



3855 North Ocoee Street, Suite 200
Cleveland, TN 37312

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November 30, 2011

Mr. Patrick Bowe
Director
Remediation Division
Bureau of Water Protection and Land Reuse
State of Connecticut Department of Energy and Environmental Protection
79 Elm Street
Hartford, CT 06106

Re: Property-Specific Remedial Action Report
Newhall Street Neighborhood
222 Morse Street, Block K
Hamden, Connecticut 06517

Dear Mr. Bowe:

Enclosed please find the Property-Specific Remedial Action Report (RAR) prepared for the property located at 222 Morse Street in Hamden, Connecticut. The Property-Specific RAR summarizes the remediation and restoration activities conducted at the property as required by Consent Order No. SRD-128. Remediation and restoration of this property are complete and were implemented in compliance with the Remedy Selection Plan, and the Generic Remedial Action Plan (RAP) approved by the Connecticut Department of Energy and Environmental Protection (DEEP).

Section 2.0 of the enclosed report documents property-specific construction activities that were required due to the extent of fill encountered or other field conditions. Please note that although a Property-Specific Remedial Action Plan was not prepared for this property, all field activities were completed pursuant to the approved Generic RAP and/or with DEEP oversight and approval. Olin hereby submits this Property-Specific RAR for DEEP approval. As noted below and as required by the Remedy Selection Plan, a copy of the enclosed report has also been provided to the property owner.

Please contact me at (423) 336-4540 if you have any questions regarding this matter.

Sincerely,
OLIN CORPORATION

A handwritten signature in black ink, appearing to read "David M. Share".

David M. Share
Director, Environmental Remediation

cc: Wayne MaGill – 6212 Stefland Drive, Seaford, Delaware 19973
Curt Richards – Olin
Carrie Hunt – Olin
Nelson Walter – AMEC
Robert Bell – DEEP
Ray Frigon – DEEP
Richard Pearce – Newhall Street Neighborhood Community Liaison
Robert Labulis – Town of Hamden Building Department

**PROPERTY-SPECIFIC REMEDIAL ACTION REPORT
222 MORSE STREET**

**NON-PUBLIC PROPERTIES
NEWHALL STREET NEIGHBORHOOD
HAMDEN, CONNECTICUT**

Prepared for:



Olin Corporation
3855 North Ocoee Street, Suite 200
Cleveland, TN 37312

Prepared by:



AMEC Environment & Infrastructure, Inc.
1090 Elm Street, Suite 201
Rocky Hill, Connecticut 06067

November 30, 2011

AMEC Project Number: 6107110004/95

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A handwritten signature in black ink that reads "Nelson Walter".

Nelson Walter, P.E.
Project Manager

A handwritten signature in black ink that reads "Rod Pendleton".

Rod Pendleton, P.G.
Principal Scientist

DOCUMENT CERTIFICATION

I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, that the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information is punishable as a criminal offense under §53a-157b of the Connecticut General Statutes and any other applicable law.

David M. Share, Director, Environmental Remediation



Chief Executive Officer (or duly authorized representative)
Olin Corporation

DOCUMENT CERTIFICATION

I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, that the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information is punishable as a criminal offense under §53a-157b of the Connecticut General Statutes and any other applicable law.

Nelson Walter, Project Manager



AMEC Environment & Infrastructure, Inc.

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A Photographs

ACRONYMS AND ABBREVIATION

| | |
|--------|---|
| AMEC | AMEC Environment & Infrastructure, Inc. |
| bgs | below ground surface |
| DEEP | Connecticut Department of Energy and Environmental Protection |
| MACTEC | MACTEC Engineering and Consulting, Inc. |
| NPP | non-public properties |
| Olin | Olin Corporation |
| RAP | Remedial Action Plan |
| RAR | Remedial Action Report |
| RSP | Remedy Selection Plan |
| XRF | X-ray fluorescence |

1.0 INTRODUCTION

This Property-Specific Remedial Action Report (RAR) was prepared by AMEC Environment & Infrastructure, Inc. (AMEC) on behalf of Olin Corporation (Olin) for the property located at 222 Morse Street in Hamden, Connecticut. This Property-Specific RAR was prepared based on information obtained during remediation activities conducted at the property during the 2011 construction season. This document provides information about the remediation activities completed for the property, which are required by Consent Order SRD-128 entered into by Olin, the Town of Hamden, the Regional Water Authority, the State Board of Education, and the State of Connecticut Department of Energy and Environmental Protection (DEEP). The Consent Order requires Olin to excavate and remove fill material up to 4 feet below ground surface (bgs) from approximately 230 residential properties within the Consent Order boundary.

Section 1 of this report provides a summary of site history and a general description of the remedy process for the Newhall Street Neighborhood. Section 2 of this report describes the construction activities conducted at 222 Morse Street.

1.1 Regulatory Status

In April 2003, the DEEP issued a Consent Order to Olin, the Town of Hamden, South Central Connecticut Regional Water Authority, and the State Board of Education (DEEP, 2003). The Consent Order requires Olin to investigate and remediate the Non-Public Properties (NPP) within the Consent Order boundary of the Newhall Street Neighborhood.

1.2 Description of Remedy Process

In October 2007, a Final Remedy Selection Plan (RSP) was approved and issued by the Commissioner of the DEEP (DEEP, 2007). The remedy for the NPP within the Consent Order boundary is summarized below:

- Excavation of fill within the top 4 feet;
- Disposition of excavated material at authorized off-site facilities;
- Backfilling of excavated areas with clean soil; and
- Restoration of existing features including landscaping, patios, fencing, driveways, etc. that are disturbed during construction activities.

The Final Design - Generic Remedial Action Plan (RAP) (MACTEC, 2008), was approved by the DEEP and serves as the basis for remedial action activities within the NPP. The Final Design - Generic RAP details remedial construction activities including excavation of fill to a depth of up to four feet, backfilling excavations, disposition of fill and debris, and restoration of disturbed areas. Detailed plans and specifications regarding the remediation are contained in the Generic RAP and other project plans which have been approved by the DEEP. The Final Design - Generic RAP and other plans are available at the Town of Hamden Miller Public Library located at 290

Dixwell Avenue, and on the DEEP website at: at 290 Dixwell Avenue, and on the DEEP website at: <http://www.newhallinfo.org>.

Prior to implementing the approved remedial solution, a Property-Specific RAP was prepared for each property that was known to contain waste fill and was submitted to the property owner and DEEP for approval. The purpose of the Property-Specific RAP was to provide the homeowner with information regarding the planned construction activities, temporary relocation requirements (if necessary), access provisions, an estimated time table to complete the planned work, and a description of plans to restore the property to existing conditions. Although a Property-Specific RAP was not prepared for this property, the property owner signed an Access and Restoration Agreement that allowed Olin to complete excavation activities as required based on observations made in the field and to restore the property to existing conditions.

2.0 PROPERTY-SPECIFIC CONSTRUCTION ACTIVITIES

During the 2011 construction season, Olin completed the excavation, backfill, and restoration of the property in accordance with the Final Design - Generic RAP. Figure 2-1 shows the areas where excavation occurred on the property and the locations of excavation confirmation samples. Excavation confirmation samples were collected in accordance with Section 3.2.3 - Confirmatory Sampling of the Final Design - Generic RAP, including adherence to the sampling frequency requirements. X-ray fluorescence (XRF) excavation confirmation sampling results are presented in Table 2-1.

As indicated in Table 2-1, most confirmation sampling results indicate total lead concentrations less than the criteria of 400 milligrams per kilogram (mg/kg) approved by DEEP in the Final Design - Generic RAP. Several samples collected from the perimeter of the excavated area indicated total lead concentrations that exceeded 400 mg/kg. Additional soil could not be removed from these locations around the perimeter of the house, because continued excavation could jeopardize the integrity of the structure.

The following is a description of changes from the Property-Specific RAP that were necessitated because of field conditions and/or details regarding the marker barrier installed following excavation activities:

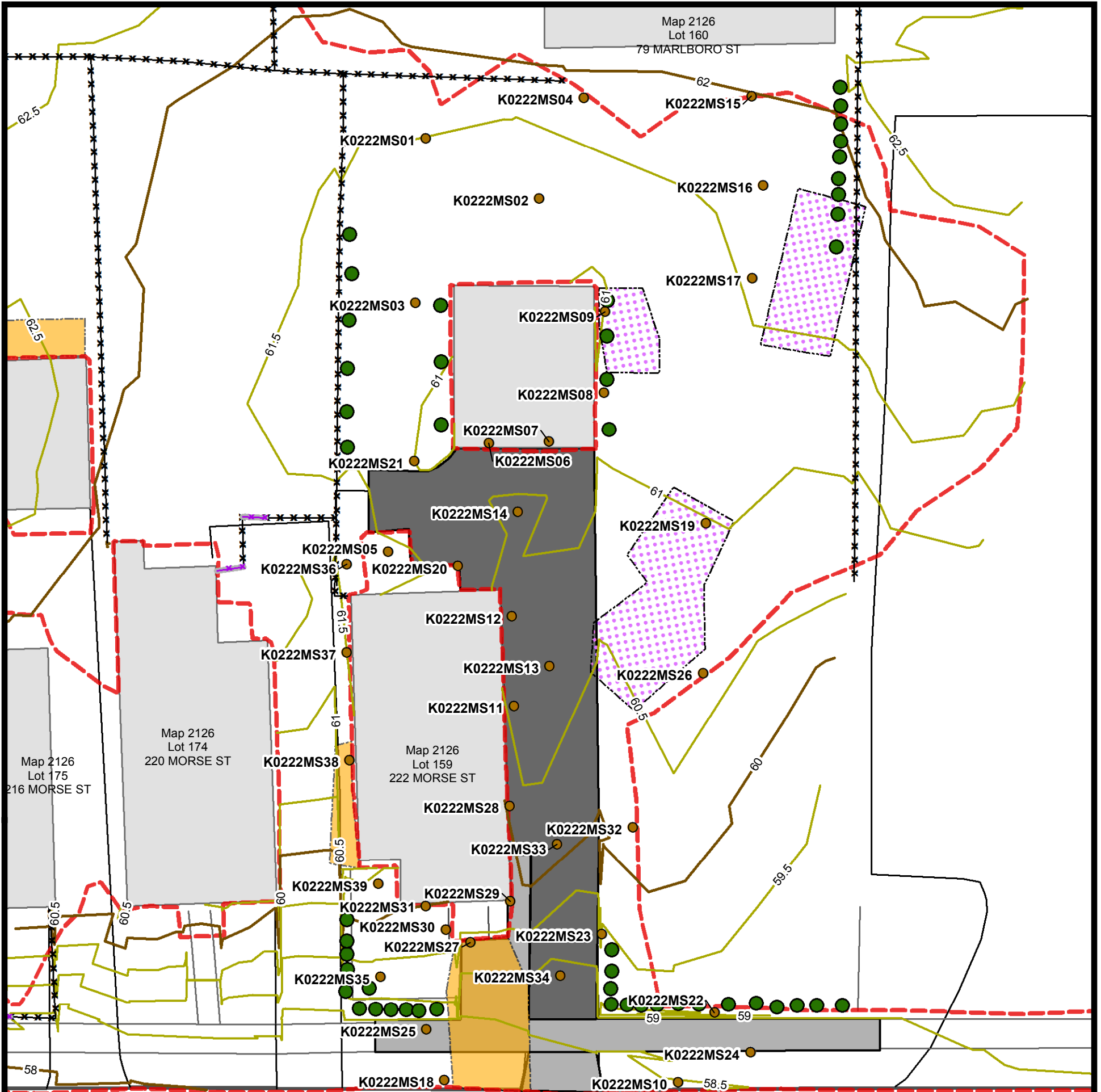
- In some locations, fill material was encountered at greater than 4 feet in depth below ground surface (bgs). This fill material was left in place, covered by an orange geotextile fabric, and backfilled with clean soil in accordance with the Final Design - Generic RAP. Figure 2-1 shows the approximate area of geotextile fabric identifying the presence of fill at a depth greater than 4 feet bgs.
- In some locations, it was necessary to leave fill material in place at depths less than 4 feet bgs in order to avoid jeopardizing the integrity of a structure. This fill material was left in place, covered by a marker barrier (an orange geotextile fabric and/or shotcrete), and backfilled with clean soil in accordance with the Final Design - Generic RAP. Figure 2-1 shows the approximate area of geotextile fabric/shotcrete identifying the presence of fill at a depth less than 4 feet bgs.

Photographs of construction activities and the restored property are presented in Attachment A.

3.0 REFERENCES

- DEEP, 2003. Order No. SRD-128, State Of Connecticut vs. Town Of Hamden, South Central Connecticut Regional Water Authority, State Board Of Education, and Olin Corporation. State of Connecticut Department of Environmental Protection, April 16, 2003.
- DEEP, 2007. Remedy Selection Plan, Newhall Street, Neighborhood Remediation Project. State of Connecticut Department of Environmental Protection, October 2007
- MACTEC, 2008. Final Design - Generic Remedial Action Plan, Non-Public Properties, Newhall Street Neighborhood, Hamden, Connecticut. MACTEC Engineering and Consulting, Inc., August 19, 2008.

FIGURES

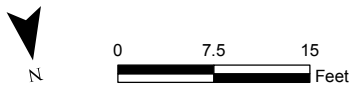


Morse Street

Legend

- Approximate Extent of Marker Barrier Covering Fill < 4 ft bgs Remaining on Property
- Limits of Excavation
- Approximate Extent of Orange Marker Barrier Covering Fill > 4 ft bgs Remaining on Property
- Final Elevation Contour (2-ft interval)
- New Shrub
- New Fence
- New Fence Gate
- Final Elevation Contour (0.5-ft interval)
- New Asphalt Driveway/Sidewalk
- New Concrete Driveway/Sidewalk

Note: All grass areas disturbed by excavation were restored with sod and/or seed/mulch.



Prepared/Date: BRP 11/30/11
Checked/Date: DRP 11/30/11

TABLES

**TABLE 2-1
EXCAVATION CONFIRMATION XRF SAMPLING RESULTS**

**222 MORSE STREET
NEWHALL STREET NEIGHBORHOOD
HAMDEN, CONNECTICUT**

| Location ID | Location Type | Field Sample ID | Sample Date | Top Depth (ft,bgs) | Bottom Depth (ft,bgs) | Parameter | Result | Final Qualifier | Unit of Measure |
|-------------|---------------|-------------------|-------------|--------------------|-----------------------|-----------|--------|-----------------|-----------------|
| K0222MS01EX | PEB | K0222MS-SON0103EX | 08-Jul-11 | 3 | 3 | Lead | 168 | | MG/KG |
| K0222MS02EX | PEB | K0222MS-SON0202EX | 08-Jul-11 | 2 | 2 | Lead | 50 | U | MG/KG |
| K0222MS03EX | PEB | K0222MS-SON0302EX | 08-Jul-11 | 2 | 2 | Lead | 50 | U | MG/KG |
| K0222MS04EX | PES | K0222MS-SON0401EX | 08-Jul-11 | 1 | 1 | Lead | 150 | | MG/KG |
| K0222MS05EX | PES | K0222MS-SON0502EX | 08-Jul-11 | 2 | 2 | Lead | 477 | | MG/KG |
| K0222MS06EX | PES | K0222MS-SON0601EX | 08-Jul-11 | 1 | 1 | Lead | 50 | U | MG/KG |
| K0222MS07EX | PES | K0222MS-SON0701EX | 08-Jul-11 | 1 | 1 | Lead | 50 | U | MG/KG |
| K0222MS08EX | PES | K0222MS-SON0801EX | 08-Jul-11 | 1 | 1 | Lead | 907 | | MG/KG |
| K0222MS09EX | PES | K0222MS-SON0901EX | 08-Jul-11 | 1 | 1 | Lead | 1115 | | MG/KG |
| K0222MS10EX | PES | K0222MS-SON1002EX | 11-Jul-11 | 2 | 2 | Lead | 50 | U | MG/KG |
| K0222MS11EX | PES | K0222MS-SON1101EX | 08-Jul-11 | 1 | 1 | Lead | 59 | | MG/KG |
| K0222MS12EX | PES | K0222MS-SON1201EX | 08-Jul-11 | 1 | 1 | Lead | 50 | U | MG/KG |
| K0222MS13EX | PEB | K0222MS-SON1302EX | 08-Jul-11 | 2 | 2 | Lead | 74 | | MG/KG |
| K0222MS14EX | PEB | K0222MS-SON1403EX | 08-Jul-11 | 3 | 3 | Lead | 111 | | MG/KG |
| K0222MS15EX | PES | K0222MS-SON1501EX | 08-Jul-11 | 1 | 1 | Lead | 50 | U | MG/KG |
| K0222MS16EX | PEB | K0222MS-SON1603EX | 08-Jul-11 | 3 | 3 | Lead | 117 | | MG/KG |
| K0222MS17EX | PEB | K0222MS-SON1703EX | 08-Jul-11 | 3 | 3 | Lead | 132 | | MG/KG |
| K0222MS18EX | PES | K0222MS-SON1802EX | 11-Jul-11 | 2 | 2 | Lead | 50 | U | MG/KG |
| K0222MS19EX | PEB | K0222MS-SON1903EX | 08-Jul-11 | 3 | 3 | Lead | 100 | | MG/KG |
| K0222MS20EX | PES | K0222MS-SON2002EX | 08-Jul-11 | 2 | 2 | Lead | 50 | U | MG/KG |
| K0222MS21EX | PEB | K0222MS-SON2102EX | 08-Jul-11 | 2 | 2 | Lead | 238 | | MG/KG |
| K0222MS22EX | PES | K0222MS-SON2202EX | 11-Jul-11 | 2 | 2 | Lead | 79 | | MG/KG |
| K0222MS23EX | PES | K0222MS-SON2302EX | 11-Jul-11 | 2 | 2 | Lead | 56 | | MG/KG |
| K0222MS24EX | PEB | K0222MS-SON2403EX | 11-Jul-11 | 3 | 3 | Lead | 50 | U | MG/KG |
| K0222MS25EX | PEB | K0222MS-SON2503EX | 11-Jul-11 | 3 | 3 | Lead | 50 | U | MG/KG |
| K0222MS26EX | PES | K0222MS-SON2602EX | 11-Jul-11 | 2 | 2 | Lead | 74 | | MG/KG |
| K0222MS27EX | PES | K0222MS-SON2702EX | 11-Jul-11 | 2 | 2 | Lead | 216 | | MG/KG |
| K0222MS28EX | PES | K0222MS-SON2801EX | 11-Jul-11 | 1 | 1 | Lead | 53 | | MG/KG |
| K0222MS29EX | PES | K0222MS-SON2901EX | 11-Jul-11 | 1 | 1 | Lead | 63 | | MG/KG |
| K0222MS30EX | PES | K0222MS-SON3001EX | 11-Jul-11 | 1 | 1 | Lead | 109 | | MG/KG |

**TABLE 2-1
EXCAVATION CONFIRMATION XRF SAMPLING RESULTS**

**222 MORSE STREET
NEWHALL STREET NEIGHBORHOOD
HAMDEN, CONNECTICUT**

| Location ID | Location Type | Field Sample ID | Sample Date | Top Depth (ft,bgs) | Bottom Depth (ft,bgs) | Parameter | Result | Final Qualifier | Unit of Measure |
|-------------|---------------|-------------------|-------------|--------------------|-----------------------|-----------|--------|-----------------|-----------------|
| K0222MS31EX | PES | K0222MS-SON3101EX | 11-Jul-11 | 1 | 1 | Lead | 120 | | MG/KG |
| K0222MS32EX | PES | K0222MS-SON3201EX | 12-Jul-11 | 1 | 1 | Lead | 55 | | MG/KG |
| K0222MS33EX | PEB | K0222MS-SON3302EX | 11-Jul-11 | 2 | 2 | Lead | 82 | | MG/KG |
| K0222MS34EX | PEB | K0222MS-SON3403EX | 11-Jul-11 | 3 | 3 | Lead | 344 | | MG/KG |
| K0222MS35EX | PEB | K0222MS-SON3503EX | 11-Jul-11 | 3 | 3 | Lead | 81 | | MG/KG |
| K0222MS36EX | PES | K0222MS-SON3601EX | 12-Jul-11 | 1 | 1 | Lead | 534 | | MG/KG |
| K0222MS37EX | PES | K0222MS-SON3701EX | 12-Jul-11 | 1 | 1 | Lead | 79 | | MG/KG |
| K0222MS38EX | PES | K0222MS-SON3801EX | 12-Jul-11 | 1 | 1 | Lead | 764 | | MG/KG |
| K0222MS39EX | PEB | K0222MS-SON3901EX | 12-Jul-11 | 1 | 1 | Lead | 51 | | MG/KG |

Notes: bgs - below ground surface

ft - feet

KG - kilograms

MG - milligrams

PEB - sample from bottom of excavation

PES - sample from perimeter of excavation

U - not detected at a concentration above the reporting limit

XRF - x-ray fluorescence

ATTACHMENT A
PHOTOGRAPHS



View looking North at excavated back yard



View looking East at excavation area behind house



View looking South at excavation in front of house



View looking South at restored front of property



View looking South at restored side yard



View looking North at restored back of property