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Ms. Linda C. Ross CPG
Division of Environmental Remediation, Region 9
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
270 Michigan Avenue
Buffalo, NY 14203-2999

Dear Ms. Ross:

Re: Abbreviated Alternatives Analysis
Former Buffalo China Site C915209

On behalf of Buffalo China, Inc. (Buffalo China), Conestoga-Rovers & Associates, Inc. (CRA) has prepared this abbreviated alternatives analysis to evaluate the feasibility of remediating contaminated soils at the Former Buffalo China Site (Site) to 6 NYCRR Part 375 commercial soil cleanup objectives (SCOs) rather than the applicable industrial standards. Buffalo China has entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) to investigate and remediate, as appropriate, potential areas of environmental concern associated with the Site under the Brownfield Cleanup Program (BCP).

This analysis was completed at the request of the NYSDEC in response to a letter from the City of Buffalo (the City) to the NYSDEC objecting to the use of industrial SCOs as the cleanup criteria for portions of the Site. The City is requesting consideration of the use of the commercial use SCOs to assist the City in meeting its goals for the Seneca Babcock Redevelopment Project Urban Renewal.

As requested by the NYSDEC, an evaluation of the feasibility of implementing soil excavation (Track 2) or a cover system (Track 4) to remediate soils that exceed commercial SCOs is presented below.

To provide some background, Figure 1 shows all of the locations from which soil samples were collected during the Brownfield Investigation. Figure 2 shows all of the exceedances of commercial criteria with industrial criteria presented for comparison.

The soils to be remediated are located primarily on the south and west sides of the Harrison Street warehouse as shown on Figure 3. Currently, the selected remedy for the site soils is a combination of Soil Alternative (SO Alternative) 3, excavation and off-Site disposal of unsaturated soils that exhibit contaminant concentrations in excess of protection of groundwater standards at Excavation A and in excess of industrial standards at Excavations B through E; and SO Alternative 2, Monitored Natural

Attenuation (MNA) of VOCs and SVOCs in some discrete areas with institutional and engineering controls to minimize exposures to metals in Site soil.

The area within Excavation A is being remediated to protection of groundwater SCOs because it is considered the source area for the groundwater contamination at the Site.

Excavations B through E were proposed as part of the remedial action as spot removals because of the presence of lead in shallow soils at concentrations exceeding the protection of groundwater SCOs. The lead concentrations at Excavations B and D do not exceed either commercial or industrial criteria and are not being considered for any additional actions in response to the City's objection to the use of industrial SCOs.

There are four locations that have one contaminant of concern (COC) each that exceeds commercial SCOs in addition to what has already been included in the Remedial Action Work Plan (RAWP). Surface soil sample 1 (SS-1), located on the top of the soil mound, had a lead detection in the 2-inch to 4-inch below ground surface (bgs) sample interval that exceeded the commercial criterion. Soil boring location SB-11-07, located beneath the Harrison Street Warehouse, had a lead detection at this location that exceeded the commercial criterion in the 2-foot to 6-foot bgs sample interval.

Location SB-2-07 is also located in the soil mound. The sample analytical result for benzo(a)pyrene was 1.4 micrograms per kilogram (mg/kg) or parts per million (ppm) in the original sample and 2.7 ppm in the duplicate sample. The commercial SCO for benzo(a)pyrene is 1 ppm. The last location, BH-13, which is adjacent to a parking area and the main road used for shipping and receiving had a sample analytical result for benzo(a)pyrene of 1.3 ppm in the 1.5-foot to 2.5-foot bgs sample interval.

## TRACK 2 CLEANUP

The additional actions evaluated as part of a Track 2 cleanup to remediate Site soils to commercial SCOs are soil excavation at SS-1 and SB-11-07 to remove lead in the shallow soils. The excavation at SS-1 would be approximately 100 square feet by 2 feet deep. The excavation at SB-7-07 would be 100 square feet by 8 feet deep depending on the structural integrity of the warehouse and will require removal and restoration of the building concrete floor.

Although the concentrations of benzo(a)pyrene at SB-2-07 and BH-13 do exceed the commercial SCOs, they are only 0.3 ppm to 1.6 ppm above the commercial SCO and do not warrant further action at an active industrial facility. These two locations are not being considered as part of this evaluation.

*Assessment*

Overall Protection of Human Health and the Environment: Removal and off-Site disposal of the soils that contain lead at concentrations above the commercial SCOs would be protective of human health and the environment by preventing potential human exposure to contaminated soil as well as eliminating potential for leaching into groundwater.

Compliance with SCGs: Soil excavation would achieve the chemical-specific SCGs, action-specific SCGs The potentially applicable location-specific SCGs for this Alternative are the City of Buffalo zoning ordinances. This property is zoned as industrial.

Reduction of Toxicity, Mobility, or Volume: Soil excavation does not provide a reduction in toxicity or volume of COCs in excavated soil unless treatment is required at the disposal facility. Mobility of COCs in Site soil would be eliminated through the removal and transport of soil from the area.

Short-Term Effectiveness: No additional short-term risk to the community or the environment would be posed as a result of the implementation of the soil excavation. Risk to workers conducting the work would be mitigated through the implementation of safe work practices and proper PPE.

Long-Term Effectiveness and Permanence: Soil excavation is a permanent solution to prevent exposure to contaminated soils.

Land Use: Soil excavation at these areas would achieve the soil remedial action objectives (RAOs) for metals and is compatible with the current and intended future land use without implementation of an additional soil remedy to address these two areas.

Implementability: Soil excavation at these two locations can be implemented at these locations with some difficulty due to the locations. In addition, there would be concern about the structural integrity of the Warehouse at SB-11-07 as well as potential undue interruptions in the operations at this active manufacturing facility.

Cost: The estimated cost to address these areas increases the current projected cost of SO Alternative 3 from $240,000 to $285,000, assuming that up to 83 tons of additional material are classified non hazardous and are landfilled without any pretreatment. The cost highly dependent upon: i) the ultimate volume of soil excavated; and ii) how much, if any, of the excavated soil is a hazardous waste for disposal.

**TRACK 4 CLEAN UP**

As stated above, the benzo(a)pyrene concentrations at SB-2-07 and BH-13 do not warrant further actions and are not considered in the evaluation of the Track 4 cleanup using a cover system. Location

SS-1 is on the top of the soil mound and the exceedance is at 2 inches to 4 inches bgs. Installing and maintaining a cover system at this location is not a reasonable approach and will not be evaluated further, given that the soil mound will be removed if and when the Site is redeveloped in the future.

Location SB-11-07 is underneath the Harrison Street Warehouse and as such an effective cover system is already in place. Since this is an active industrial facility, it can be presumed that this cover system will remain in place for the foreseeable future. The required Site Management Plan that will be prepared for the Site will require maintenance and inspection of the cover system as an engineering control.

*Assessment*

Overall Protection of Human Health and the Environment: Use of a cover system over soils that contain lead at concentrations above the commercial SCOs would be protective of human health and the environment by preventing incidental human exposure to contaminated soil as well as eliminating potential for leaching into groundwater.

Compliance with SCGs: Use of a cover system would not achieve the chemical-specific SCGs. Action specific SGSs would be achieved. The potentially applicable location-specific SCGs for this Alternative are the City of Buffalo zoning ordinances. This property is zoned as industrial.

Reduction of Toxicity, Mobility, or Volume: Use of a cover system does not provide a reduction in toxicity or volume of COCs in soil. Mobility of COCs in Site soil would be reduced by limiting or eliminating transport of COCs in soil to off-Site areas as a result of wind dispersion, surface runoff, or other mechanical means.

Short-Term Effectiveness: No additional short-term risk to the community or the environment would be posed as a result of the implementation of the cover system remedy since it is already in place. Risk to workers conducting inspections would be mitigated through the implementation of safe work practices and proper PPE.

Long-Term Effectiveness and Permanence: Long term effectiveness of a cover system is dependent upon the maintenance of the system.

Land Use: Use of the existing cover system is compatible with the intended future land use in conjunction with the proposed soil remedy of exvacation at Area A. This facility is an active industrial facility.

Implementability: Use of the existing cover system at location SB-11-07 is readily implementable as it is already in place at this active industrial facility.

Cost: There would be no additional cost associated with use of the existing floor slab as a cover system at location SB-11-07.

**SUMMARY**

The following is a comparison of the alternatives evaluated above to the current proposed remedy.

Overall Protection of Human Health and the Environment: The use of commercial SCOs and the commercial SCO alternatives evaluated offer no additional protection of human health or the environment to what is already proposed to meet the industrial SCOs.

Compliance with SCGs: The current proposed remedy would meet the chemical specific SCGs with the exception of the locations SS-1 and SB-11-07.

Reduction of Toxicity, Mobility, or Volume: Neither excavation nor the use of a cover system to address the exceedances of commercial use SCOs would provide a reduction in toxicity or volume of COCs in soil beyond what is currently proposed unless the excavated soils are treated at the disposal facility. Mobility of COCs in Site soil would be reduced by limiting or eliminating transport of COCs in soil to off-Site areas as a result of wind dispersion, surface runoff, or other mechanical means.

Short-Term Effectiveness: Use of commercial SCOs would reduce the short term effectiveness due to the additional time, fuel, energy, man power required to excavate the two areas in addition to additional truck traffic to haul the excavated materials and the disruption to Site operations since this is an active facility.

Long-Term Effectiveness and Permanence: If commercial use SCOs were applicable there would be no effect on long term effectiveness or permanence compared to the current proposed remedy.

Land Use: This facility is an active industrial facility and will be for the foreseeable future. The property is zoned industrial. The current proposed remedy supports this and meets the RAOs. Requiring additional actions to meet commercial use SCOs at an active industrial facility would be an unnecessary burden.

Implementability: The additional actions are implementable in conjunction with the current proposed remedy.

Cost: At a minimum the cost to conduct excavations at both of these locations would be $45,000. Additional and unnecessary costs would be incurred if confirmatory sampling results meet industrial SCOs but not commercial SCOs and additional soil excavation, transportation and disposal, and backfilling and restoration are required to meet commercial SCOs.

Since there is already a cover system in place at SB-11-07 a combination of the two alternatives could be implemented for a reduced minimum estimated cost of $35,000. This assumes that up to 23 tons of additional material are classified non hazardous and are landfilled without any pretreatment. The cost highly dependent upon: i) the ultimate volume of soil excavated; and ii) how much, if any, of the excavated soil is a hazardous waste for disposal.

## CONCLUSION

This analysis was conducted at the request of the NYSDEC in response to a letter from the City concerning the possible future use of the property.

If commercial SCOs were adopted to drive remediation at this active and operating industrial zoned site then a combination of soil excavation at SS-1 and use of the existing floor slab as a cover system at SB-11-07 would be the selected remedy to address these two additional locations that are not included in the Remedial Action Work Plan.

However, Buffalo China is not volunteering to adopt commercial SCOs for this project. If the use and zoning of this operating facility change from industrial to commercial, the parties then involved in that use/zoning change can perform the additional remediation suggested by this analysis.

Should you have any questions or comments, please contact me at 716-856-2142.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Christine Barton

Christine Barton
Project Coordinator

CMB/ck/037191-Ross-31

cc: Mr. Gregory Sutton, NYSDEC
Mr. Matthew Forcucci, NYSDOH
Ms. Catherine Suttmeier, Buffalo China
Rick Kennedy, Hodgson Russ
Rick Shepherd, CRA

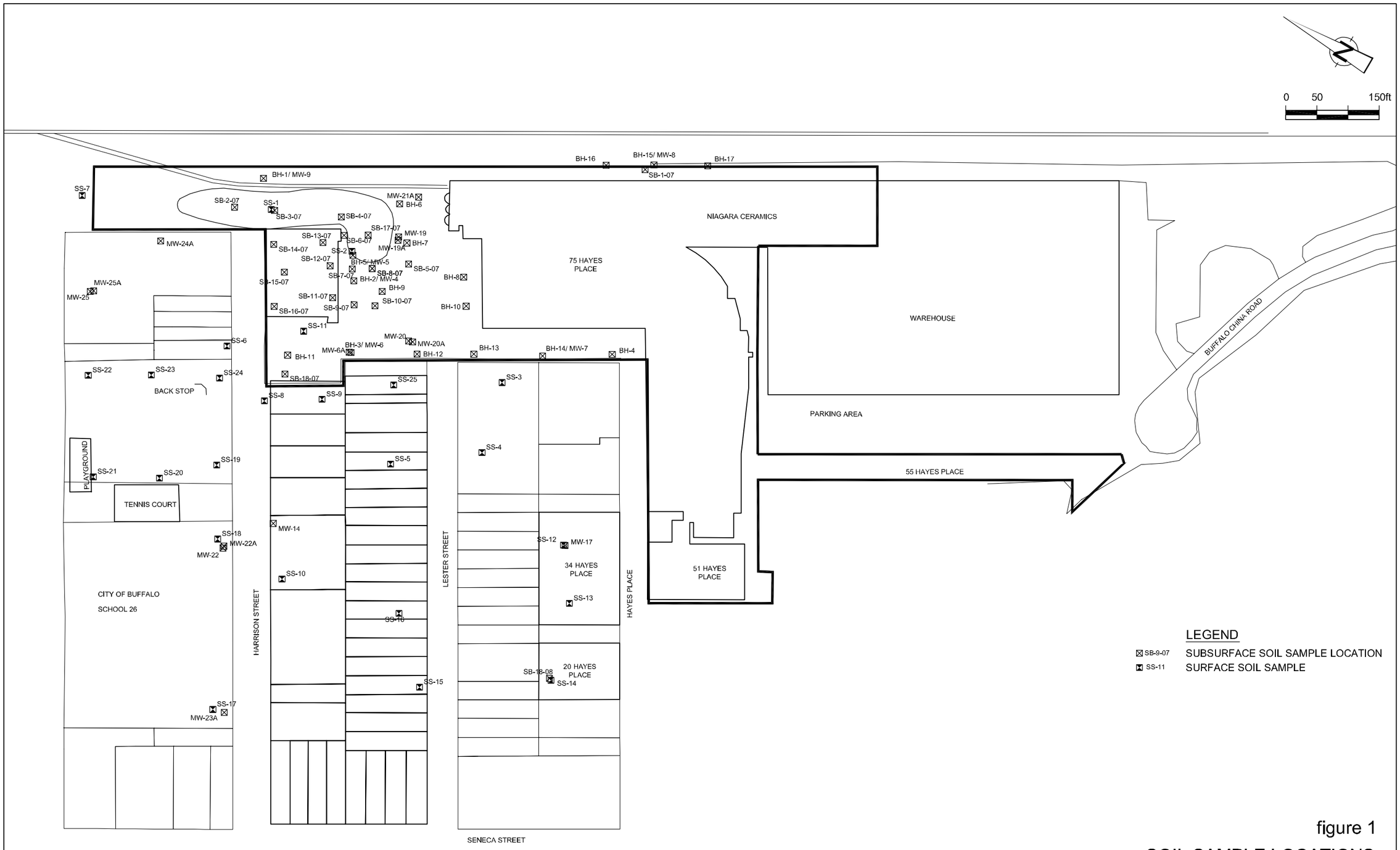


figure 1

SOIL SAMPLE LOCATIONS
FORMER BUFFALO CHINA SITE (NO. C915209)
*Buffalo, New York*

37191-00(ROSS031)GN-BU001 JAN 20/2011

| SB-2-07 | 7/27/2007 6.5-8 ft BGS mg/kg | 7/27/2007 6.5-8 ft BGS mg/kg | NYS SOIL COMMERCIAL CRITERIA | NYS SOIL INDUSTRIAL CRITERIA |
|---|---|---|---|---|
| SVOCs | | | | |
| Benzo(a)pyrene | 1.4 | 2.7 | 1 | 1.1 |

| Soil Mound | 5/7/2008 0.15-0.33 ft BGS mg/kg | NSY SOIL COMMERCIAL CRITERIA | NSY SOIL INDUSTRIAL CRITERIA |
|---|---|---|---|
| Metals | | | |
| Lead | 2090 J | 1000 | 3900 |

| BH-7 | 5/2/2006 1.4-1.8 ft BGS mg/kg | NYS SOIL COMMERCIAL CRITERIA | NYS SOIL INDUSTRIAL CRITERIA |
|---|---|---|---|
| Metals | | | |
| Lead | 4980 | 1000 | 3900 |

| BH-5 S2 | 5/2/2006 1.6-2.5 ft BGS mg/kg | NYS SOIL COMMERCIAL CRITERIA | NYS SOIL INDUSTRIAL CRITERIA |
|---|---|---|---|
| VOCs | | | |
| Trichloroethene | 670 | 200 | 400 |
| Metals | | | |
| Lead | 1470 | 1000 | 3900 |

| SB-8-07 | 7/25/2007 3.5-8 ft BGS mg/kg | NYS SOIL COMMERCIAL CRITERIA | NYS SOIL INDUSTRIAL CRITERIA |
|---|---|---|---|
| Metals | | | |
| Arsenic | 21.4 | 16 | 16 |
| Barium | 2310 | 400 | 10000 |
| Lead | 2230 | 1000 | 3900 |

| SB-7-07 | 7/25/2007 3-6 ft BGS mg/kg | NYS SOIL COMMERCIAL CRITERIA | NYS SOIL INDUSTRIAL CRITERIA |
|---|---|---|---|
| SVOCs | | | |
| Benzo(a)anthracene | 15 | 5.6 | 11 |
| Benzo(a)pyrene | 14 | 1 | 1.1 |
| Benzo(b)fluoranthene | 17 | 5.6 | 11 |
| Dibenz(a,h)anthracene | 2.4 | 0.56 | 1.1 |
| Indeno(1,2,3-cd)pyrene | 8.5 | 5.6 | 11 |

| BH-9 | 5/2/2006 0.5-1 ft BGS mg/kg | NYS SOIL COMMERCIAL CRITERIA | NYS SOIL INDUSTRIAL CRITERIA |
|---|---|---|---|
| Metals | | | |
| Lead | 9250 | 1000 | 3900 |

| SB-11-07 | 7/26/2007 2-6 ft BGS mg/kg | NYS SOIL COMMERCIAL CRITERIA | NYS SOIL INDUSTRIAL CRITERIA |
|---|---|---|---|
| Metals | | | |
| Lead | 2160 | 1000 | 3900 |

| BH-3 | 5/2/2006 0.5-1 ft BGS mg/kg | NYS SOIL COMMERCIAL CRITERIA | NYS SOIL INDUSTRIAL CRITERIA |
|---|---|---|---|
| Metals | | | |
| Lead | 2500 J | 1000 | 3900 |

| BH-13 | 5/3/2006 1.5-2.5 ft BGS mg/kg | NYS SOIL COMMERCIAL CRITERIA | NYS SOIL INDUSTRIAL CRITERIA |
|---|---|---|---|
| SVOCs | | | |
| Benzo(a)pyrene | 1.3 | 1 | 1.1 |

SB-2-07
SS-1
BH-5/ MW-5
BH-7
SB-8-07
SB-7-07
BH-9
SB-11-07
BH-3/ MW-6
BH-13
NIAGARA CERAMICS
75 HAYES PLACE
PLAYGR
TENNIS COURT
0 40 80ft

LEGEND
■ BH-01 SOIL SAMPLE LOCATION

figure 2

CONTAMINANT CONCENTRATIONS EXCEEDING COMMERCIAL CRITERIA IN SOIL
FORMER BUFFALO CHINA SITE (NO. C915209)
*Buffalo, New York*

SOIL CRITERIA USED FOR EVALUATION OF ANALYTICAL RESULTS - 6 NYCRR PART 375 RESTRICTED USE SOIL CLEANUP OBJECTIVES FOR COMMERCIAL USE. INDUSTRIAL CRITERIA HAVE BEEN PROVIDED FOR COMPARISON.

0 40 80ft

NIAGARA CERAMICS

75 HAYES PLACE

AREA A

AREA B

AREA C

AREA D

AREA E

BACK STOP

PLAYGROUND

TENNIS COURT

CITY OF BUFFALO

LESTER STREET

MW-9A
BH-1/ MW-9
SB-2-07
SS-1
SB-3-07
SB-4-07
MW-21A
BH-6
MW-24A
MW-11
MW-25A
MW-25
SB-14-07
SB-13-07
MW-12
SB-17-07
SB-6-07
MW-5A
BH-5/ MW-5
MW-19
MW-19A
BH-7
SB-12-07
MW-18
MW-18A
SB-15-07
SB-7-07
SB-8-07
SB-5-07
BH-8
BH-2/ MW-4
BH-9
SB-11-07
SB-16-07
SB-9-07
SB-10-07
BH-10
SS-11
MW-20
MW-20A
BH-11
MW-6A
BH-3/ MW-6
BH-12
BH-13
MW-7A
BH-14/ MW-7
BH-4
MW-13A
MW-13
SB-18-07
MW-10
MW-15A
MW-15
MW-14A
MW-14
MW-22A
MW-22
MW-17
BH-16
BH-15/ MW-8
SB-1-07

LEGEND

- BH-01 SOIL SAMPLE LOCATION
- MW-1 OVERBURDEN MONITORING WELL
- MW-9A BEDROCK MONITORING WELL
- PROPERTY LINE
- AREA TO BE EXCAVATED TO WATER TABLE APPROXIMATELY 4' bgs (AREA = 6120 $ft^2$)
- 10'x10'x2' EXCAVATION
- ADDITIONAL EXCAVATION EVALUATED AS PART OF ABBREVIATED ALTERNATIVES ANALYSIS

figure 3

AREAS OF EXCAVATION
FORMER BUFFALO CHINA SITE (NO. C915209)
*Buffalo, New York*

37191-00(ROSS031)GN-BU003 JAN 20/2011