contaminated groundwater is not being used for drinking water, as the area is served by a public water supply.
Direct contact with groundwater	- People can come into contact if they complete ground-intrusive work at the site but this is unlikely due to depth of groundwater and would be mitigated by the use of appropriate PPE.
Inhalation of air (exposures related to soil vapor intrusion)	- A soil gas survey was completed and no vapor issues were identified.
Other: Consumption of fish and shellfish	- Anyone consuming fish or shellfish from Hempstead Harbor adjacent to the Site may come into contact with Site COPECs.

Table 4-1. Preliminary Cost Estimate
Alternative B1 - Excavation & Removal to Residential Use SCOs
May 2014

Item	Quantity	Unit	Unit Price	Amount
Mobilization/demobilization		Lump Sum		$20,000
Soil erosion and sediment control		Lump Sum		$8,000
Pre-Design - Geoprobe Delineation, H&S, site survey, etc.		Lump Sum		$30,000
Excavation	14000	Cubic Yard	25	$350,000
Transportation and disposal	21000	Ton*	80	$1,680,000
Characterization & Post-Excavation Analytical		Lump Sum		$8,000
6" Top soil (Lot 38 Front Yard only)	20	Cubic Yard	45	$900
Backfill (1.2 x Excavation Volume)	16800	Cubic Yard	45	$756,000
Vegetative cover	28200	Sq. Feet	0.21	$5,922
Misc. site restoration and cleanup		Lump Sum		$25,000
Subtotal				$2,884,000
Contingency	25%			$721,000
Engineering (including RAWP)				$175,000
Environmental Easement/Site Management Plan				$10,000
Community Air Monitoring Program				$5,000
Subtotal				$911,000
Total				$3,800,000

Notes:

* Assuming a typical density of approximately 1.5 tons/cy

All numbers rounded

Table 4-2. Preliminary Cost Estimate
Alternative B2 - Excavation & Removal to Residential Use Criteria Using Proposed Redevelopment Site Elevations
May 2014

Item	Quantity	Unit	Unit Price	Amount
Mobilization/demobilization		Lump Sum		$20,000
Soil erosion and sediment control		Lump Sum		$8,000
Pre-Design - Geoprobe Delineation, H&S, site survey, etc.		Lump Sum		$30,000
Excavation	21800	Cubic Yard	25	$545,000
Transportation and disposal	32700	Ton*	80	$2,616,000
Characterization & Post-Excavation Analytical		Lump Sum		$8,000
6" Top soil (Lot 38 Front Yard only)	20	Cubic Yard	45	$900
Backfill (1.2 x 10 feet of 25-ft excavation area)	8520	Cubic Yard	45	$383,400
Vegetative cover (shallow excavation areas only)	1100	Sq. Feet	0.21	$231
Misc. site restoration and cleanup		Lump Sum		$25,000
Subtotal				$3,637,000
Contingency	25%			$909,000
Engineering (including RAWP)				$175,000
Environmental Easement/Site Management Plan				$10,000
Community Air Monitoring Program				$5,000
Subtotal				$1,099,000
Total				$4,740,000

Notes:

* Assuming a typical density of approximately 1.5 tons/cy
All numbers rounded

Table 4-3. Preliminary Cost Estimate
Alternative C - Excavation & Removal to Unrestricted Use SCOs
May 2014

Item	Quantity	Unit	Unit Price	Amount
Mobilization/demobilization		Lump Sum		$20,000
Soil erosion and sediment control		Lump Sum		$8,000
Pre-Design - Geoprobe Delineation, H&S, survey, etc.		Lump Sum		$30,000
Excavation	29000	Cubic Yard	25	$725,000
Transportation and disposal	43500	Ton*	80	$3,480,000
Characterization & Post-Excavation Analytical		Lump Sum		$8,000
6" Top soil (Lot 38 only)	210	Cubic Yard	45	$9,450
Backfill (1.2 x Excavation Volume)	34800	Cubic Yard	45	$1,566,000
Vegetative cover	63000	Sq. Feet	0.21	$13,230
Misc. site restoration and cleanup		Lump Sum		$25,000
Subtotal				$5,885,000
Contingency	25%			$1,471,000
Engineering (Including RAWP)				$175,000
Community Air Monitoring Program				$5,000
Subtotal				$1,651,000
Total				$7,540,000

Notes:

* Assuming a typical density of approximately 1.5 tons/cy

All numbers rounded

Table 4-4. Preliminary Cost Estimate
Alternative D1 - Limited Excavation, Rezoning and Capping of 4 Lots
May 2014

Item	Quantity	Unit	Unit Price	Amount
Mobilization/demobilization		Lump Sum		$20,000.00
Soil erosion and sediment control		Lump Sum		$8,000.00
Pre-Design - H&S, site survey, etc.		Lump Sum		$15,000
Excavation	150	Cubic Yard	25	$3,750
Transportation and disposal	225	Ton*	80	$18,000
Characterization & Post-Excavation Analytical		Lump Sum		$1,000
Backfill (1.2 x Excavation Volume)	180	Cubic Yard	45	$8,100
24" Soil Cap	2000	Cubic Yard	45	$90,000
6" Top soil (Lot 38 Front Yard only)	20	Cubic Yard	45	$900
Demarcation Layer (i.e. construction safety fence)	27500	Sq. Feet	0.10	$2,750
Vegetative cover	27700	Sq. Feet	0.21	$6,000
Misc. site restoration and cleanup		Lump Sum		$25,000
Subtotal				$199,000
Contingency	25%			$50,000
Engineering (Including RAWP)				$100,000
Deed Notice/Site Management Plan				$12,000
Community Air Monitoring Program				$5,000
Subtotal				$167,000
Total				$370,000

Notes:

* Assuming a typical density of approximately 1.5 tons/cy

All numbers rounded

Table 4-5. Preliminary Cost Estimate
Alternative D2 - Limited Excavation, Rezoning and Capping of 3 Lots
May 2014

Item	Quantity	Unit	Unit Price	Amount
Mobilization/demobilization		Lump Sum		$20,000.00
Soil erosion and sediment control		Lump Sum		$8,000.00
Pre-Design - H&S, site survey, etc.				$15,000
Excavation	2700	Cubic Yard	25	$67,500
Transportation and disposal	4050	Ton*	80	$324,000
Characterization & Post-Excavation Analytical		Lump Sum		$2,000
Backfill (1.2 x Excavation Volume)	3240	Cubic Yard	45	$145,800
24" Soil Cap	1710	Cubic Yard	45	$76,950
6" Top soil (Lot 38 Front Yard only)	20	Cubic Yard	45	$900
Demarcation Layer (i.e. construction safety fence)	23000	Sq. Feet	0.10	$2,300
Vegetative cover	28200	Sq. Feet	0.21	$6,000
Misc. site restoration and cleanup		Lump Sum		$25,000
Subtotal				$693,000
Contingency	25%			$173,000
Engineering (Including RAWP)				$100,000
Deed Notice/Site Management Plan				$12,000
Community Air Monitoring Program				$5,000
Subtotal				$290,000
Total				$980,000

Notes:

* Assuming a typical density of approximately 1.5 tons/cy

All numbers rounded

Table 4-6. Preliminary Cost Estimate
Alternative D3 - Excavation & On-Site Placement, Rezoning and Capping of 1 Lot
May 2014

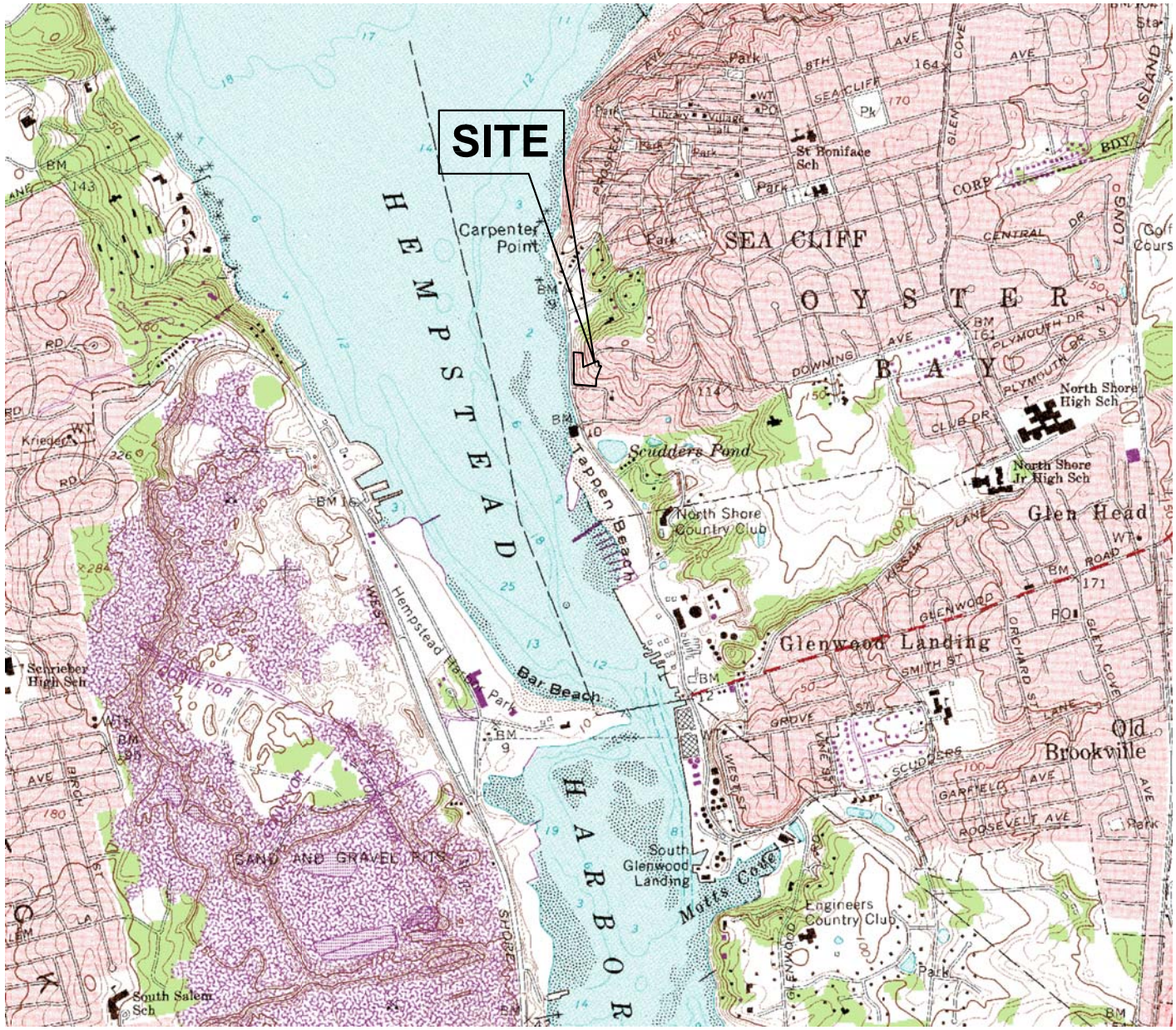
Item	Quantity	Unit	Unit Price	Amount
Mobilization/demobilization		Lump Sum		$20,000.00
Soil erosion and sediment control		Lump Sum		$8,000.00
Pre-Design - H&S, site survey, etc.				$15,000
Excavation	9200	Cubic Yard	25	$230,000
Characterization & Post-Excavation Analytical		Lump Sum		$5,000
Backfill (1.2 x Excavation Volume)	11040	Cubic Yard	45	$496,800
24" Soil Cap	1300	Cubic Yard	45	$58,500
6" Top soil (Lot 38 Front Yard only)	20	Cubic Yard	45	$900
Demarcation Layer (i.e. construction safety fence)	17000	Sq. Feet	0.10	$1,700
Vegetative cover	28200	Sq. Feet	0.21	$6,000
Misc. site restoration and cleanup		Lump Sum		$25,000
Subtotal				$867,000
Contingency	25%			$217,000
Engineering (Including RAWP)				$125,000
Deed Notice/Site Management Plan				$12,000
Community Air Monitoring Program				$5,000
Subtotal				$359,000
Total				$1,230,000

Notes:

All numbers rounded

FIGURES

N



SOURCE:
1968 SEA CLIFF, NY
USGS QUADRANGLE,
7.5 MIN. SERIES

0 2000 4000
SCALE IN FEET

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SITE LOCATION MAP

FIGURE NO.
1-1
PROJECT NO.
140359

0 100 200

SCALE IN FEET

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SITE LOTS

FIGURE NO.
1-2
PROJECT NO.
140359

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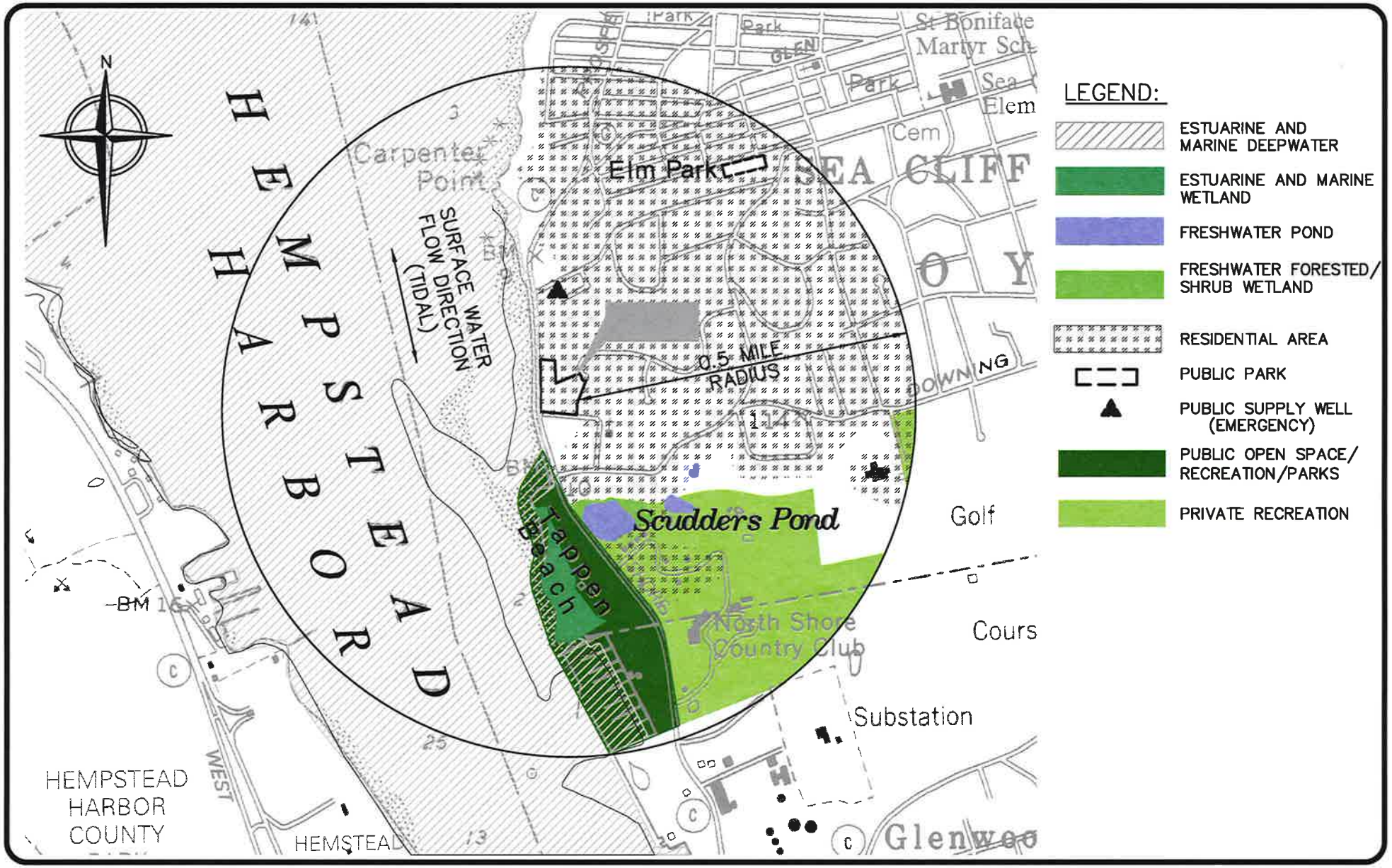

0 1000 2000

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LAND USE

FIGURE NO.
1-3
PROJECT NO.
140359

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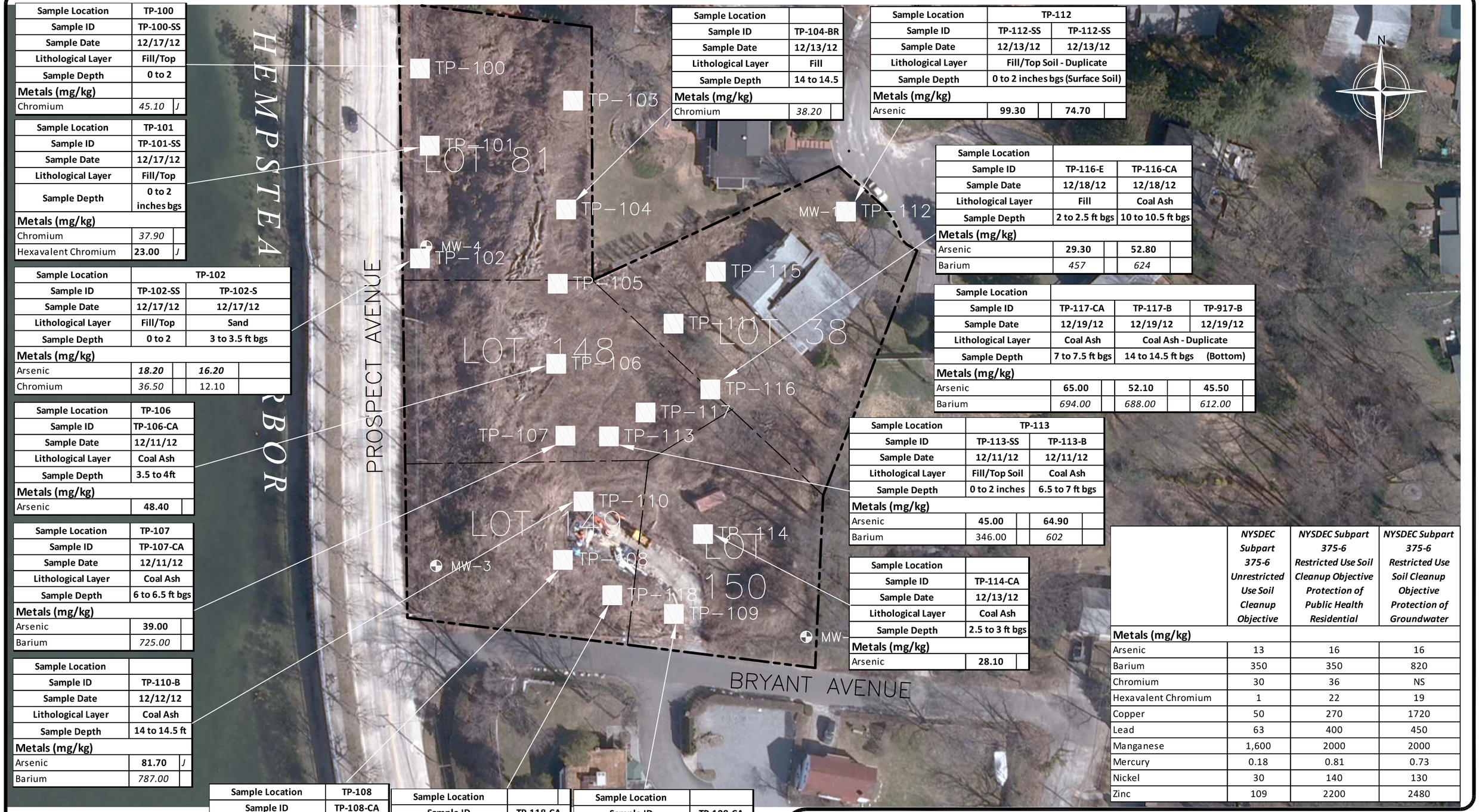

Sample Location	TP-100
Sample ID	TP-100-SS
Sample Date	12/17/12
Lithological Layer	Fill/Top
Sample Depth	0 to 2
Metals (mg/kg)	
Chromium	*45.10* J

Sample Location	TP-101
Sample ID	TP-101-SS
Sample Date	12/17/12
Lithological Layer	Fill/Top
Sample Depth	0 to 2 inches bgs
Metals (mg/kg)	
Chromium	*37.90*
Hexavalent Chromium	**23.00** J

Sample Location	TP-102	
Sample ID	TP-102-SS	TP-102-S
Sample Date	12/17/12	12/17/12
Lithological Layer	Fill/Top	Sand
Sample Depth	0 to 2	3 to 3.5 ft bgs
Metals (mg/kg)		
Arsenic	***18.20***	***16.20***
Chromium	*36.50*	12.10

Sample Location	TP-106
Sample ID	TP-106-CA
Sample Date	12/11/12
Lithological Layer	Coal Ash
Sample Depth	3.5 to 4ft
Metals (mg/kg)	
Arsenic	**48.40**

Sample Location	TP-107
Sample ID	TP-107-CA
Sample Date	12/11/12
Lithological Layer	Coal Ash
Sample Depth	6 to 6.5 ft bgs
Metals (mg/kg)	
Arsenic	**39.00**
Barium	*725.00*

Sample Location	
Sample ID	TP-110-B
Sample Date	12/12/12
Lithological Layer	Coal Ash
Sample Depth	14 to 14.5 ft
Metals (mg/kg)	
Arsenic	**81.70** J
Barium	*787.00*

Sample Location	
Sample ID	TP-104-BR
Sample Date	12/13/12
Lithological Layer	Fill
Sample Depth	14 to 14.5
Metals (mg/kg)	
Chromium	*38.20*

Sample Location	TP-112	
Sample ID	TP-112-SS	TP-112-SS
Sample Date	12/13/12	12/13/12
Lithological Layer	Fill/Top Soil - Duplicate	
Sample Depth	0 to 2 inches bgs (Surface Soil)	
Metals (mg/kg)		
Arsenic	**99.30**	**74.70**

Sample Location		
Sample ID	TP-116-E	TP-116-CA
Sample Date	12/18/12	12/18/12
Lithological Layer	Fill	Coal Ash
Sample Depth	2 to 2.5 ft bgs	10 to 10.5 ft bgs
Metals (mg/kg)		
Arsenic	**29.30**	**52.80**
Barium	*457*	*624*

Sample Location			
Sample ID	TP-117-CA	TP-117-B	TP-917-B
Sample Date	12/19/12	12/19/12	12/19/12
Lithological Layer	Coal Ash	Coal Ash - Duplicate	
Sample Depth	7 to 7.5 ft bgs	14 to 14.5 ft bgs	(Bottom)
Metals (mg/kg)			
Arsenic	**65.00**	**52.10**	**45.50**
Barium	*694.00*	*688.00*	*612.00*

Sample Location	TP-113	
Sample ID	TP-113-SS	TP-113-B
Sample Date	12/11/12	12/11/12
Lithological Layer	Fill/Top Soil	Coal Ash
Sample Depth	0 to 2 inches	6.5 to 7 ft bgs
Metals (mg/kg)		
Arsenic	**45.00**	**64.90**
Barium	346.00	*602*

Sample Location	
Sample ID	TP-114-CA
Sample Date	12/13/12
Lithological Layer	Coal Ash
Sample Depth	2.5 to 3 ft bgs
Metals (mg/kg)	
Arsenic	**28.10**

	NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective	*NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Public Health Residential*	*NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Groundwater*
Metals (mg/kg)			
Arsenic	13	16	16
Barium	350	350	820
Chromium	30	36	NS
Hexavalent Chromium	1	22	19
Copper	50	270	1720
Lead	63	400	450
Manganese	1,600	2000	2000
Mercury	0.18	0.81	0.73
Nickel	30	140	130
Zinc	109	2200	2480

Sample Location	TP-108
Sample ID	TP-108-CA
Sample Date	12/12/12
Lithological Layer	Coal Ash
Sample Depth	14 to 14.5 ft
Metals (mg/kg)	
Arsenic	**178.00**
Barium	*627.00*

Sample Location	
Sample ID	TP-118-CA
Sample Date	12/19/12
Lithological Layer	Coal Ash
Sample Depth	5 to 5.5 ft bgs
Metals (mg/kg)	
Arsenic	**31.10**

Sample Location	
Sample ID	TP-109-CA
Sample Date	12/12/12
Lithological Layer	Coal Ash
Sample Depth	1.5 to 2.5 ft
Metals (mg/kg)	
Arsenic	**25.20**

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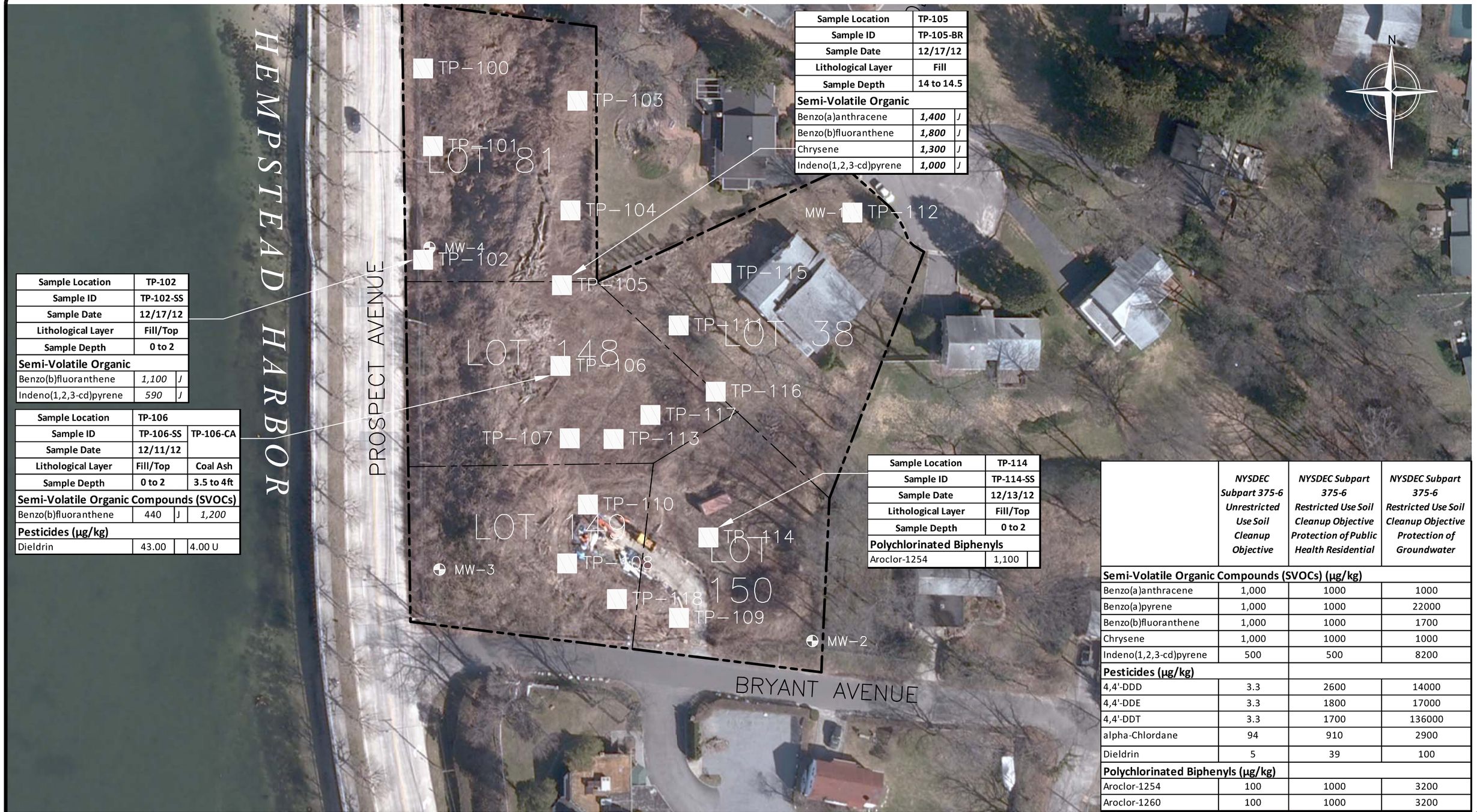
METALS DETECTED ABOVE RESIDENTIAL SCOs

FIGURE NO.
2-1
PROJECT NO.
140359



Sample Location	TP-102	
Sample ID	TP-102-SS	
Sample Date	12/17/12	
Lithological Layer	Fill/Top	
Sample Depth	0 to 2	
Semi-Volatile Organic		
Benzo(b)fluoranthene	*1,100*	J
Indeno(1,2,3-cd)pyrene	*590*	J

Sample Location	TP-106		
Sample ID	TP-106-SS		TP-106-CA
Sample Date	12/11/12		
Lithological Layer	Fill/Top		Coal Ash
Sample Depth	0 to 2		3.5 to 4ft
Semi-Volatile Organic Compounds (SVOCs)			
Benzo(b)fluoranthene	440	J	*1,200*
Pesticides (µg/kg)			
Dieldrin	43.00		4.00 U

Sample Location	TP-105	
Sample ID	TP-105-BR	
Sample Date	12/17/12	
Lithological Layer	Fill	
Sample Depth	14 to 14.5	
Semi-Volatile Organic		
Benzo(a)anthracene	***1,400***	J
Benzo(b)fluoranthene	***1,800***	J
Chrysene	***1,300***	J
Indeno(1,2,3-cd)pyrene	***1,000***	J

Sample Location	TP-114
Sample ID	TP-114-SS
Sample Date	12/13/12
Lithological Layer	Fill/Top
Sample Depth	0 to 2
Polychlorinated Biphenyls	
Aroclor-1254	1,100

	NYSDEC Subpart 375-6 Unrestricted Use Soil Cleanup Objective	*NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Public Health Residential*	*NYSDEC Subpart 375-6 Restricted Use Soil Cleanup Objective Protection of Groundwater*
Semi-Volatile Organic Compounds (SVOCs) (µg/kg)			
Benzo(a)anthracene	1,000	1000	1000
Benzo(a)pyrene	1,000	1000	22000
Benzo(b)fluoranthene	1,000	1000	1700
Chrysene	1,000	1000	1000
Indeno(1,2,3-cd)pyrene	500	500	8200
Pesticides (µg/kg)			
4,4'-DDD	3.3	2600	14000
4,4'-DDE	3.3	1800	17000
4,4'-DDT	3.3	1700	136000
alpha-Chlordane	94	910	2900
Dieldrin	5	39	100
Polychlorinated Biphenyls (µg/kg)			
Aroclor-1254	100	1000	3200
Aroclor-1260	100	1000	3200

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SVOC'S, PESTICIDES AND PCBS DETECTED ABOVE RESIDENTIAL SCOs

FIGURE NO.
2-2
PROJECT NO.
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LEGEND

EXTENT OF COAL ASH

0 50 100

SCALE IN FEET

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ESTIMATED EXTENT OF COAL ASH

FIGURE NO.
2-3
PROJECT NO.
140359

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LEGEND

- PROPOSED EXCAVATION AREA
- TP-108 — TEST PIT LOCATION
- EXTENT OF COAL ASH

0 50 100

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ALTERNATIVE B1 - EXCAVATION AREAS FOR RESIDENTIAL USE

FIGURE NO.
4-1
PROJECT NO.
140359

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LEGEND

- PROPOSED EXCAVATION AREA
- TP-108 — TEST PIT LOCATION
- EXTENT OF COAL ASH

0 50 100

SCALE IN FEET

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ALTERNATIVE B2 - EXCAVATION AREAS FOR RESIDENTIAL USE

FIGURE NO.
4-2
PROJECT NO.
140359

LEGEND

- PROPOSED EXCAVATION AREA
- TP-108 — TEST PIT LOCATION
- EXTENT OF COAL ASH

0 50 100

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ALTERNATIVE C - EXCAVATION AREAS FOR UNRESTRICTED USE

FIGURE NO. **4-3**

PROJECT NO. 140359

0 100 200

SCALE IN FEET

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ALTERNATIVE D1
REZONING AREAS

FIGURE NO.
4-4
PROJECT NO.
140359

LEGEND

- PROPOSED EXCAVATION AREA
- LIMIT OF PROPOSED SOIL CAP
- TP-108 TEST PIT LOCATION
- EXTENT OF COAL ASH

0 50 100

SCALE IN FEET

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ALTERNATIVE D1-LIMITED EXCAVATION AREAS AND CAP AREA

FIGURE NO.
4-5
PROJECT NO.
140359

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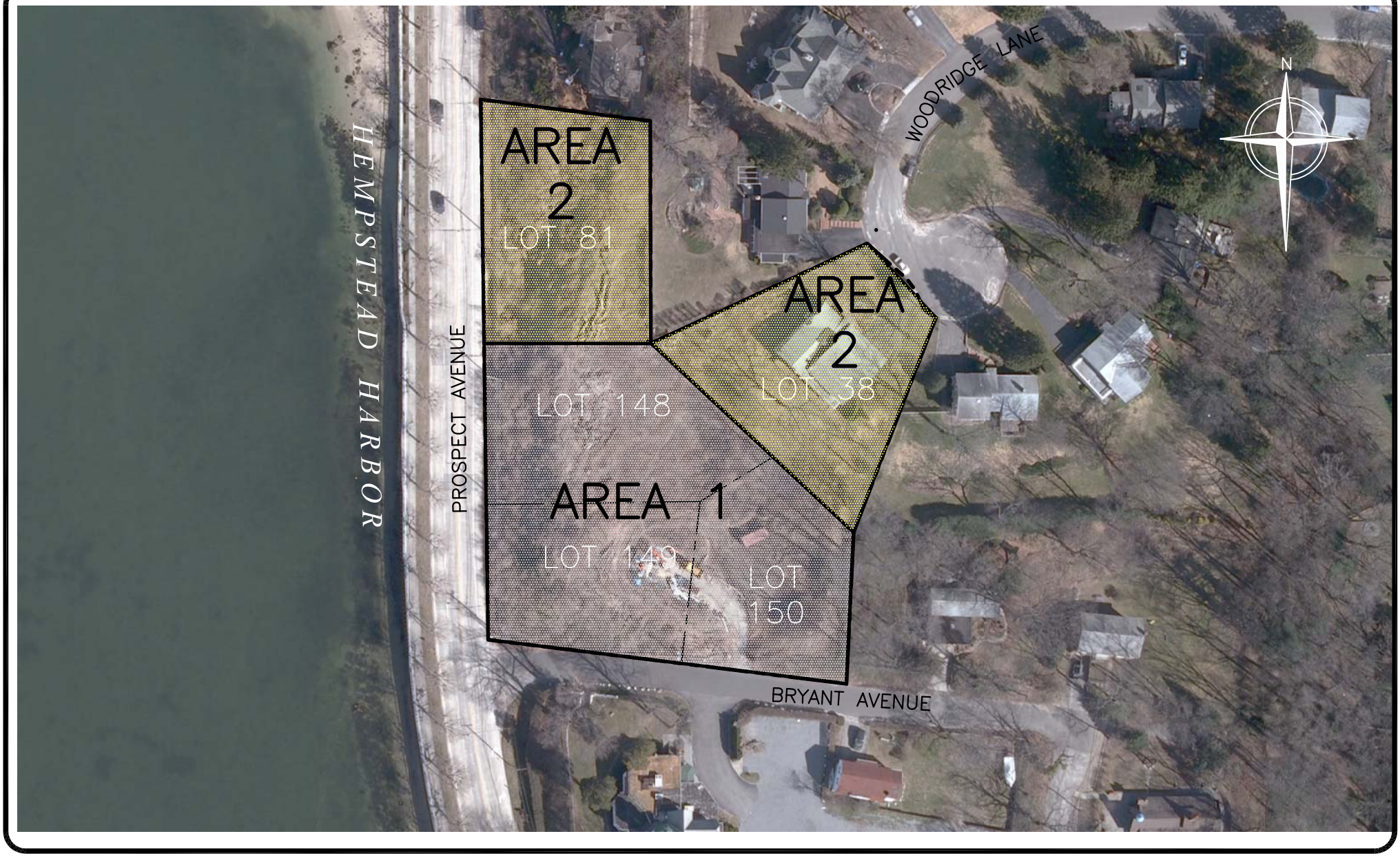

0 100 200

SCALE IN FEET

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ALTERNATIVE D2
REZONING AREAS

FIGURE NO.
4-6
PROJECT NO.
140359

LEGEND

- PROPOSED EXCAVATION AREA
- LIMIT OF PROPOSED SOIL CAP
- TP-108 — TEST PIT LOCATION
- EXTENT OF COAL ASH

0 50 100

SCALE IN FEET

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CORNERSTONE ENGINEERING GROUP, LLC

SAEID JALAYER / KNAUF SHAW
34 WOODRIDGE LANE (LOTS 38, 81, 148, 149 AND 150
SEA CLIFF, NEW YORK
ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE D2 - LIMITED EXCAVATION AREAS AND CAP AREA

FIGURE NO.
4-7
PROJECT NO.
140359

File: X:\PROJECTS\KNAUF SHAW\100498-130451\Project Drawings\MIKNSSSP-27.dwg Layout: Layout1 User: Diane.MacDowell May 30, 2014 - 3:30pm

0 100 200

SCALE IN FEET

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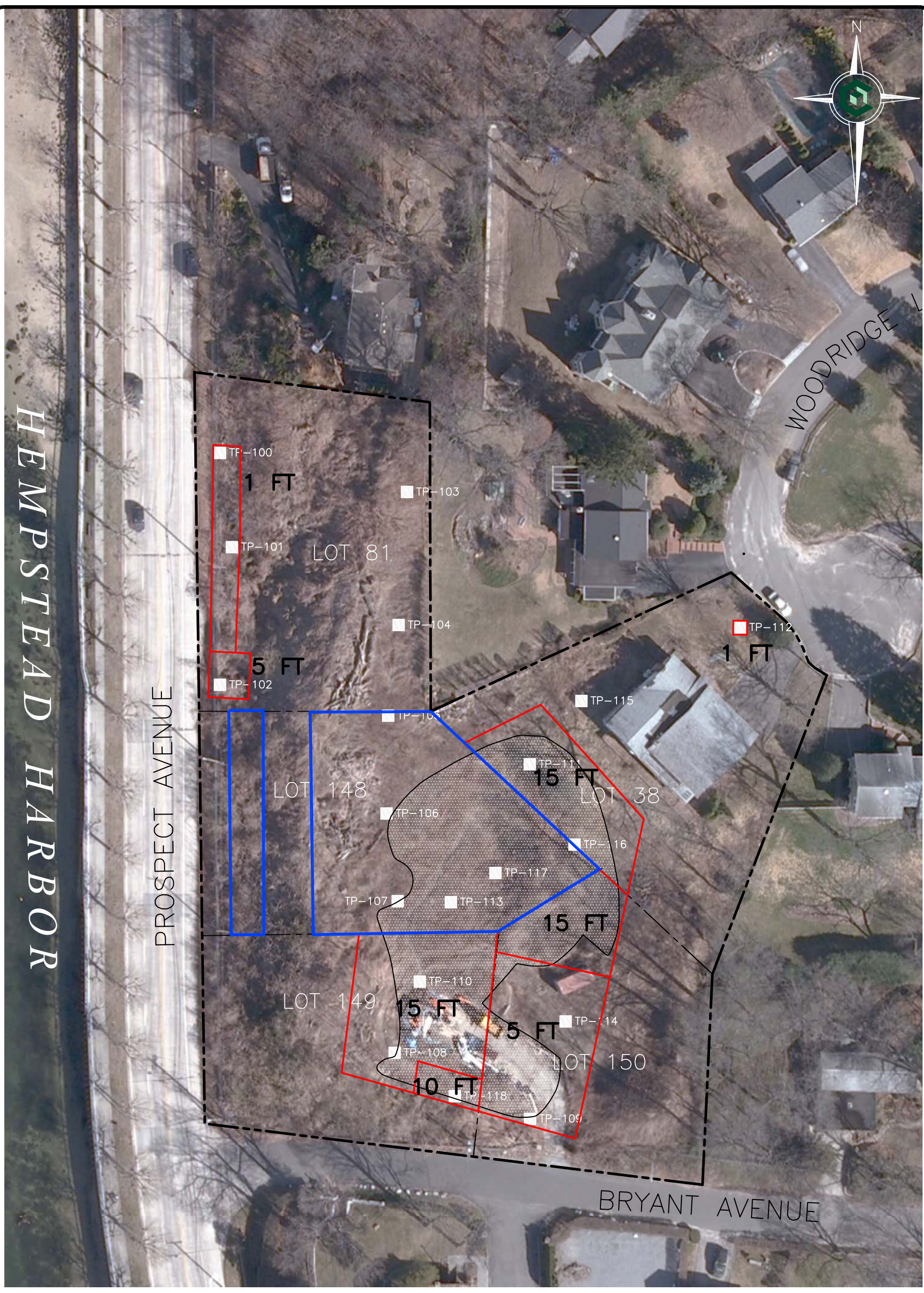
34 WOODRIDGE LANE (LOTS 38, 81, 148, 149 AND 150)
SEA CLIFF, NEW YORK
ALTERNATIVE ANALYSIS REPORT
ALTERNATIVE D3
REZONING AREAS

FIGURE NO.
4-8
PROJECT NO.
140359



LEGEND

- PROPOSED EXCAVATION AREA
- LIMIT OF PROPOSED SOIL CAP
- TP-108 — TEST PIT LOCATION
- EXTENT OF COAL ASH

0 50 100

SCALE IN FEET

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ALTERNATIVE ANALYSIS REPORT

ALTERNATIVE D3 - LIMITED EXCAVATION AREAS AND CAP AREA

FIGURE NO.
4-9
PROJECT NO.
140359

File: X:\PROJECTS\KNAUF SHAW\100498-130451\Project Drawings\MIKNSSSP-24.dwg Layout: Layout1 User: Diane.MacDowell Jun 02, 2014 - 3:22pm

APPENDIX A

ANALYTICAL RESULTS OF COAL ASH WASTE CHARACTERIZATION

Technical Report

prepared for:

Applemon Corporation
151 S. Mountain Road
New City NY, 10956
Attention: Fuad Adib

Report Date: 05/01/2014
Client Project ID: 397 Prospect Ave.
York Project (SDG) No.: 14D0996

Report Date: 05/01/2014
Client Project ID: 397 Prospect Ave.
York Project (SDG) No.: 14D0996

Applemon Corporation
151 S. Mountain Road
New City NY, 10956
Attention: Fuad Adib

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on April 24, 2014 and listed below. The project was identified as your project: **397 Prospect Ave.**.

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Notes section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the attachment to this report, and case narrative if applicable.

The results of the analyses, which are all reported on dry weight basis (soils) unless otherwise noted, are detailed in the following pages.

Please contact Client Services at 203.325.1371 with any questions regarding this report.

York Sample ID	Client Sample ID	Matrix	Date Collected	Date Received
14D0996-01	SS-1	Soil	04/23/2014	04/24/2014

General Notes for York Project (SDG) No.: 14D0996

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All samples were received in proper condition for analysis with proper documentation, unless otherwise noted.
6. All analyses conducted met method or Laboratory SOP requirements. See the Qualifiers and/or Narrative sections for further information.
7. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
8. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by York.

Approved By: 

Date: 05/01/2014

Benjamin Gulizia
Laboratory Director

Sample Information

Client Sample ID: SS-1 **York Sample ID:** 14D0996-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
14D0996	397 Prospect Ave.	Soil	April 23, 2014 3:00 pm	04/24/2014

Semi-Volatiles, TCLP RCRA Target List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 3510C/1311

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
1319-77-3	Cresols, total	ND		ug/L	7.40	30.0	1	EPA 8270D/1311	04/28/2014 19:00	04/29/2014 17:23	SR
106-46-7	1,4-Dichlorobenzene	ND		ug/L	6.45	10.0	1	EPA 8270D/1311	04/28/2014 19:00	04/29/2014 17:23	SR
121-14-2	2,4-Dinitrotoluene	ND		ug/L	4.73	10.0	1	EPA 8270D/1311	04/28/2014 19:00	04/29/2014 17:23	SR
118-74-1	Hexachlorobenzene	ND		ug/L	5.91	10.0	1	EPA 8270D/1311	04/28/2014 19:00	04/29/2014 17:23	SR
87-68-3	Hexachlorobutadiene	ND		ug/L	6.62	10.0	1	EPA 8270D/1311	04/28/2014 19:00	04/29/2014 17:23	SR
67-72-1	Hexachloroethane	ND		ug/L	7.26	10.0	1	EPA 8270D/1311	04/28/2014 19:00	04/29/2014 17:23	SR
95-48-7	2-Methylphenol	ND		ug/L	1.71	10.0	1	EPA 8270D/1311	04/28/2014 19:00	04/29/2014 17:23	SR
65794-96-9	3- & 4-Methylphenols	ND		ug/L	7.43	20.0	1	EPA 8270D/1311	04/28/2014 19:00	04/29/2014 17:23	SR
98-95-3	Nitrobenzene	ND		ug/L	3.93	10.0	1	EPA 8270D/1311	04/28/2014 19:00	04/29/2014 17:23	SR
87-86-5	Pentachlorophenol	ND		ug/L	7.53	10.0	1	EPA 8270D/1311	04/28/2014 19:00	04/29/2014 17:23	SR
110-86-1	Pyridine	ND		ug/L	6.37	10.0	1	EPA 8270D/1311	04/28/2014 19:00	04/29/2014 17:23	SR
95-95-4	2,4,5-Trichlorophenol	ND		ug/L	7.22	10.0	1	EPA 8270D/1311	04/28/2014 19:00	04/29/2014 17:23	SR
88-06-2	2,4,6-Trichlorophenol	ND		ug/L	6.54	10.0	1	EPA 8270D/1311	04/28/2014 19:00	04/29/2014 17:23	SR

CAS No.	Surrogate Recoveries	Result	Acceptance Range
367-12-4	*Surrogate: 2-Fluorophenol*	*37.0 %*	*10-53*
4165-62-2	*Surrogate: Phenol-d5*	*25.1 %*	*10-39*
4165-60-0	*Surrogate: Nitrobenzene-d5*	*58.0 %*	*10-120*
321-60-8	*Surrogate: 2-Fluorobiphenyl*	*57.3 %*	*10-108*
5175-83-7	*Surrogate: 2,4,6-Tribromophenol*	*45.5 %*	*10-150*
1718-51-0	*Surrogate: Terphenyl-d14*	*62.8 %*	*10-143*

Pesticides, TCLP RCRA List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 3510C/1311

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
8001-35-2	Toxaphene	ND		ug/L	0.526	0.526	1	EPA 8081B/1311	04/29/2014 05:46	04/29/2014 19:41	JW
72-43-5	Methoxychlor	ND		ug/L	0.0526	0.0526	1	EPA 8081B/1311	04/29/2014 05:46	04/29/2014 19:41	JW
1024-57-3	Heptachlor epoxide	ND		ug/L	0.0105	0.0105	1	EPA 8081B/1311	04/29/2014 05:46	04/29/2014 19:41	JW
76-44-8	Heptachlor	ND		ug/L	0.0105	0.0105	1	EPA 8081B/1311	04/29/2014 05:46	04/29/2014 19:41	JW
58-89-9	gamma-BHC (Lindane)	ND		ug/L	0.0105	0.0105	1	EPA 8081B/1311	04/29/2014 05:46	04/29/2014 19:41	JW
72-20-8	Endrin	ND		ug/L	0.0105	0.0105	1	EPA 8081B/1311	04/29/2014 05:46	04/29/2014 19:41	JW
57-74-9	Chlordane, total	ND		ug/L	0.0421	0.0421	1	EPA 8081B/1311	04/29/2014 05:46	04/29/2014 19:41	JW

CAS No.	Surrogate Recoveries	Result	Acceptance Range
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*49.4 %*	*30-120*
2051-24-3	*Surrogate: Decachlorobiphenyl*	*71.1 %*	*30-120*

Sample Information

Client Sample ID: SS-1 **York Sample ID:** 14D0996-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
14D0996	397 Prospect Ave.	Soil	April 23, 2014 3:00 pm	04/24/2014

Polychlorinated Biphenyls (PCB)

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 3550C

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
12674-11-2	Aroclor 1016	ND		mg/kg dry	0.0234	0.0234	1	EPA 8082A	04/25/2014 19:00	04/29/2014 01:34	JW
11104-28-2	Aroclor 1221	ND		mg/kg dry	0.0234	0.0234	1	EPA 8082A	04/25/2014 19:00	04/29/2014 01:34	JW
11141-16-5	Aroclor 1232	ND		mg/kg dry	0.0234	0.0234	1	EPA 8082A	04/25/2014 19:00	04/29/2014 01:34	JW
53469-21-9	Aroclor 1242	ND		mg/kg dry	0.0234	0.0234	1	EPA 8082A	04/25/2014 19:00	04/29/2014 01:34	JW
12672-29-6	Aroclor 1248	ND		mg/kg dry	0.0234	0.0234	1	EPA 8082A	04/25/2014 19:00	04/29/2014 01:34	JW
11097-69-1	Aroclor 1254	ND		mg/kg dry	0.0234	0.0234	1	EPA 8082A	04/25/2014 19:00	04/29/2014 01:34	JW
11096-82-5	Aroclor 1260	ND		mg/kg dry	0.0234	0.0234	1	EPA 8082A	04/25/2014 19:00	04/29/2014 01:34	JW
1336-36-3	* Total PCBs	ND		mg/kg dry	0.0234	0.0234	1	EPA 8082A	04/25/2014 19:00	04/29/2014 01:34	JW

	Surrogate Recoveries	Result	Acceptance Range
877-09-8	*Surrogate: Tetrachloro-m-xylene*	*45.8 %*	*30-140*
2051-24-3	*Surrogate: Decachlorobiphenyl*	*42.3 %*	*30-140*

Arsenic, SPLP by EPA 6010

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 3010A/1312

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7440-38-2	**Arsenic**	**0.0360**		mg/L	0.00400	0.00400	1	EPA 6010C/1312	04/29/2014 15:40	04/30/2014 02:13	MW

Metals, RCRA

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 3050B

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7440-38-2	**Arsenic**	**109**		mg/kg dry	1.37	1.37	1	EPA 6010C	04/25/2014 14:30	04/25/2014 21:57	MW
7440-39-3	**Barium**	**552**		mg/kg dry	1.37	1.37	1	EPA 6010C	04/25/2014 14:30	04/25/2014 21:57	MW
7440-43-9	**Cadmium**	**2.21**		mg/kg dry	0.412	0.412	1	EPA 6010C	04/25/2014 14:30	04/25/2014 21:57	MW
7440-47-3	**Chromium**	**23.8**		mg/kg dry	0.687	0.687	1	EPA 6010C	04/25/2014 14:30	04/25/2014 21:57	MW
7439-92-1	**Lead**	**10.6**		mg/kg dry	0.412	0.412	1	EPA 6010C	04/25/2014 14:30	04/25/2014 21:57	MW
7782-49-2	Selenium	ND		mg/kg dry	1.37	1.37	1	EPA 6010C	04/25/2014 14:30	04/25/2014 21:57	MW
7440-22-4	Silver	ND		mg/kg dry	0.687	0.687	1	EPA 6010C	04/25/2014 14:30	04/25/2014 21:57	MW

Metals, TCLP RCRA

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 3010A/1311

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7440-38-2	**Arsenic**	**0.124**		mg/L	0.004	0.004	1	EPA 6010C/1311	04/28/2014 14:31	04/29/2014 00:41	MW
7440-39-3	**Barium**	**2.23**		mg/L	0.010	0.010	1	EPA 6010C/1311	04/28/2014 14:31	04/29/2014 00:41	MW
7440-43-9	Cadmium	ND		mg/L	0.003	0.003	1	EPA 6010C/1311	04/28/2014 14:31	04/29/2014 00:41	MW
7440-47-3	**Chromium**	**0.005**		mg/L	0.005	0.005	1	EPA 6010C/1311	04/28/2014 14:31	04/29/2014 00:41	MW
7439-92-1	Lead	ND		mg/L	0.003	0.003	1	EPA 6010C/1311	04/28/2014 14:31	04/29/2014 00:41	MW
7782-49-2	Selenium	ND		mg/L	0.010	0.010	1	EPA 6010C/1311	04/28/2014 14:31	04/29/2014 00:41	MW

Sample Information

Client Sample ID: SS-1 **York Sample ID:** 14D0996-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
14D0996	397 Prospect Ave.	Soil	April 23, 2014 3:00 pm	04/24/2014

Metals, TCLP RCRA

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 3010A/1311

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7440-22-4	Silver	ND		mg/L	0.005	0.005	1	EPA 6010C/1311	04/28/2014 14:31	04/29/2014 00:41	MW

Mercury by 7470/7471

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA SW846-7471

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7439-97-6	Mercury	ND		mg/kg dry	0.0454	0.0454	1	EPA 7471B	05/01/2014 10:20	05/01/2014 17:03	AA

Mercury, TCLP

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA SW846-7470

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
7439-97-6	Mercury	ND		mg/L	0.0000390	0.000200	1	EPA 7470/1311	04/29/2014 10:31	04/29/2014 16:59	AA

Ignitability

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: Analysis Preparation

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	* Ignitability	Non-Ignit.		-	1	1	1	EPA 1030P	04/28/2014 10:06	04/28/2014 10:06	AA

Paint Filter Test

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: Analysis Preparation

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	* Paint Filter Test	No Free Liquid		-	0	0	1	EPA 9095A	04/28/2014 10:07	04/28/2014 16:54	AA

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	*** % Solids**	**72.8**		%	0.100	0.100	1	SM 2540G	05/01/2014 08:59	05/01/2014 13:56	ALD

Corrosivity

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: Analysis Preparation

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	pH	**7.03**	HT-pH	pH units		0.500	1	EPA 9045D	05/01/2014 09:19	05/01/2014 14:10	MF

Reactivity-Cyanide

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: Analysis Preparation

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst

Sample Information

Client Sample ID: SS-1 **York Sample ID:** 14D0996-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
14D0996	397 Prospect Ave.	Soil	April 23, 2014 3:00 pm	04/24/2014

Reactivity-Cyanide

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: Analysis Preparation

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Reactivity - Cyanide	ND		mg/kg	0.250	0.250	1	EPA SW-846 Ch.7.3.3	05/01/2014 13:13	05/01/2014 15:39	AD

Reactivity-Sulfide

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: Analysis Preparation

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Reactivity - Sulfide	**24.0**		mg/kg	15.0	15.0	1	EPA SW-846 Ch.7.3.4	05/01/2014 13:16	05/01/2014 15:48	AD

SPLP Extraction for METALS EPA 1312

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA SW 846-1312 SPLP for Extr. for Metals

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	SPLP Extraction	Completed		N/A	1.00	1.00	1	EPA 1312	04/25/2014 21:00	04/28/2014 17:52	KK

TCLP Extraction for METALS EPA 1311

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA SW 846-1311 TCLP ext. for metals

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	TCLP Extraction	Completed		N/A	1.00	1.00	1	EPA 1311	04/25/2014 21:00	04/28/2014 17:53	KK

TCLP Extraction for SVOCS/PEST/HERB

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA SW 846-1311 TCLP extr. for SVOA/PEST/HERBS

CAS No.	Parameter	Result	Flag	Units	LOD/MDL	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	TCLP Extraction	Completed		N/A	1.00	1.00	1	EPA 1311	04/25/2014 21:00	04/28/2014 17:53	KK

Notes and Definitions

S-AC Acid surrogate recovery outside of control limits. The data was accepted based on valid recovery of remaining two acid surrogates.

PF-01 No Free Liquid

IGN-01 Non-Ignit.

HT-pH HOLDING TIME EXCEEDED. Samples for pH must be measured in the field or within 15 minutes of sample collection.

EXT-COMP Completed

---

*	Analyte is not certified or the state of the samples origination does not offer certification for the Analyte.
ND	NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL)
RL	REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve.
LOQ	LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon NELAC 2009 Standards and applies to all analyses.
LOD	LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846.
MDL	METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods.
Reported to	This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only.
NR	Not reported
RPD	Relative Percent Difference
Wet	The data has been reported on an as-received (wet weight) basis
Low Bias	Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
High Bias	High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
Non-Dir.	Non-dir. flag (Non-Directional Bias) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons.

If EPA SW-846 method 8270 is included herein it is noted that the target compound N-nitrosodiphenylamine (NDPA) decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine (DPA). These results could actually represent 100% DPA, 100% NDPA or some combination of the two.
For this reason, York reports the combined result for n-nitrosodiphenylamine and diphenylamine for either of these compounds as a combined concentration as Diphenylamine.

If Total PCBs are detected and the target aroclors reported are "Not detected", the Total PCB value is reported due to the presence of either or both Aroclors 1262 and 1268 which are non-target aroclors for some regulatory lists.

2-chloroethylvinyl ether readily breaks down under acidic conditions. Samples that are acid preserved, including standards will exhibit breakdown. The data user should take note.

Certification for pH is no longer offered by NYDOH ELAP.

Semi-Volatile and Volatile analyses are reported down to the LOD/MDL, with values between the LOD/MDL and the LOQ being "J" flagged as estimated results.

YORK ANALYTICAL LABORATORIES INC
120 RESEARCH DR.
STRATFORD, CT 06615
(203) 325-1371
FAX (203) 357-0166

Field Chain-of-Custody Record

NOTE: York's Std. Terms & Conditions are listed on the back side of this document.
This document serves as your written authorization to York to proceed with the analyses requested and your signature binds you to York's Std. Terms & Conditions.

York Project No. 14009961

YOUR Information
Company: Applemon
Address: Corporation
Phone No.:
Contact Person: Fuad Adib
E-Mail Address:

Report To:
Company: Same
Address:
Phone No.:
Attention: Same
E-Mail Address:

Invoice To:
Company: Same
Address:
Phone No.:
Attention: Same
E-Mail Address:

YOUR Project ID
397 Prospect Ave

Purchase Order No.
—

Samples from: CT ___ NY / NJ ___

Turn-Around Time
- RUSH - Same Day ☐
- RUSH - Next Day ☐
- RUSH - Two Day ☐
- RUSH - Three Day ☐
- RUSH - Four Day ☐
- Standard(5-7 Days) ☒

Report Type
- Summary Report ___
- Summary w/ QA Summary ___
- CT RCP Package ___
- CTRCP DQA/DUE Pkg ___
- NY ASP A Package ___
- NY ASP B Package ___
- NJDEP Red. Deliv. ___

Electronic Data Deliverables (EDD)
- Simple Excel ___
- NYSDEC EQuIS ___
- EQuIS (std) ___
- EZ-EDD (EQuIS) ___
- NJDEP SRP HazSite EDD ___
- GIS/KEY (std) ___
- Other ___
- **York Regulatory Comparison**
- **Excel Spreadsheet** ___

Compare to the following Regs. (please fill in):

Print Clearly and Legibly. All Information must be complete. Samples will NOT be logged in and the turn-around time clock will not begin until any questions by York are resolved.

Fuad F. Adib
Samples Collected/Authorized By (Signature)
Fuad F. Adib
Name (printed)

Matrix Codes	
S -	soil
Other -	specify(oil, etc.)
WW -	wastewater
GW -	groundwater
DW -	drinking water
Air-A -	ambient air
Air-SV -	soil vapor

Volatiles		Semi-Vols.	Pest/PCB/Herb	Metals	Misc. Org.	Full Lists	Misc.
8260 full	TICs	8270 or 625	8082PCB	RCRA8	TPH GRO	Pri.Poll.	Corrosivity
624	Site Spec.	STARS list	8081Pest	PP13 list	TPH DRO	TCL Organics	Reactivity
STARS list	Nassau Co.	BN Only	8151Herb	TAL	CT ETPH	TAL Met/CN	Ignitability
BTEX	Suffolk Co.	Acids Only	CT RCP	CT15 list	NY 310-13	Full TCLP	Flash Point
MTBE	Ketones	PAH list	App. IX	TAGM list	TPH 1664	Full App. IX	Sieve Anal.
TCL list	Oxygenates	TAGM list	Site Spec.	NJDEP list	Air TO14A	Part 360-Routine	Heterotrophs
TAGM list	TCLP list	CT RCP list	SPLP or TCLP	Total	Air TO15	Part 360-Baseline	TOX
CT RCP list	524.2	TCL list	TCLP Pest	Dissolved	Air STARS	Part 360-Expanded No Dioxins/Furans	BTU lb.
Arom. only	502.2	NJDEP list	TCLP Herb	SPLP or TCLP	Air VPH	Part 360-Expanded Full List	Aquatic Tox.
Halog.only	NJDEP list	App. IX	Chlordane	Indiv. Metals	Air TICs	NYCDEP Sewer	TOC
App.IX list	SPLP or TCLP	TCLP BNA	608 Pest	LIST Below	Methane	NYSDEC Sewer	Asbestos
8021B list		SPLP or TCLP	608 PCB		Helium	TAGM	Silica

Sample Identification	Date/Time Sampled	Sample Matrix	Choose Analyses Needed from the Menu Above and Enter Below	Container Description(s)
SS-1	April 23, 14	Other - Ash	Waste Characterization per attached list,	8 oz.
			including: TCLP (SVOC, Pesticides, Metals)	
			PCB's	
			Mercury	
			RCRA Metals	
			SPLP - As	
			Paint filter	
			IRC	

Comments

Preservation Check those Applicable
Special Instructions
Field Filtered ☐
Lab to Filter ☐

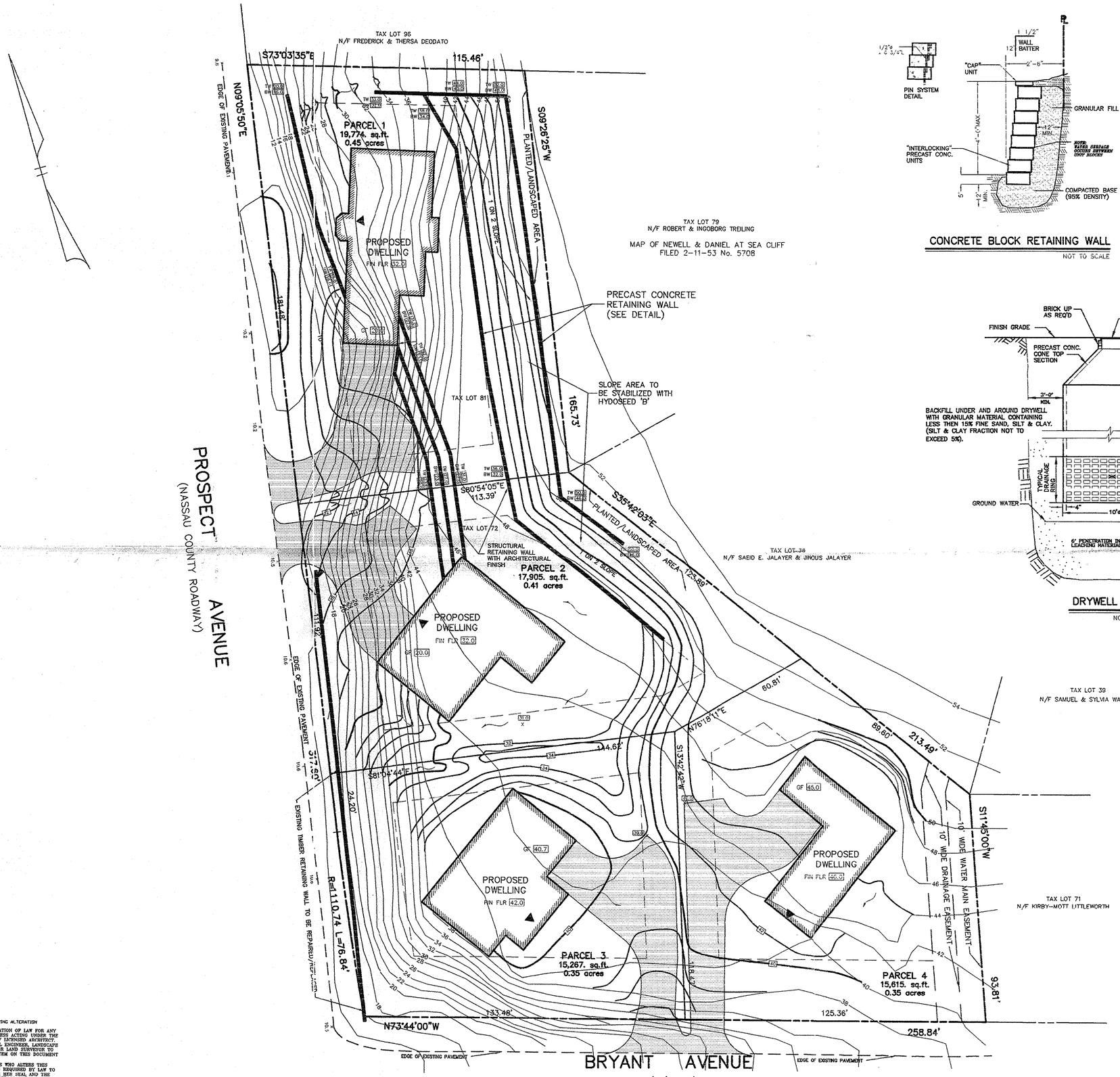
4°C / Frozen ___ HCl ___ MeOH ___ HNO_3 ___ H_2SO_4 ___ NaOH ___
ZnAc ___ Ascorbic Acid ___ Other ___

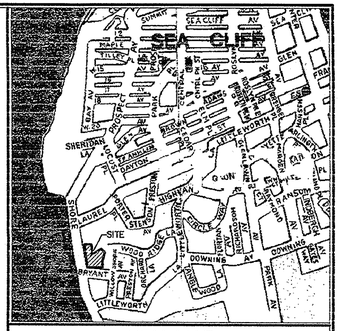
Fuad Adib	4/24/14	Chris	4-24-14 1240
Samples Relinquished By	Date/Time	Samples Received By	Date/Time
		Pfaee	4-24-14 1530
Samples Relinquished By	Date/Time	Samples Received in LAB by	Date/Time

Temperature on Receipt 3.7 °C

APPENDIX B

PROPOSED REDEVELOPMENT SITE PLAN





CONCRETE BLOCK RETAINING WALL

NOT TO SCALE

DIMENSIONAL CHARACTERISTICS

WEIGHT: 82 LBS./UNIT
FACE AREA: 2/3 SQ.FT.
UNIT SIZE: 6"H, 16"W, 12"D
COLORS: GRAY, TAN, BROWN AS SELECTED BY OWNER
CONCRETE RETAINING WALL MANUFACTURED BY VERSA-LOK RETAINING WALL SYSTEMS OR APPROVED EQUAL.

DRYWELL DETAIL

NOT TO SCALE

NOTE:

DRYWELLS TO BE PROVIDED FOR ROOF RUNOFF FOR PROPOSED DWELLINGS (1 L.F. OF EFFECTIVE DEPTH OF 8'ø D.W. FOR EACH 250 S.F. OF ROOF AREA OR 1 L.F. OF EFFECTIVE DEPTH OF 10'ø D.W. FOR EACH 400 S.F. OF ROOF AREA)

TYPICAL PLOT PLAN

NOT TO SCALE

KEY MAP

ASPHALT PAVEMENT

NOT TO SCALE

HYDOSEED 'B' @ 170#/ACRE (ECOLOGY MIX)

80% RELIANT HARD FESCUE
20% JAMESTOWN II CHEWINGS FESCUE

LEGEND

—— 50 ——	NCDPW TOPOGRAPHIC INFORMATION 1957

LEGEND

FIN FLR	CONCEPTUAL FINISHED FLOOR ELEVATION
G.F.	CONCEPTUAL GARAGE FLOOR ELEVATION
▼	INDICATES FRONT OF DWELLING UNIT ORIENTED TOWARD STREET
46.0	PROPOSED ELEVATION IN FEET
▬	PRECAST CONCRETE RETAINING WALL

NOTES

1. NASSAU COUNTY TAX MAP. SECTION 21 BLOCK L LOT(S) 72 & 81
2. TOPOGRAPHIC INFORMATION SHOWN IS IN NASSAU COUNTY DATUM AND IS BASED ON AVAILABLE NCDPW DATA THAT HAS BEEN PARTIALLY VERIFIED IN FIELD.
3. ZONING DISTRICT: RESIDENCE B (10,000 S.F.)
4. APPLICANT: SAEID E. JALAYER
   31 MARY PITKIN PATH
   SHOREHAM, NEW YORK 11766
5. TOTAL MAP AREA: 68,562 S.F. (1.57 ACRES)

GRADING AND LOT LINES REVISED 2-11-05
ADDITIONAL NOTES ADDED 1-5-05

PROSPECT SHORE ESTATES

BRYANT AND PROSPECT AVENUES
INC. VILLAGE OF SEA CLIFF
NASSAU COUNTY, NEW YORK

FINAL PLAN

JOSEPH E. DIOGUARDI Jr.
ENGINEER/LAND SURVEYOR
110 BAYVILLE AVENUE
BAYVILLE, NEW YORK 11709
PHONE/FAX (516) 628 – 9291

SCALE: 1" = 20'
DATE: 10-18-04

SEC 21 BLK L LOTS 72 & 81

DRAWING ALTERATION

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF LICENSED ARCHITECT, PROFESSIONAL ENGINEER, LANDSCAPE ARCHITECT, OR LAND SURVEYOR TO ALTER ANY ITEM ON THIS DOCUMENT IN ANY WAY.

ANY LICENSEE WHO ALTERS THIS DOCUMENT IS REQUIRED BY LAW TO AFFIX HIS OR HER SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS OR HER SIGNATURE AND SPECIFIC DESCRIPTION OF THE ALTERATIONS.

SEC 21 BLK L LOTS 72 & 81