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PHASE III SIDE BANK SOIL INVESTIGATION WORK PLAN
BLOODY BROOK, ONONDAGA COUNTY, NEW YORK

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September 2002
Revised November 2002

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EXECUTIVE SUMMARY

This Phase III Side Bank Soil Investigation Work Plan (Work Plan) has been prepared to describe the proposed sampling of soils along Bloody Brook located in Onondaga County, New York. The proposed sampling consists of obtaining 203 surface and subsurface soil samples at 50 locations along the side banks of Bloody Brook beginning on the West Branch of Bloody Brook downstream of the New York State Thruway and ending at Onondaga Lake Parkway. This portion of Bloody Brook is part of the Bloody Brook Drainage District that is maintained by the Onondaga County Department of Water Environment Protection (County). This Work Plan was prepared pursuant to the Voluntary Cleanup Agreement (Index # D7-0001-01-09) between Lockheed Martin Corporation (LMC) and the New York State Department of Environmental Conservation (NYSDEC).

LMC believes that the deposition of cadmium impacted soils on the side banks of Bloody Brook is primarily the result of placement of sediments containing cadmium on the side banks during installation of erosion controls and maintenance dredging activities to maintain the drainage capacity of the brook. This depositional theory is based on the documented presence of cadmium in the sediments, as well as information from the County indicating that sediments were commonly placed on side banks during maintenance activities. Other depositional mechanisms are being considered. However, LMC believes that placement during maintenance dredging is the primary mechanism.

The primary objective of this Phase III Investigation will be to define the extent of cadmium impacted soils by verifying the above-referenced depositional mechanism through the collection and analysis of soil samples at various depths to provide information necessary to determine remedial alternatives for Bloody Brook. All soil samples collected will be inspected for various lithological characteristics (i.e., grain size, sorting, compaction, plasticity, color, etc.). These observations will be compared to laboratory analytical data in order to attempt to identify a distinction between native soils and recent sediments originating from the brook.

LMC anticipates completion of this field investigation during the fall of 2002. The results from the investigation described herein will be incorporated into the monthly Progress Reports as required in Paragraph III of the Voluntary Cleanup Agreement.

1.0 INTRODUCTION

This Phase III Side Bank Soil Investigation Work Plan (Work Plan) has been prepared to describe the proposed sampling of soils along Bloody Brook located in Onondaga County, New York. The proposed sampling consists of obtaining 203 surface and subsurface soil samples at 50 locations along the side banks of Bloody Brook beginning on the West Branch of Bloody Brook downstream of the New York State Thruway (Thruway) and ending at Onondaga Lake Parkway. This portion of Bloody Brook is part of the Bloody Brook Drainage District that is maintained by the County. This Work Plan was prepared pursuant to the Voluntary Cleanup Agreement (Index # D7-0001-01-09) between LMC and the NYSDEC.

The proposed sampling described in this Work Plan will further define the extent of cadmium present along these portions of the side banks of Bloody Brook. The work described in this Work Plan is part of a phased investigation approach, and is designed to provide information required to develop the scope of subsequent work (i.e., investigation, remedial action). The scope of the proposed sampling is based on the following:

- LMC's belief that the primary mechanism that resulted in the deposition of cadmium impacted soils along the side banks of the brook;
- The physical condition and constructed engineering controls installed along the brook; and
- The cadmium results from side bank soil samples previously collected along Bloody Brook.

This Work Plan describes LMC's proposed Phase III sampling of side bank soils. Phase I was completed in November 2001 and Phase II was completed in June 2002. In addition, the NYSDEC collected side bank soil samples in October 2001 and the County collected side bank soil samples in October 1996. The results of all previous side bank soil samples of which LMC is aware are summarized in **Table 1**.

The basis of the scope of this Work Plan is discussed in further detail in **Section 2** (Background). **Section 3** (Sampling and Analysis Program) describes the objectives of the proposed sampling activities and the selection of sampling locations and **Section 4** (Methodologies) presents the technical protocols that will be used to collect the samples. **Section 5** (Public Participation) discusses activities that will be performed by the NYSDEC to inform the public about the work. **Section 6** (Contingency Plan) contains a discussion of

contingency actions that may be required to complete the sampling activities. The schedule for completing the work described in this Work Plan is provided in **Section 7** (Implementation Schedule). **Section 8** (Data Evaluation and Reporting) describes how the analytical and field data will be evaluated and reported.

2.0 BACKGROUND

The scope of the sampling described in this Work Plan is based on LMC's understanding of the primary mechanism that resulted in the deposition of cadmium impacted soils along the side banks of the brook, the physical condition of the brook and adjacent areas, and the results of previous side bank soil sampling. Each of these components is discussed below.

2.1 Deposition Mechanism

LMC believes that the deposition of cadmium impacted soils on the side banks of Bloody Brook is primarily the result of placement of sediments containing cadmium on the side banks during installation of erosion controls and maintenance dredging activities to maintain the drainage capacity of the brook. This depositional theory is based on the presence of cadmium in the sediments, as well as information from the County indicating that sediments were commonly placed on side banks during maintenance activities.

Other potential mechanisms which may have resulted in the presence of cadmium in side bank soils are as follows:

- Sediment deposition during storm (flood) events;
- The presence of cadmium in native soil in the vicinity of the brook;
- The presence of cadmium in imported fill material used to construct the residential or commercial properties in the vicinity of the brook; and/or
- The presence of cadmium in imported fill material used for drainage district improvements (e.g., installation of gabions or rip rap and stream realignment).

The mechanism of sediment placement on the side banks during drainage maintenance activities would likely result in the presence of cadmium only in soils immediately adjacent to the brook. Therefore, the sampling will focus on the areas adjacent to the brook, with a limited amount of sampling in upland areas necessary to confirm that other mechanisms have not resulted in a wider distribution of cadmium in soils.

2.2 Physical Description

This Work Plan describes proposed sampling of the side banks of Bloody Brook beginning on the West Branch of Bloody Brook downstream of the Thruway and ending at Onondaga Lake Parkway. This portion of the brook is over 4,000 feet long, and flows through varied adjacent land uses as generally described below:

- Wooded area with relatively natural channels (from the Thruway downstream approximately 750 feet);
- Single-family residential area with gabion or rip rap channel and maintained (i.e., mowed) drainage easement areas (from approximately 750 feet downstream of the Thruway to Floradale Road);
- Apartment building and commercial area (from Floradale Road to Old Liverpool Road); and
- Light industrial area with varied commercial, transportation and municipal uses (from Old Liverpool Road to Onondaga Lake Parkway).

Bloody Brook is located within property owned by the Town of Salina, various private owners and Onondaga County. Easements or rights-of-way have been granted to the County for purposes of operating and maintaining the Bloody Brook Drainage District. Since the nature of the brook, the adjacent land use, the drainage easement dimensions and the side bank structure vary in each of these areas, a separate drainage description of the physical properties for each area is presented below.

2.2.1 Wooded Area

This portion of Bloody Brook is relatively isolated and inaccessible and extends approximately 750 feet downstream of the Thruway. In this area, Bloody Brook is located within property owned by the Town of Salina. The drainage easement is irregularly shaped in this area and is relatively wide (i.e., greater than 150 feet) encompassing wooded and brush vegetated areas with mature cottonwood trees dominating the canopy with underbrush consisting of various shrub species. The channel and banks in this portion of Bloody Brook do not have engineered erosion controls. The bottom of the brook is a clay substrate with some overlying soft sediments. The east bank has relatively steep slopes along wooded areas leading to residential areas. The west bank has a more gentle slope along wooded and brush vegetated areas leading to residential areas. The sediments from this portion of Bloody Brook were removed by LMC in 1997 (West Branch of Bloody Brook Sediment Removal Certification Report, Blasland, Bouck & Lee, Inc., November 1997).

2.2.2 *Single Family Residential Area*

This portion of Bloody Brook begins approximately 750 feet south of the Thruway and ends at Floradale Road. In this area, Bloody Brook is located within property owned by the Town of Salina. The drainage easement in this area is typically 40 feet wide (but increases to more than 100 feet wide in the most upstream area) and is maintained (i.e., mowed) by the County. This portion of Bloody Brook has been significantly modified to increase stormwater capacity and to reduce erosion.

Upstream of Brookview Lane, the vertical channel walls are lined with gabions and the channel has been straightened to promote drainage. Significant work (i.e., installation of the gabions and channel straightening) was completed by the County as recently as 1996 in this portion of the brook. Residential backyards abut the maintained drainage easement area. A small unnamed tributary enters the brook from the west at the upstream end of this portion of the brook.

From Brookview Lane downstream to Floradale Road, the channel section is trapezoidal with large flagstone rip rap lining the sloped walls and bottom. Areas of the channel wall have been subject to slope failure where the flagstone has begun to slide into the brook. Residential sideyards abut the maintained easement area and resident-maintained (i.e., mowed or fenced) areas appear to overlap the drainage easement in many areas. Multi-barrel culverts are used at road crossings.

2.2.3 *Apartment Building and Commercial Area*

This portion of Bloody Brook begins at Floradale Road and ends at Old Liverpool Road. In these areas, Bloody Brook is located within property owned by various private owners. The drainage easement in this area is typically 40 feet wide and is maintained (i.e., mowed) by the County. Apartment complex and commercial landscaped areas and parking areas abut the easement and appear to overlap the easement in certain areas. The channel section is trapezoidal with large flagstone rip rap lining the sloped walls and bottom. Areas of the channel wall have been subject to slope failure. Certain areas of the brook have vegetated side slopes (i.e., no flagstone). Some of these areas have been undermined by erosion and have collapsed into the brook. A small unnamed tributary enters the brook from the west approximately 200 feet downstream of Floradale Road. The confluence of the West and Middle Branches of Bloody Brook occurs approximately 200 feet upstream of Old Liverpool Road. Multi-barrel culverts are used at road crossings and to contain the brook under paved apartment parking areas.

2.2.4 Light Industrial Area

This area begins at Old Liverpool Road and extends downstream to Onondaga Lake Parkway. In these areas, Bloody Brook is located within property owned by various private owners and Onondaga County. The drainage easement in this area is typically 60 feet wide from Old Liverpool Road to the CSX Railroad crossing. Downstream of the CSX Railroad crossing, the property is owned by Onondaga County. The banks and bottom of the brook do not have erosion controls installed. Erosion is taking place along the banks and significant sediment deposition has resulted in complete blockage of one of the culverts which carries the brook under the CSX Railroad crossing.

Upstream of the CSX Railroad crossing, the abutting land uses include a commercial office building on the east and a retail strip mall and contractor disposal yard to the west. West of the brook upstream of the CSX Railroad crossing (the former Lakeshore Drive-In Theater), there is visible evidence of past and ongoing filling activities abutting the side bank. In addition to these activities, the County used this area for the disposal of maintenance dredging material from Bloody Brook as recently as the summer/fall of 2000. East of the brook upstream of the CSX Railroad crossing, the side banks abut a steep slope area with evidence of fill visible along the slope. Near the CSX Railroad crossing, the areas surrounding the brook are isolated and relatively inaccessible.

Downstream of the CSX Railroad crossing, an unnamed tributary joins Bloody Brook from the west near Onondaga Lake Parkway. This tributary includes periodic overflow from the Liverpool Pump Station. The area to the east of the brook is a mix of wooded and landscaped park areas (near Onondaga Lake Parkway).

2.3 Previous Side Bank Soil Sampling

Side bank soil samples have previously been collected along the West Branch of Bloody Brook by LMC, the NYSDEC, and the County. The locations and results of these previous sampling efforts are presented on **Figure 1** and **Table 1**, and are discussed below.

The County collected 5 side bank soil samples (OCDDS-4, OCDDS-5, OCDDS-6, OCDDS-7 and OCDDS-10) from 0-6 inches in depth between the Thruway and Brookview Lane in October 1996.

The NYSDEC collected two samples (EPSOIL-2 and EPSOIL-3) from 0-12 inches in depth between the Thruway and the confluence of the West and Middle Branches in October 2001.

Two other samples were collected from 0-12 inches in depth by the NYSDEC at that time. One sample was collected upstream of Electronics Park on the West Branch of Bloody Brook (EPSOIL-1), and one was collected downstream of the railroad tracks below the confluence of the West and Middle Branches of Bloody Brook (EPSOIL-4).

In November 2001, LMC collected side bank soil samples at 12 locations (SB-01 through SB-12) from 0-12 inches in depth and 8 of these 12 locations from 12-24 inches in depth (where the 12-24 inch sample was obtainable) between the Thruway and the confluence of the West and Middle Branches. LMC collected side bank soil samples at 6 other locations downstream of the confluence of the West and Middle Branches at that time (SB-13 through SB-18) from 0 to 12 inches in depth. Four of these 6 locations were also sampled at 12 to 24 inches in depth.

In June 2002, LMC collected shallow side bank soil samples from 32 locations (SB-19 through SB-50) from 0-2 inches in depth between the Thruway and the confluence of the West and Middle Branches. These samples were collected in accordance with the NYSDEC-approved Shallow Side Bank Surface Soil Sampling and Analysis Work Plan (June 2002).

3.0 SAMPLING AND ANALYSIS PROGRAM

This section provides a detailed description of the overall objectives of the sampling program (**Section 3.1**) and the rationale for the selection of each sampling location (**Section 3.2**).

3.1 Sampling Program Objectives

The objective of the sampling program is to define the extent of cadmium impacted soils along Bloody Brook. The sampling program has been designed to define the extent and verify the validity of the depositional theory detailed in **Section 2.1**. The sampling program will also provide additional information as requested by the New York State Department of Health (NYSDOH) and NYSDEC regarding surface and subsurface soil conditions. Additional shallow soil samples will be collected in the vicinity of certain shallow soil sampling locations sampled in June 2002.

The analytical protocol has been designed so that intervals previously sampled at any single location are not resampled. Additional information pertaining to the proposed sampling locations (sampling intervals, total boring depth, boring location, etc.) is summarized in **Table 2**. Soil sample collection for laboratory analysis will be performed for all intervals identified in **Table 2**.

3.1.1 Extent and Depositional Theory

LMC proposed twenty-six (26) of the 50 sampling locations to consist of borings advanced to a depth of 4 feet below ground surface (bgs). NYSDEC requested the addition of twelve (12) borings to be advanced to a depth of 4 feet bgs. Two proposed boring locations (SB-80 and SB-83) will extend to 16 feet bgs due to the probable thickness of the fill layer at these locations. These borings will be performed to further define the extent of cadmium in the side bank soils, and to attempt to establish a correlation between soil lithology and cadmium concentration based on the depositional theory detailed in **Section 2.1.**

Various lithological characteristics (i.e., grain size, sorting, compaction, plasticity, color, etc.) can distinguish the depositional history of sediments placed on the side banks from native soils. These characteristics, subsequently coupled with laboratory analysis, will help to determine if a visual distinction can be observed which could differentiate the cadmium impacted sediment from the native soil. These distinctions could be used to assist in defining the extent of impacted area during any potential remedial action.

3.1.2 Shallow Soil Samples

The NYSDOH requested that additional shallow (i.e., from 0 to 2 inches bgs) soil samples be collected farther from the midline of Bloody Brook than some of the June 2002 sampling locations. In response to that request, additional surface soil samples will be collected in the vicinity of 25 percent of the June 2002 surface soil sampling locations with the highest cadmium concentrations. The results of these samples will be evaulated in accordance with the information contained in the Onondaga County Health Department's July 5, 2002 News Release. The shallow soil samples will be collected at 8 locations, as identified in **Table 2**. One of the 8 locations (SB-71) is also the location of a deeper boring described in **Section 3.1.1** above.

3.1.3 Additional NYSDEC-Requested Samples

In an October 28, 2002 letter, the NYSDEC requested that LMC collect samples from thirteen (13) additional locations. The letter also requested that additional background samples be collected at an area adjacent to Vine Street. During a site walk on October 31, 2002, the NYSDEC identified the 3 additional background sampling locations adjacent to Vine Street and the 12 additional sampling locations (one location was determined to be inaccessible based on field conditions). Each of these borings will be advanced to a depth of 4 feet bgs with 5 samples being collected from each. Locations upstream of Old Liverpool Road will have samples collected from 0 to 2 inches bgs, 0 to 1 feet bgs, 1 to 2 feet bgs, 2 to 3 feet bgs and 3 to 4 feet bgs.

As requested by the NYSDEC, locations downstream of Old Liverpool Road will have samples collected from 0 to 6 inches bgs, 6 to 12 inches bgs, 1 to 2 feet bgs, 2 to 3 feet bgs and 3 to 4 feet bgs. The 0 to 6 inch bgs and 6 to 12 inch bgs samples were requested to provide data relevant to fish and wildlife. The NYSDEC has determined that the 0 to 2 inch bgs samples and the 0 to 1 foot bgs samples will be sufficient for any fish and wildlife evaluations upstream of Old Liverpool Road.

3.2 Selection of Sampling Locations

This section of the Work Plan is presented by area as described in **Section 2.2** (wooded area, single family residential area, apartment building and commercial area, and light industrial area), and describes the selection of each individual proposed sampling location. The proposed sampling locations are identified on **Figure 2** (Proposed Side Bank Sampling Locations) and **Figure 3** (Additional Proposed Background Sampling Locations).

3.2.1 Wooded Area

Five borings will be advanced in this area (SB-51 through SB-55). Twenty (20) soil samples will be collected from these borings, and will be analyzed for cadmium and evaluated for lithological purposes.

Borings SB-51, SB-52, SB-54, and SB-55 will be located in areas determined to represent background/reference conditions. Lithological observations will be used to determine the physical characteristics of native soils as well as any imported fill material. Analytical laboratory data for soil samples collected from these borings will be used to determine the concentration of cadmium in the background soils.

Boring SB-53 will be advanced upstream of the existing gabion wall on the west side upstream of where sediments would likely have been placed during the gabion installation project. The lithologic data obtained during the advancement of this boring will be used to determine the characteristics of native soils as well as any non-native fill material encountered. Data obtained from soil samples collected from this boring will be used to determine the concentration of cadmium in the native soils, the potential influence of flood deposition, as well as the concentration of cadmium in the side bank soils located north of the existing gabion wall.

3.2.2 Single Family Residential Area

Nineteen (19) borings (SB-56 through SB-65 and SB-201 through SB-209) will be advanced in this area. Seventy-one (71) soil samples will be collected from these borings. Sixty-seven (67) of these will be analyzed for cadmium and evaluated for lithological purposes. Four (4) of the samples will be evaluated for lithological purposes only.

Borings SB-61, SB-62, and SB-63 will be advanced in the vicinity of existing sample location SB-02/SB-30. Soil samples collected from this location have contained the highest cadmium concentrations within the side banks of Bloody Brook. Boring SB-62 will be advanced at the same location as existing sample location SB-02/SB-30, and will be used to gather data on the vertical profile of cadmium concentrations. Physical soil characteristics will also be evaluated in an attempt to identify a lithologic change in the soil profile. If the theory that the cadmium impacted sediments were previously removed from the brook and graded onto the side banks, then a change in the soil profile should be observed. Boring SB-61 will be advanced upstream of boring SB-62 in order to further study changes in lithology and the associated distribution of cadmium. Location SB-63 will be used to further assess the horizontal distribution of cadmium in shallow side bank surface soil.

Borings SB-57 through SB-59 will be advanced in the vicinity of existing sample location SB-21. The purpose of these borings is to investigate lithologic variations as discussed in the previous paragraph, and to attempt to determine the vertical and lateral distribution of cadmium.

Borings SB-60 and SB-65 will be advanced in the vicinity of existing sample locations OCDDS-5 and SB-05/SB-36, respectively. The purpose of these borings is to investigate lithologic variations and to attempt to determine the vertical and lateral distribution of cadmium.

Locations SB-56 and SB-64 will be sampled in the vicinity of existing sample locations SB-19 and SB-32, respectively. The analytical data obtained from these soil samples will be used to further assess the horizontal distribution of cadmium in shallow (0 – 2 inches) side bank soil.

Borings SB-201 through SB-209 will be advanced at the locations requested by NYSDEC.

3.2.3 Apartment Building and Commercial Area

Ten (10) borings (SB-66 through SB-74 and SB-210) will be advanced in this area. Thirty-three (33) soil samples will be collected from these borings. Twenty-nine (29) of these will be analyzed for cadmium and evaluated for lithological purposes. Four (4) of the samples will be evaluated for lithological purposes only.

Borings SB-66 and SB-67 will be advanced in the vicinity of existing sample location SB-41. The physical properties of the soil samples and the analytical data obtained from soil samples collected from boring SB-66 will be used to identify any correlation between cadmium concentrations and the lithologic data obtained in the field, and to further delineate the vertical and lateral distribution of cadmium. Location SB-67 will be used to further assess the horizontal distribution of cadmium in shallow (0 – 2 inches) side bank soil.

Borings SB-68 and SB-69 will be advanced in the vicinity of existing sample location SB-44. The physical properties of the soil samples and the analytical data obtained from soil samples collected from boring SB-68 will be used to identify any correlation between cadmium concentrations with the lithologic data obtained in the field, and to further delineate the vertical and lateral distribution of cadmium. Location SB-69 will be used to further assess the horizontal distribution of cadmium in shallow (0 – 2 inches) side bank soil.

Borings SB-70 and SB-71 will be advanced in the vicinity of existing sample location SB-09/SB-46. The physical properties of the soil samples and the analytical data obtained from soil samples collected from these borings will be used to identify any correlation between cadmium

concentrations and the lithologic data obtained in the field. Analytical data obtained from soil samples collected from these borings will also serve to further delineate the vertical and lateral distribution of cadmium.

Borings SB-72 and SB-73 will be advanced in the vicinity of existing sample location SB-10/SB-47. The physical properties of the soil samples and the analytical data obtained from soil samples collected from boring SB-72 will be used to identify any correlation between cadmium concentrations and lithologic data obtained in the field, and to further delineate the vertical and lateral distribution of cadmium. Location SB-73 will be used to further assess the horizontal distribution of cadmium in shallow (0 – 2 inches) side bank soil.

Boring SB-74 will be advanced in the vicinity of existing sample location EPSOIL-3. The purpose of this boring is to investigate lithologic variations, and to determine the vertical and lateral distribution of cadmium.

Boring SB-210 will be advanced at the location requested by NYSDEC.

3.2.4 Light Industrial Area

Thirteen (13) borings (SB-75 through SB-85 and SB-211 and SB-212) will be advanced in this area. Sixty-four (64) soil samples will be collected from these borings. Sixty (60) of these will be analyzed for cadmium and evaluated for lithological purposes. Four (4) of the samples will be evaluated for lithological purposes only.

Borings SB-75, SB-76, and SB-77 will be advanced in the vicinity of the area used for placement of excavated Bloody Brook sediments by the County in the summer/fall 2000. These borings are located south of Old Liverpool Road in the former Lakeshore Drive-In. These boring locations have been determined based on information provided by the County regarding the location of the sediment placement area. Boring SB-77 will be advanced on the south side of the sediment placement area. Boring SB-76 will be advanced through the placement area. Boring SB-75 will be advanced on the north side of Bloody Brook. Analytical data obtained from soil samples collected from these borings will provide information related to the distribution of cadmium in the sediment placement area and in the fill material surrounding it.

Borings SB-78 and SB-79 will be advanced in the vicinity of existing sample location SB-14. The purpose of these borings is to investigate lithologic variations, and to attempt to determine the lateral and vertical distribution of cadmium.

Seeps were noted during previous site walks emanating from the fill areas on the east and west side of Bloody Brook approximately 250 feet north of the CSX Railroad crossing. Borings SB-80 through SB-83 will be advanced in this area.

The seep observed on the west side of the brook was dark red in color and appeared to emanate from the steep fill bank, across the natural bank into the brook. Boring SB-81 will be advanced approximately 15 feet west of the center of Bloody Brook. Analytical data obtained from soil samples collected from this boring will be used to determine the potential influence of the observed seep on the distribution of cadmium in the lower portions of Bloody Brook. Boring SB-80 will be advanced west of boring SB-81 at the top of the fill area. Field observations made during the advancement of this boring will be used to determine the thickness and composition of the fill area. Analytical data obtained from soil samples collected from this boring will be used to identify any influence of the fill material on the presence and distribution of cadmium.

The seep observed on the east side of the brook was gray/black in color and was observed to be coming out of the base of the bank below the water surface. Boring SB-82 will be advanced approximately 15 feet east of the center of the Brook. Analytical data obtained from soil samples collected from this boring will be used to determine the potential influence of the observed seep on the distribution of cadmium in the lower portions of Bloody Brook. Boring SB-83 will be advanced east of boring SB-82 at the top of the fill area. Field observations made during the advancement of this boring will be used to determine the thickness and composition of the fill area. Analytical data obtained from soil samples collected from this boring will be used to identify any influence of the fill material on the presence and distribution of cadmium.

Boring SB-84 will be advanced in the vicinity of existing sample location SB-15. The purpose of this boring is to investigate lithologic variations, and to determine the vertical distribution of cadmium.

Boring SB-85 will be advanced in the vicinity of existing sample location SB-17 in the vicinity of the Liverpool Pump Station overflow. The purpose of this boring is to investigate lithologic variations, and to determine the vertical distribution of cadmium. Analytical data obtained from the soil samples collected from this boring will also be used to determine any potential influence of the pump station overflow on side bank soil quality in this area.

Borings SB-211 and SB-212 will be advanced at the locations requested by NYSDEC.

3.2.5 Upstream Background Area

Three (3) borings will be advanced in this area (SB-213 through SB-215). Fifteen (15) soil samples will be collected from these borings and will be analyzed for cadmium and evaluated for lithological purposes. These locations are located along Vine Street, as shown in Figure 3, and the samples collected will be used to establish background conditions in conjunction with SB-51, SB-52, SB-54 and SB-55 as discussed in Section 3.2.1.

4.0 METHODOLOGIES

This section provides information specific to the actual field methods which will be employed in support of the side bank sediment quality assessment. Physical sample collection methods (**Section 4.1**), quality control sample collection (**Section 4.2**), equipment decontamination (**Section 4.3**), sample packaging (**Section 4.4**), analytical protocols (**Section 4.5**), and ground surface restoration (**Section 4.6**) will be discussed in this section.

4.1 Sample Collection

Several different sampling methodologies will be employed in support of the side bank soil quality assessment. The selection of the most optimal sampling method will depend on the physical characteristics of the sampling location (i.e., access, surface cover, surface slope, etc.) and the desired total depth of the boring. Sampling activities will be performed between the hours of 8:00 am and 5:00 pm, and every effort will be made to minimize any inconvenience (e.g., noise) to residents of the area. Sampling documentation will consist of detailed notes made as to the exact site of sampling, physical observations, sample depths, and weather conditions. These notes will be recorded in a field notebook. Below is a description of each of the sampling methodologies which will be considered for each of the boring locations.

4.1.1 Surface Soil Sample Collection

Surface soil samples will be collected from a depth interval of 0 to 2 inches. The samples will be collected and handled using new disposable Nitrile gloves and a pre-cleaned stainless steel spoon.

The sample locations are vegetated with mowed grasses. The soil and sod will be removed from the surface and placed into a stainless steel mixing bowl with the stainless steel spoon. An appropriate volume of soil and sod will be collected to ensure that there will be adequate soil sample volume after removing as much vegetative material as possible, and to accommodate any required quality control and/or spilt samples. After placing the top 2 inches in the pan, the stainless steel spoon will be used to separate the soil from the vegetative material into the aluminum pan resulting in a sample consisting primarily of soil material. The sample containers will then be filled using the stainless steel spoon.

4.1.2 Hand Auger Sample Collection

A stainless steel hand auger may be used in areas where deeper soil samples are required. The hand auger will be utilized only in areas which are not easily accessible for jackhammer or

geoprobe sampling equipment. The hand auger will be used to advance borings to the desired depth. The soil collected from each advancement of the hand auger will be placed into a properly decontaminated stainless steel mixing bowl. Physical observations of the soils will be made for each interval removed with the hand auger. The hand auger will be properly decontaminated between each sample interval. Sample containers will be filled for the intervals requiring laboratory analysis. The samples will be collected and handled using new disposable nitrile gloves and a decontaminated stainless steel spoon. Each of the borings will be abandoned with the excess soil.

4.1.3 Jackhammer Sampling

An electric jackhammer will be used to advance borings at locations accessible to a portable generator but not a drilling rig. The jackhammer will be used to advance steel sampling rods in two foot intervals. The sampling rods will then be extracted using a hydraulic jack.

Samples will be collected in two-foot intervals and then subsequently split into the desired one-foot intervals. The one-foot intervals will be placed into a properly decontaminated stainless steel mixing bowl. The samples will be collected and handled using new disposable nitrile gloves and a decontaminated stainless steel spoon. The soil samples will be thoroughly mixed prior to placement in laboratory supplied sample containers. All down hole equipment will be thoroughly decontaminated between sample intervals. Borings will be abandoned with excess soil.

4.1.4 Geoprobe Sampling

A geoprobe rig will be used for sample collection in all areas with sufficient access. The geoprobe rig will be used to drive the sampling tools into the formation to facilitate the soil sample collection. The down hole equipment will then be extracted.

The soil samples will be collected in disposable two-foot acetate sleeves. These sleeves will be removed from the sampling equipment and cut open to expose the soil sample then be split into one-foot intervals for sample collection. The one-foot intervals will be placed into a properly decontaminated stainless steel mixing bowl. The samples will be collected and handled using new disposable nitrile gloves and a decontaminated stainless steel spoon. The soil samples will be thoroughly mixed prior to placement in laboratory supplied sample containers. All down hole equipment will be thoroughly decontaminated between sample intervals. Borings will be abandoned with excess soil.

4.2 Quality Control Sample Collection

Quality control samples will be collected to provide necessary data for future validation of the laboratory data, if required. Blind field duplicate samples and matrix spike and matrix spike duplicates will be collected at a frequency of 1 for each 20 soil samples. An equipment blank will be prepared for each day of sampling. Each cooler will be shipped with a field blank and a laboratory blank (prepared by analytical laboratory). These quality control sample collection frequencies are summarized below:

Sample Type	Field Duplicate	Matrix Spike	Matrix Spike Duplicate	Equipment Blank	Laboratory Blank
Frequency	1:20 Samples	1:20 Samples	1:20 Samples	Daily	1:1 Sample Cooler

Based on the quantity of planned soil samples, 10 blind field duplicate samples will be collected at locations to be determined in the field. Duplicates will be created by collecting double volume for the location then splitting the sample volume between sample containers for the sample location and the duplicate sample.

The matrix spike and matrix spike duplicate samples will be created by providing triple sample volume to the laboratory for six sample locations to be determined in the field.

Equipment blanks will be created by placing laboratory clean water in a decontaminated collection pan with a pre-cleaned scoop then transferring this water into a sample container for analysis.

The laboratory blank will be prepared by the laboratory and will remain with the cooler during shipment.

4.3 Equipment Decontamination

Field decontamination will be minimized to the extent practical by using disposable equipment and precleaned stainless steel scoops. However, as necessary, reusable sampling equipment will be decontaminated before use. The decontamination procedure will consist of a wash with Alconox® and potable water and a potable water rinse, followed by a 10% nitric acid rinse, and a final distilled water rinse. The decontaminated equipment will be allowed to air dry and will then be placed in a plastic bag or wrapped in aluminum foil to keep the equipment clean.

4.4 Sample Packaging

Sample containers will be pre-cleaned by the laboratory and pre-labeled by the field representative. Sample containers will be packaged in protective coverings, and the sample custodians will handle the sample containers to minimize the potential for container breakage. Samples will be kept in a cooler with ice, and will be delivered to the laboratory under proper chain of custody at the end of the sampling program, or weekly at a minimum.

4.5 Analytical Protocols

All samples collected pursuant to this Work Plan will be analyzed by a New York State Department of Health (NYSDOH) ELAP certified laboratory. Soil and water samples will be analyzed for cadmium using SW-846 Method 6010B. The laboratory will provide a NYSDEC ASP Category B deliverable data package to allow for data validation in the future.

To support the future validation data needs, quality control samples (field duplicates, equipment blanks, field blanks, and matrix spike and matrix spike duplicate) will be collected in the field and will be analyzed by the laboratory. An evaluation of the need for third-party validation of laboratory data will be made prior to formalizing a Remedial Action Work Plan for the site.

4.6 Ground Surface Restoration

All efforts will be made to limit the amount of surficial disturbance (i.e., tread marks/ruts) potentially caused by the geoprobe rig. Any rutted areas will be repaired with topsoil and grass seed following the completion of the field activities. If significant areas require restoration, appropriate measures (i.e., hay bales) will be implemented to ensure that the work does not cause increased erosion. All sampling locations will be finished with topsoil and will be seeded with commercial grass seed.

5.0 PUBLIC PARTICIPATION

Under the Voluntary Cleanup Program, the NYSDEC is responsible for citizen participation activities in cooperation with the NYSDOH and with input from the Volunteer, as appropriate. A fact sheet will be prepared by NYSDEC. A draft fact sheet has been prepared for the NYSDEC's use (**Appendix A** - Draft Fact Sheet) in preparing the mailing. A recommended mailing list (**Appendix B** - Identification of Interested/Affected Public (Contact List)) has been prepared which includes local and State government contacts, a media contact, owners of the stream bed and side banks, and owners of property located immediately adjacent to sampling locations. A separate list of interested parties maintained by NYSDEC for projects in the region will also receive the mailing (**Appendix C** – List of Interested Parties).

Where samples will be collected in residential areas routinely maintained by the public, property owners will be contacted by LMC prior to collecting samples in these areas. In addition, LMC will conduct meetings with the County, the Town of Salina and the Village of Liverpool to update them on the status of the Bloody Brook Program.

6.0 CONTINGENCY PLAN

This section of the Work Plan has been developed to identify steps that will be taken to resolve issues that may reasonably occur during this work. These issues include weather conditions, sampler refusal or limited sample recovery, access, Onondaga County construction plans, the ongoing drainage condition and channel flow assessment, and the condition of the side banks along Old Liverpool Road.

6.1 Weather Conditions

During heavy rainfall events, certain sampling points will not be accessible. Therefore, to protect the safety of sampling personnel, work activities will be cancelled on days where forecasts predict significant rainfall. Work will resume the next day. In addition, in the event that rainfall conditions result in restricted access to sampling locations (as determined in the field), work activities will be suspended until conditions improve. Similar work restrictions will apply during periods of heavy snowfall, and work will not be scheduled during periods of snow cover. Due to the likelihood of snow cover or snowfall, it is expected that sampling will not occur during the months of December through March.

6.2 Sampler Refusal or Limited Sample Recovery

In the event that sampling equipment cannot penetrate the subsurface at the designated sampling location, or where limited sample recovery will affect data collection, additional efforts will be made to advance the sampler within the same general location as that specified by this Work Plan. In addition, multiple sampling methodologies are described in this Work Plan to minimize the possibility that samples will not be obtained at a given location. In the event of refusal, limited sample recovery, or the presence of obstructions, LMC will not collect the sample and will consult with the NYSDEC regarding potential relocation.

6.3 Access

LMC anticipates that access to perform the side bank soil sampling described herein is obtained through the maintenance easements and rights-of-way granted to Onondaga County. The County, NYSDEC and LMC have performed sampling in and adjacent to Bloody Brook

since 1996 without restrictions to access. However, if access to complete the scope of investigations described herein is denied, LMC will consult with the NYSDEC regarding potential relocation of any affected sampling location(s). If relocation is not an option, LMC will engage in discussions regarding access with the property owner(s) and may collect the sample(s) at a later date. If these discussions are unsuccessful, LMC will notify the NYSDEC in accordance with paragraph XIV.C. of the Voluntary Cleanup Agreement for assistance in obtaining access.

6.4 Onondaga County Construction Plans

LMC understands that the County plans to construct a pumping station south of Floradale Road and a holding tank south of Old Liverpool Road to alleviate sewage overflows during storm events. The facilities and the piping systems associated with these structures will be constructed in the vicinity of Bloody Brook. In areas where the construction plans require a disturbance to side bank soils, LMC may collect additional side bank soil samples to support the completion of the County's planned work.

6.5 Ongoing Drainage Condition and Channel Flow Assessment

As part of the ongoing assessment of existing drainage conditions and channel flow characteristics in portions of Bloody Brook, areas of Bloody Brook will be identified as needing substantial reconstruction to promote storm flow. In areas where the assessment indicates that a significant disturbance to side bank soils may occur, LMC may collect additional side bank soil samples to support the upgrade projects or restoration.

6.6 Condition of Side Banks Along Old Liverpool Road

On August 22, 2002, evidence of recent soil removal and grading was observed on the south side of Old Liverpool Road, along the side bank of Bloody Brook. It appears that this disturbance was conducted in conjunction with the repaving of the road. LMC has contacted the County and determined that soils were removed from the side banks in this area by the Onondaga County Department of Transportation (OCDOT). The NYSDEC contacted the OCDOT and determined that soils were not removed from the side banks, but that the material was regraded at that same location. Field observations confirm that crushed stone has been placed on the side banks in this area.

6.7 Identification of Lithological Marker

In the event that a lithological marker cannot be distinguished by project geologists, LMC may elect to perform laboratory analysis in a phased manner (e.g., analyzing the samples from the

top 2 feet, then analyzing deeper samples as appropriate based on the results from the shallower soils). This determination will be made in consultation with NYSDEC.

Based on geological interpretations made during this program, LMC may propose to modify portions of this sampling plan. These modifications will be made in consultation with the NYSDEC.

7.0 IMPLEMENTATION SCHEDULE

This section presents the anticipated schedule to complete the work described herein.

Activity	Anticipated Schedule
Submittal of Initial Work Plan	September 24, 2002
NYSDEC Review	September 24, 2002 – October 28, 2002
LMC/NYSDEC Address Comments	October 28, 2002 – November 4, 2002
Submittal of Revised Work Plan	November 5, 2002
NYSDEC Approval of Work Plan	November 6, 2002
NYSDEC Distribution of Fact Sheet	November 6, 2002
Field Activities/Sample Collection	November 11, 2002 – November 22, 2002
Laboratory Analysis	November 25, 2002 – December 20, 2002
Receipt of Category B Laboratory Report	December 24, 2002
Submittal of Laboratory Report to NYSDEC	December 31, 2002
Evaluation of Data	January 2003 – March 2003
Determine Next Program Step (Investigation/Remedial Action Activities)	January 2003 – March 2003

8.0 DATA EVALUATION AND REPORTING

Upon receipt of a preliminary laboratory analytical report, LMC will provide NYSDEC with the preliminary report and a summary table and will begin to evaluate the data. The data will be evaluated to determine the following:

- Is there a correlation between field lithology and cadmium concentration in side bank soils?
- Have the horizontal and vertical extent of cadmium in side bank soils been adequately defined?
- Can remedial action alternatives be evaluated based on the data collected?
- Is an additional phase of investigation required?

The scope of the next phase of work will be based on the following:

- The ability to identify side bank disposed sediments based on field-observed lithological characteristics;
- The confirmation of side bank disposition of sediments as the mechanism primarily responsible for the cadmium in side bank soils;
- The results of the ongoing assessment of channel flow characteristics and drainage capacity;
- Determination from NYSDEC regarding the need to disturb in-place erosion controls to access underlying soils that will possibly be required during any remedial action performed with respect to the side bank soils; and
- Determination from the NYSDEC regarding the frequency of confirmatory sampling that will be required during any remedial action performed with respect to the side bank soils.

The results from the investigation work described herein will be incorporated into the monthly Progress Reports as required in Paragraph III of the Voluntary Cleanup Agreement.

TABLES

Table 1
Summary of Existing Analytical Data
Bloody Brook, Onondaga County, New York

Sample Location ID	Cadmium Concentration (mg/kg)	Cadmium Concentration (mg/kg)	Cadmium Concentration (mg/kg)	Cadmium Concentration (mg/kg)
Depth (in)	(0-2)	(0-6)	(0-12)	(12-24)
NYS Thruway to Brookview Lane				
West				
SB-19	34.7			
OCDDS-7		80.5		
SB-21	82.3			
SB-23	27.1			
SB-25	3.76			
OCDDS-6		0.14		
SB-27	11.9			
East				
SB-22	12.2			
SB-24	15.8			
OCDDS-10		0.4		
SB-20	10.9			
OCDDS-4		3.8		
SB-26	8.34			
SB-28	10.9			
OCDDS-5		26.4		
Brookview Lane to Sunflower Drive				
West				
SB-01	10.5		1.64	
SB-02/SB-30	39.3		203	503
East				
SB-29	10.5			
SB-03/SB-31	22.9		37	30.1*
Sunflower Drive to Floradale Road				
West				
SB-32	35.2			
SB-34	3.79			
SB-05/SB-36	26.6		41.1	98.2
East				
SB-33	11.3			
SB-04/SB-35	19.0		30.4	34.2
SB-06SB-37	11.3		11.3	8.04
Floradale Road to Confluence with Unnamed Tributary				
West				
SB-38	22.4			
EPSOIL-2			29.6	
SB-07/SB-40	6.52		42.1	34.3
SB-42	5.65			
East				
SB-39	16.8			
SB-41	47.3			
SB-08/SB-43	7.77		5.78	
Unnamed Tributary to Harborside Manor Road				
West				
SB-45	17.5			
East				
SB-44	101			
SB-09/SB-46	96.1		81.5	191
SB-10/SB-47	35.6		108	114
Harborside Manor Road to Confluence with Middle Branch				
East				
SB-48	29.6			
SB-11/SB-49	21.6		9.82	
EPSOIL-3			75.6	
SB-12/SB-50	1.3		2.11	
Confluence with Middle Branch to Onondaga Lake Parkway				
West				
SB-13			14.4	0.666U
SB-15			30.2	44.8
SB-17			32.1	
East				
SB-14			52.2	26.2*
SB-16			28.9	27.7
EPSOIL-4			4.5	
SB-18			6.25	

NOTES:
1. An asterisk (*) indicates that the full 12-24 inch sample could not be collected.
2. The OCDDS samples were collected by Onondaga County in October 1996.
3. The EPSOIL samples were collected by NYSDEC in October 2001.
4. LMC collected samples in November 2001 and June 2002.

Table 2
Summary of Proposed Investigation
Bloody Brook, Onondaga County, New York

Location ID	Distance to Center Line of Brook (ft)	Depth Interval(s) Collected (ft)	Analysis	Notes
Wooded Area				
SB-51	75 - 100	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Background/reference sample. Approx. 350 ft. upstream of gabion end.
SB-52	150 - 175	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Background/ reference sample. Behind #649 Sunflower Drive property.
SB-53	15	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Location to establish upstream extent on west side. Approx. 25 - 30 ft. upstream of gabion end.
SB-54	10 - 15	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Background/reference sample. North of tributary, approx. 100 - 125 ft. west of West Branch.
SB-55	10 - 15	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Background/ reference sample. South of tributary, approx. 100 - 125 ft. west of West Branch.

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Table 2
Summary of Proposed Investigation
Bloody Brook, Onondaga County, New York

Location ID	Distance to Center Line of Brook (ft)	Depth Interval(s) Collected (ft)	Analysis	Notes
Single Family Residential Area				
SB-56	14 - 17	0-2 in.	Cadmium.	Location 5 - 8 feet west of SB-19 (highest 25% of June 2002 samples).
SB-57	9	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Same location as SB-21.
SB-58	14 - 17	0-2 in.	Cadmium.	Location 5 - 8 feet west of SB-21 (highest 25% of June 2002 samples).
SB-59	25 - 30	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Approx. 15 - 20 ft. west of SB-57. Fence is approx. 33 ft. from center line.
SB-60	9	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	East of brook, approx. 42 ft. upstream of end of gabions. Fence approx. 11 ft. from center line.
SB-61	9	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Location 10 ft. upstream of SB-02 and SB-30.
SB-62	9	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology for all intervals, cadmium at 2-3 ft. and 3-4 ft.	Same location as SB-02 and SB-30.
SB-63	17	0-2 in.	Cadmium.	Location 8 ft. west of SB-02 and SB-30.
SB-64	18 - 21	0-2 in.	Cadmium.	Location 5 - 8 feet west of SB-32 (highest 25% of June 2002 samples).
SB-65	17	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology for all intervals, cadmium at 2-3 ft. and 3-4 ft.	Same location as SB-05 and SB-36.
SB-201	29	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
SB-202	15	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
SB-203	15	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
SB-204	9	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample. Same as SB-23.
SB-205	15	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
SB-206	15	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
SB-207	9	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample. Same as SB-27.
SB-208	15	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
SB-209	15 - 20	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.

Table 2
Summary of Proposed Investigation
Bloody Brook, Onondaga County, New York

Location ID	Distance to Center Line of Brook (ft)	Depth Interval(s) Collected (ft)	Analysis	Notes
Apartment Building and Commercial Area				
SB-66	12	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Same location as SB-41.
SB-67	17 - 20	0-2 in.	Cadmium.	Location 5 - 8 feet east of SB-41 (highest 25% of June 2002 samples).
SB-68	12	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Same location as SB-44.
SB-69	17 - 20	0-2 in.	Cadmium.	Location 5 - 8 feet north/east of SB-44 (highest 25% of June 2002 samples).
SB-70	10	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology for all intervals, cadmium at 2-3 ft. and 3-4 ft.	Same location as SB-09 and SB-46.
SB-71	15 - 18	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Location 5 - 8 feet west of SB-09 and SB-46.
SB-72	15	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology for all intervals, cadmium at 2-3 ft. and 3-4 ft.	Same location as SB-10 and SB-47.
SB-73	20 - 23	0-2 in.	Cadmium.	Location 5 - 8 feet north/east of SB-47 (highest 25% of June 2002 samples).
SB-74	10	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Approx. 12 ft. from center line of Middle Branch, at NYSDEC's approx. EPSOIL-3 location.
SB-210	17.5	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.

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Table 2
Summary of Proposed Investigation
Bloody Brook, Onondaga County, New York

Location ID	Distance to Center Line of Brook (ft)	Depth Interval(s) Collected (ft)	Analysis	Notes
Light Industrial Area				
SB-75	10 - 15	0-6 in., 6-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	North/east of brook, south of Old Liverpool Road, approx. 100 - 125 ft. from Old Liverpool Road center culvert.
SB-76	35	0-6 in., 6-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	South/west of brook, approx. 100 - 125 ft. from Old Liverpool Road center culvert (in staked area used by Onondaga County for sediment disposal).
SB-77	70 - 80	0-6 in., 6-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	South/west of brook, approx. 100 - 125 ft. from Old Liverpool Road center culvert (beyond staked area used by Onondaga County for sediment disposal).
SB-78	10	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology for all intervals, cadmium at 1-2 ft., 2-3 ft. and 3-4 ft.	Same location as SB-14.
SB-79	20	0-6 in., 6-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Approx. 10 ft. east of SB-14.
SB-80	40 - 50	0-6 in., 6-12 in., 0-4 ft., 4-8 ft., 8-12 ft.,12-16 ft.	Lithology and cadmium for all intervals.	Through fill bank on west side, approx. 90 ft. downstream of 6-in. CMP pipe in east bank.
SB-81	15	0-6 in., 6-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	On west side of brook, approx. 90 ft. downstream of 6-in. CMP pipe in east bank.
SB-82	15	0-6 in., 6-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	On east side of brook, approx. 40 ft. downstream of 6-in. CMP pipe in east bank.
SB-83	35 - 45	0-6 in., 6-12 in., 0-4 ft., 4-8 ft., 8-12 ft.,12-16 ft.	Lithology and cadmium for all intervals.	Through fill bank on east side, approx. 40 ft. downstream of 6-in. CMP pipe in east bank.
SB-84	20	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology for all intervals, cadmium at 2-3 ft. and 3-4 ft.	Same location as SB-15.
SB-85	15	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology for all intervals, cadmium at 1-2 ft., 2-3 ft. and 3-4 ft.	Same location as SB-17.
SB-211	20 - 30	0-6 in., 0-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
SB-212	30	0-6 in., 0-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.

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Table 2
Summary of Proposed Investigation
Bloody Brook, Onondaga County, New York

Location ID	Distance to Center Line of Brook (ft)	Depth Interval(s) Collected (ft)	Analysis	Notes
Upstream Background Area				
SB-213	5 - 10	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Background sample located adjacent to Vine Street.
SB-214	5 - 10	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Background sample located adjacent to Vine Street.
SB-215	5 - 10	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Background sample located adjacent to Vine Street.

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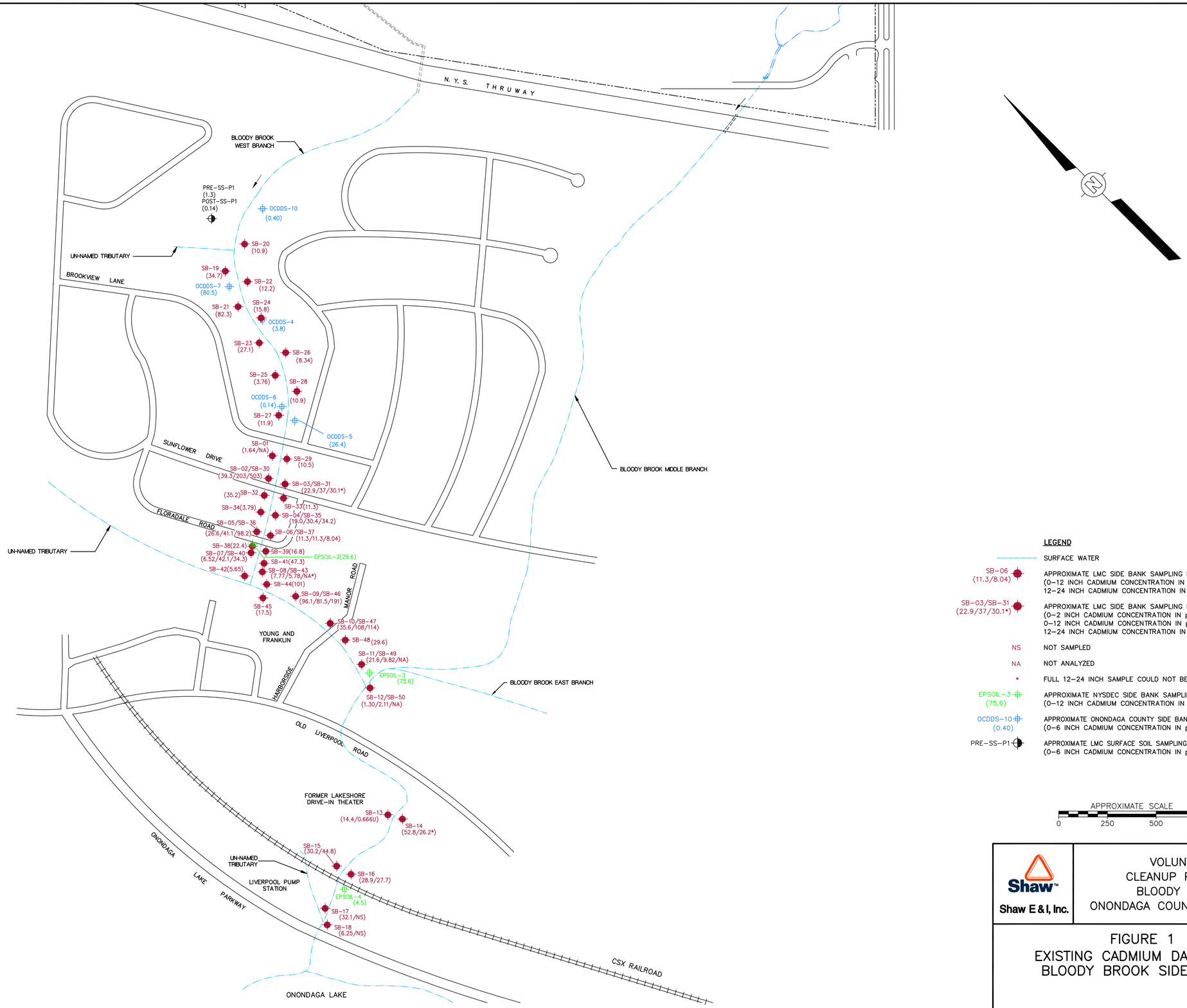
FIGURES



LEGEND

	SURFACE WATER
SB-06 (11.3/8.04)	APPROXIMATE LMC SIDE BANK SAMPLING LOCATION (0–12 INCH CADMIUM CONCENTRATION IN ppm/ 12–24 INCH CADMIUM CONCENTRATION IN ppm)
SB-03/SB-31 (22.9/37/30.1*)	APPROXIMATE LMC SIDE BANK SAMPLING LOCATION (0–2 INCH CADMIUM CONCENTRATION IN ppm/ 0–12 INCH CADMIUM CONCENTRATION IN ppm/ 12–24 INCH CADMIUM CONCENTRATION IN ppm)
NS	NOT SAMPLED
NA	NOT ANALYZED
*	FULL 12–24 INCH SAMPLE COULD NOT BE COLLECTED
EPSOIL-3 (75.6)	APPROXIMATE NYSDEC SIDE BANK SAMPLING LOCATION (0–12 INCH CADMIUM CONCENTRATION IN ppm)
OCDDS-10 (0.40)	APPROXIMATE ONONDAGA COUNTY SIDE BANK SAMPLING LOCATION (0–6 INCH CADMIUM CONCENTRATION IN ppm)
PRE-SS-P1	APPROXIMATE LMC SURFACE SOIL SAMPLING LOCATION (0–6 INCH CADMIUM CONCENTRATION IN ppm)

APPROXIMATE SCALE
0 250 500 750 FEET

Shaw™
Shaw E & I, Inc.

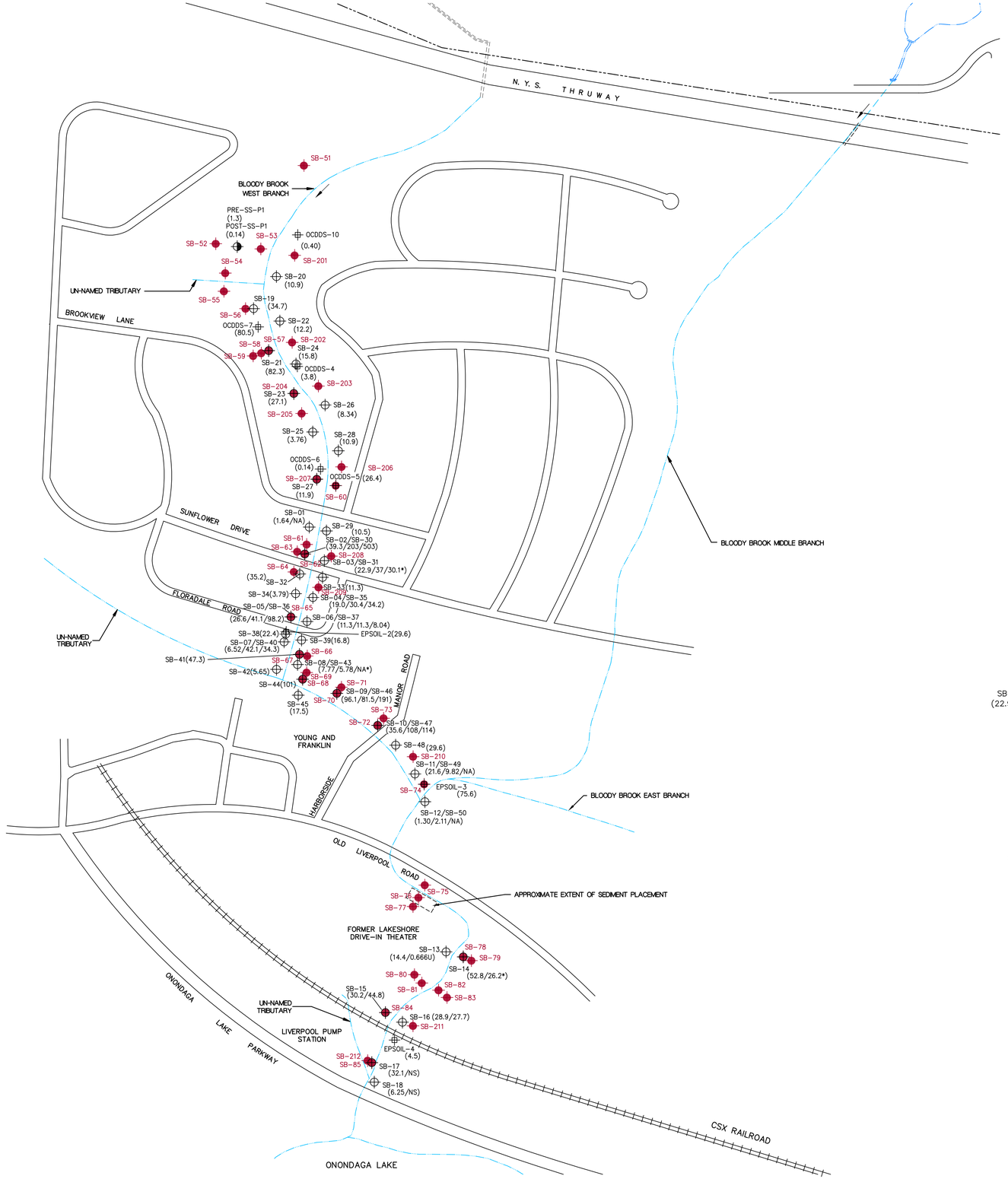
VOLUNTARY
CLEANUP PROGRAM
BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FIGURE 1
EXISTING CADMIUM DATA FROM
BLOODY BROOK SIDE BANKS

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
ALBANY, NY	SSH/HMD 08-01-02			824446D10

L:\project\824446\824446D10.dwg
Plot Date/Time: 10/28/08 11:49am
Format Revised: 11/23/99
Image:
Xref: .

Location ID	Distance to Center Line of Brook (ft)	Depth Interval(s) Collected (ft)	Analysis	Notes
Wooded Area				
SB-51	75 – 100	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Background/reference sample. Approx. 350 ft. upstream of gabion end.
SB-52	150 – 175	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Background/ reference sample. Behind #649 Sunflower Drive property.
SB-53	15	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Location to establish upstream extent on west side. Approx. 25 – 30 ft. upstream of gabion end.
SB-54	10 – 15	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Background/reference sample. North of tributary, approx. 100 – 125 ft. west of West Branch.
SB-55	10 – 15	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Background/ reference sample. South of tributary, approx. 100 – 125 ft. west of West Branch.
Single Family Residential Area				
SB-56	14 – 17	0-2 in.	Cadmium.	Location 5 – 8 feet west of SB-19 (highest 25% of June 2002 samples).
SB-57	9	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Same location as SB-21.
SB-58	14 – 17	0-2 in.	Cadmium.	Location 5 – 8 feet west of SB-21 (highest 25% of June 2002 samples).
SB-59	25 – 30	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Approx. 15 – 20 ft. west of SB-57. Fence is approx. 33 ft. from center line.
SB-60	9	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	East of brook, approx. 42 ft. upstream of end of gabions. Fence approx. 11 ft. from center line.
SB-61	9	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Location 10 ft. upstream of SB-02 and SB-30.
SB-62	9	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology for all intervals, cadmium at 2-3 ft. and 3-4 ft.	Same location as SB-02 and SB-30.
SB-63	17	0-2 in.	Cadmium.	Location 8 ft. west of SB-02 and SB-30.
SB-64	18 – 21	0-2 in.	Cadmium.	Location 5 – 8 feet west of SB-32 (highest 25% of June 2002 samples).
SB-65	17	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology for all intervals, cadmium at 2-3 ft. and 3-4 ft.	Same location as SB-05 and SB-36.
SB-201	29	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
SB-202	15	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
SB-203	15	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
SB-204	9	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample. Same as SB-23.
SB-205	15	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
SB-206	15	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
SB-207	9	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample. Same as SB-27.
SB-208	15	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
SB-209	15 – 20	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
Apartment Building and Commercial Area				
SB-66	12	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Same location as SB-41.
SB-67	17 – 20	0-2 in.	Cadmium.	Location 5 – 8 feet east of SB-41 (highest 25% of June 2002 samples).
SB-68	12	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Same location as SB-44.
SB-69	17 – 20	0-2 in.	Cadmium.	Location 5 – 8 feet north/east of SB-44 (highest 25% of June 2002 samples).
SB-70	10	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology for all intervals, cadmium at 2-3 ft. and 3-4 ft.	Same location as SB-09 and SB-46.
SB-71	15 – 18	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Location 5 – 8 feet west of SB-09 and SB-46.
SB-72	15	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology for all intervals, cadmium at 2-3 ft. and 3-4 ft.	Same location as SB-10 and SB-47.
SB-73	20 – 23	0-2 in.	Cadmium.	Location 5 – 8 feet north/east of SB-47 (highest 25% of June 2002 samples).
SB-74	10	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Approx. 12 ft. from center line of Middle Branch, at NYSDEC's approx. EPSOIL-3 location.
SB-210	17.5	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
Light Industrial Area				
SB-75	10 – 15	0-6 in., 6-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	North/east of brook, south of Old Liverpool Road, approx. 100 – 125 ft. from Old Liverpool Road center culvert.
SB-76	35	0-6 in., 6-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	South/west of brook, approx. 100 – 125 ft. from Old Liverpool Road center culvert (in staked area used by Onondaga County for sediment disposal).
SB-77	70 – 80	0-6 in., 6-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	South/west of brook, approx. 100 – 125 ft. from Old Liverpool Road center culvert (beyond staked area used by Onondaga County for sediment disposal).
SB-78	10	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology for all intervals, cadmium at 1-2 ft., 2-3 ft. and 3-4 ft.	Same location as SB-14.



Location ID	Distance to Center Line of Brook (ft)	Depth Interval(s) Collected (ft)	Analysis	Notes
Light industrial area continued.				
SB-79	20	0-6 in., 6-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Approx. 10 ft. east of SB-14.
SB-80	40 – 50	0-6 in., 6-12 in., 0-4 ft., 4-8 ft., 8-12 ft.,12-16 ft.	Lithology and cadmium for all intervals.	Through fill bank on west side, approx. 90 ft. downstream of 6-in. CMP pipe in east bank.
SB-81	15	0-6 in., 6-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	On west side of brook, approx. 90 ft. downstream of 6-in. CMP pipe in east bank.
SB-82	15	0-6 in., 6-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	On east side of brook, approx. 40 ft. downstream of 6-in. CMP pipe in east bank.
SB-83	35 – 45	0-6 in., 6-12 in., 0-4 ft., 4-8 ft., 8-12 ft.,12-16 ft.	Lithology and cadmium for all intervals.	Through fill bank on east side, approx. 40 ft. downstream of 6-in. CMP pipe in east bank.
SB-84	20	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology for all intervals, cadmium at 2-3 ft. and 3-4 ft.	Same location as SB-15.
SB-85	15	0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology for all intervals, cadmium at 1-2 ft., 2-3 ft. and 3-4 ft.	Same location as SB-17.
SB-211	20 – 30	0-6 in., 0-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
SB-212	30	0-6 in., 0-12 in., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	NYSDEC-requested additional sample.
Upstream Background Area				
SB-213	5 – 10	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Background sample located adjacent to Vine Street.
SB-214	5 – 10	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Background sample located adjacent to Vine Street.
SB-215	5 – 10	0-2 in., 0-1 ft., 1-2 ft., 2-3 ft., 3-4 ft.	Lithology and cadmium for all intervals.	Background sample located adjacent to Vine Street.

LEGEND

	SURFACE WATER
SB-52	PROPOSED SAMPLING LOCATION
SB-06 (11.3/8.04)	APPROXIMATE LMC SIDE BANK SAMPLING LOCATION (0–12 INCH CADMIUM CONCENTRATION IN ppm/ 12–24 INCH CADMIUM CONCENTRATION IN ppm)
SB-03/SB-31 (22.9/37/30.1*)	APPROXIMATE LMC SIDE BANK SAMPLING LOCATION (0–2 INCH CADMIUM CONCENTRATION IN ppm/ 0–12 INCH CADMIUM CONCENTRATION IN ppm/ 12–24 INCH CADMIUM CONCENTRATION IN ppm)
NS	NOT SAMPLED
NA	NOT ANALYZED
*	FULL 12–24 INCH SAMPLE COULD NOT BE COLLECTED
EPSOIL-3 (75.6)	APPROXIMATE NYSDEC SIDE BANK SAMPLING LOCATION (0–12 INCH CADMIUM CONCENTRATION IN ppm)
OCDDS-10 (0.40)	APPROXIMATE ONONDAGA COUNTY SIDE BANK SAMPLING LOCATION (0–6 INCH CADMIUM CONCENTRATION IN ppm)
PRE-SS-P1	APPROXIMATE LMC SURFACE SOIL SAMPLING LOCATION (0–6 INCH CADMIUM CONCENTRATION IN ppm)

NOTE:
BACKGROUND SAMPLES LOCATED ADJACENT TO VINE STREET ARE ILLUSTRATED ON FIGURE 3.

APPROXIMATE SCALE
0 250 500 750 FEET

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BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FIGURE 2
PROPOSED SIDE BANK SAMPLING LOCATIONS

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APPROVED BY
CHECKED BY
DRAWN BY SSH/HMD 08-26-02
OFFICE ALBANY, NY

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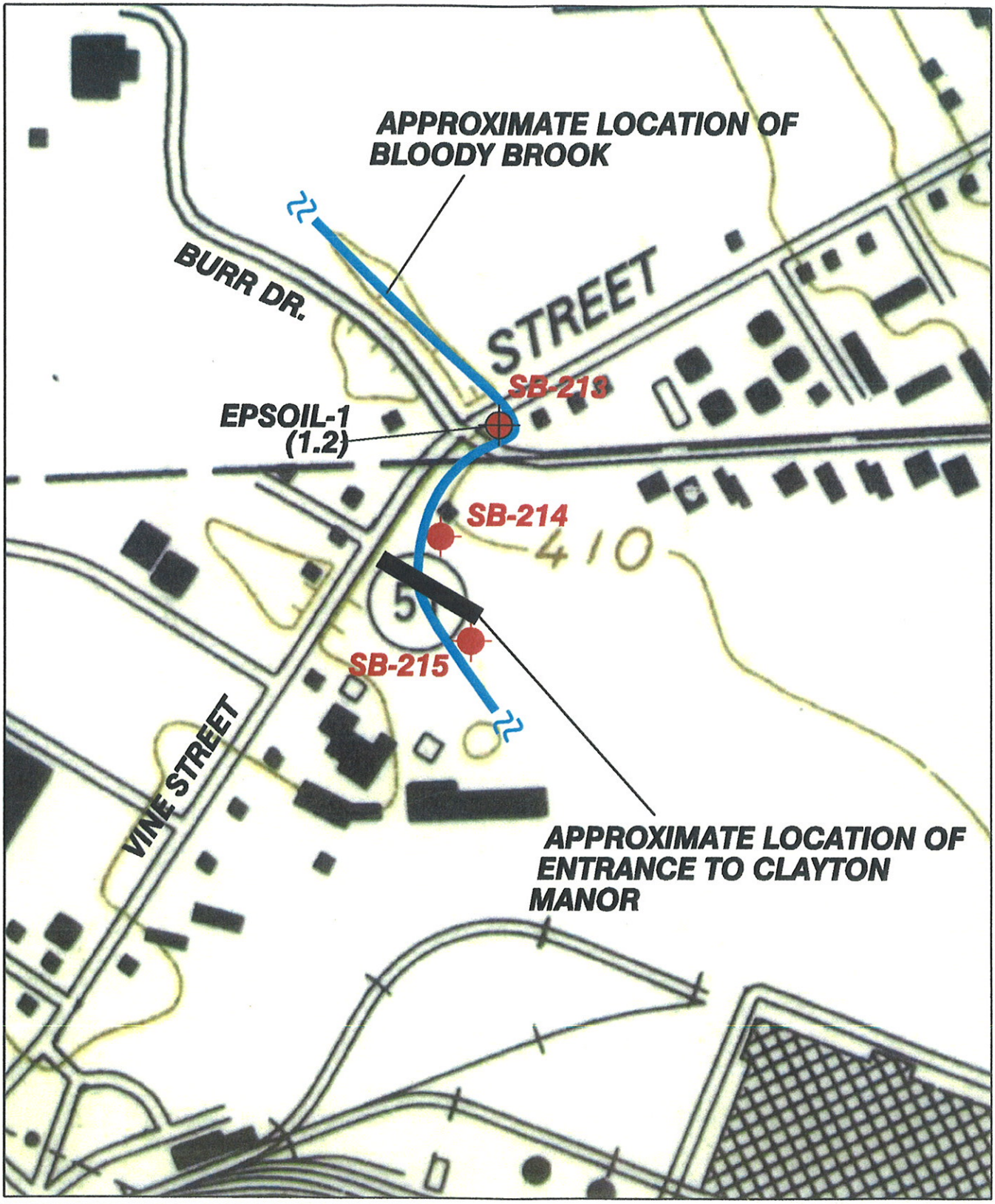

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NOT TO SCALE

LEGEND

PROPOSED SAMPLING LOCATION

APPROXIMATE NYSDEC SIDE BANK SAMPLING LOCATION (0–12 INCH CADMIUM CONCENTRATION IN ppm)

REFERENCE:

NYSDOT 7.5 MIN TOPOGRAPHIC MAP OF SYRACUSE WEST, QUADRANGLE 1990.

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VOLUNTARY CLEANUP PROGRAM
BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FIGURE 3
ADDITIONAL PROPOSED BACKGROUND SAMPLING LOCATIONS

APPENDIX A

DRAFT FACT SHEET

Draft Fact Sheet: Side Bank Soil Investigation
Bloody Brook, Onondaga County, New York

Prepared By: New York State Department of Environmental Conservation

Side Bank Soil Investigation
Bloody Brook, Onondaga County, New York

Lockheed Martin Corporation will be performing sampling during the week of November 11, 2002 at 50 locations along Bloody Brook from the NYS Thruway to Onondaga Lake Parkway. A Side Bank Soil Investigation Work Plan has been prepared that describes the work in detail. The Work Plan is available for review by contacting Mary Jane Peachey at the Regional NYSDEC office.

For More Information:

Site-related Health Questions

Ms. Henriette Hamel
NYSDOH
(315) 426-7627

Ms. Lisa Letteney
Onondaga County DOH
(315) 435-6600

Other Questions

Mr. Richard Mustico, PE
NYSDEC
(518) 402-9767

Ms. Mary Jane Peachey, PE
NYSDEC
(315) 426-7420

Ms. Ellen Mitchell
Lockheed Martin Corporation
(315) 456-3296

Lockheed Martin Corporation entered into a Voluntary Cleanup Agreement with the New York State Department of Environmental Conservation (NYSDEC) in July 2002 to address NYSDEC concerns regarding cadmium identified in sediments and side bank soils of portions of Bloody Brook. NYSDEC has approved a Side Bank Soil Investigation Work Plan that involves the collection of 203 samples from 50 locations along the brook. The sampling will take approximately two weeks to complete and NYSDEC will be on-site when the samples are collected. The sampling will be performed by an experienced environmental consultant retained by Lockheed Martin Corporation. The sampling locations are shown on the attached map.

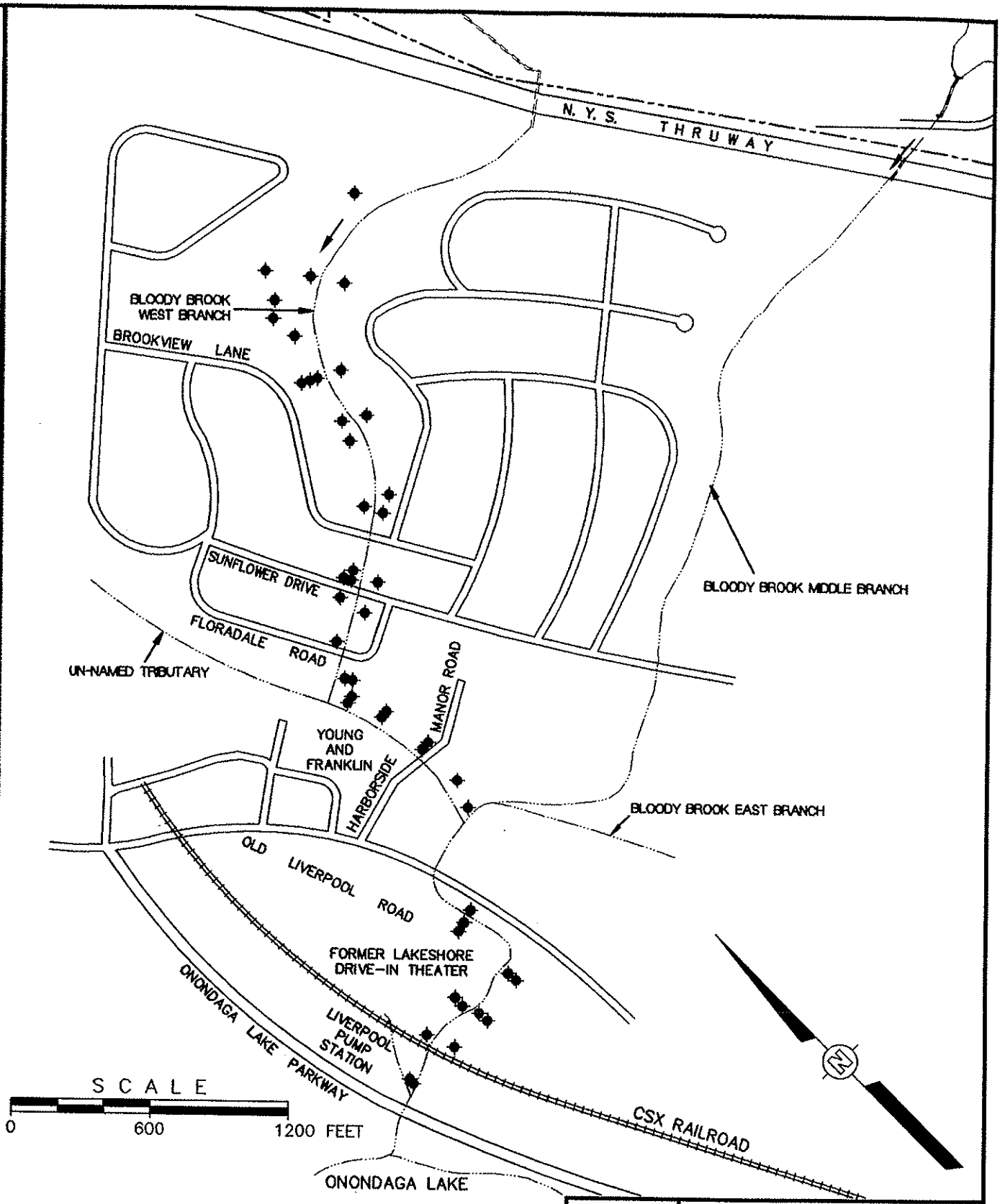
After the soil sampling is completed, the samples will be analyzed for cadmium by a laboratory certified by the New York State Department of Health (NYSDOH). Once the analytical results are received (approximately 4-6 weeks following the completion of sample collection), the test results will be available to the public. This soil sampling will be beneficial because it will assist NYSDEC in making decisions about how to clean up the area.

Side bank soil samples will be collected from 50 locations in the Bloody Brook Drainage District from the NYS Thruway to Onondaga Lake Parkway. Soil samples will be collected from various depths ranging from 2 inches to 4 feet, with the exception of two locations where depths will extend to 16 feet. The objective of the sampling program is to define the extent of cadmium in side bank soils as a result of drainage maintenance activities.

A small scoop will be used to collect the shallow samples from the ground surface to two inches. Deeper samples will be collected using a hand operated auger, or a mechanized device designed to retrieve samples from the subsurface. The mechanical devices include an electric impact hammer powered by a portable generator or a small mobile hydraulic rig.

The sampling will be conducted between the hours of 8:00 a.m. and 5:00 p.m. and every effort will be made to minimize any inconvenience to residents of the area. There may be some temporary noise caused by equipment operation. Also, in some cases, sampling personnel will need to cross lawns or other public and private property with equipment to access a sampling location or they will need to park trucks or equipment temporarily in parking lots/roadways in the area. Sampling personnel will make every effort to avoid disturbance to these areas, especially lawns, but where this cannot be avoided, the disturbance will be promptly restored after the sampling is completed.

People living in the area may have questions about coming into contact with the soils immediately adjacent to the Brook. Under typical exposure scenarios, the concentrations of cadmium in soil in this area are not high enough to pose a health concern.



LEGEND

SURFACE WATER

APPROXIMATE SAMPLE LOCATIONS

NOTE:
LOCATIONS OF 3 BACKGROUND SAMPLES ADJACENT TO VINE STREET NOT SHOWN.

Shaw E & I, Inc.

BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

PROPOSED SAMPLE LOCATIONS

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
ALBANY, NY	S. SHKOLNIK 08-28-02			824446A6

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APPENDIX B

IDENTIFICATION OF INTERESTED/AFFECTED PUBLIC (CONTACT LIST)

APPENDIX B
IDENTIFICATION OF INTERESTED/AFFECTED PUBLIC (CONTACT LIST)

This appendix identifies individuals and organizations representing the Town of Salina, the Village of Liverpool, Onondaga County, and the State of New York, and individuals and groups potentially interested/affected by the Phase III Side Bank Soil Investigation.

Local Contacts

ENTITY	CONTACT	ADDRESS
Town of Salina Supervisor	Ms. Mary Ann Schadt	201 School Road Liverpool, New York 13088
Village of Liverpool Mayor	Ms. Marlene Ward	500 Hickory Street Liverpool, New York 13088
Onondaga County County Executive	Mr. Nicholas Pirro	Onondaga County Courthouse 401 Montgomery Street, Syracuse, New York 13202
Onondaga County County Clerk	Ms. M. Ann Ciarpelli	Onondaga County Courthouse 401 Montgomery Street, Syracuse, New York 13202
Onondaga County Health Department	Dr. Lloyd Novick	Onondaga County Courthouse 421 Montgomery Street, Syracuse, New York 13202
Onondaga County Office of the Environment	Mr. David Coburn	Onondaga County Courthouse 421 Montgomery Street, Syracuse, New York 13202

State Contacts

ENTITY	CONTACT	ADDRESS
New York State Senate	Senator John A. DeFrancisco	State Office Building, Room 804 333 East Washington Street, Syracuse, New York 13202
New York State Assembly	Assemblywoman Joan Christensen	4317 East Genessee Street DeWitt, New York 13214
NYSDEC	Mr. Richard A. Mustico, PE	625 Broadway Albany, New York 12233
NYSDEC	Ms. Mary Jane Peachey, PE	615 Erie Boulevard West Syracuse, New York 13204
NYSDEC	Ms. Carol Conyers, Esq.	625 Broadway Albany, New York 12233
NYSDOH	Ms. Henriette Hamel	217 South Salina Street Syracuse, NY 13202

Lockheed Martin Corporation Contacts

ENTITY	CONTACT	ADDRESS
Lockheed Martin Corporation Communications	Ellen Mitchell	PO Box 4840 Syracuse, New York 13221
Lockheed Martin Corporation General Counsel	Sandra Lee Fenske, Esq.	PO Box 4840 Syracuse, New York 13221
Lockheed Martin Corporation Principal Engineer	Patrick D. Salvador, PE	PO Box 4840 Syracuse, New York 13221
Lockheed Martin Corporation Regional ESH Manager	Brian A. Kent	PO Box 4840 Syracuse, New York 13221

Media Contacts

ENTITY	CONTACT	ADDRESS
Syracuse Newspapers		Clinton Square PO Box 4814 Syracuse, New York, 13202

Owners of Bloody Brook Stream Bed and Owners of Adjacent Property

TAX MAP	OWNER	PROPERTY ADDRESS
28-02-39	June G. Valle 122 Brookview Lane, Liverpool, NY 13088	122 Brookview Lane (1 family)
28-02-40	Scott L. & MaryEllen Montani 120 Brookview Lane, Liverpool, NY 13088	120 Brookview Lane (1 family)
28-02-41	Joseph Albero 118 Brookview Lane, Liverpool, NY 13088	118 Brookview Lane (1 family)
28-02-42	John J. Relihan 116 Brookview Lane, Liverpool, NY 13088	116 Brookview Lane (1 family)
28-02-43	Evelyn M. Quarantillo 114 Brookview Lane, Liverpool, NY 13088	114 Brookview Lane (1 family)
28-02-44	Lawrence C. & Dorothy M. Strutz 112 Brookview Lane, Liverpool, NY 13088	112 Brookview Lane (1 family)
28-02-45	Frank G. & Catherine M. Eierstock 110 Brookview Lane, Liverpool, NY 13088	110 Brookview Lane (1 family)
28-02-46	Kathleen J. Muraski 108 Brookview Lane, Liverpool, NY 13088	108 Brookview Lane (1 family)
28-02-47	Town of Salina 201 School Road, Liverpool, NY 13088	Sunflower Drive (Vacant-wooded area)
29-05-10	Melville L. & Carolyn C. Bartlett 207 Midwood Drive, Liverpool, NY 13088	207 Midwood Drive (1 family)

TAX MAP	OWNER	PROPERTY ADDRESS
29-05-09	Theodore P. Booras 205 Midwood Drive, Liverpool, NY 13088	205 Midwood Drive (1 family)
29-05-08	Lynn C. Weatherup 201 Midwood Drive, Liverpool, NY 13088	201 Midwood Drive (1 family)
29-05-07	Robert H. & Shirley P. LaFaver 113 Midwood Drive, Liverpool, NY 13088	113 Midwood Drive (1 family)
29-05-06	Richard & Nancy Polachek 206 Saltmakers Road, Liverpool, NY 13088	111 Midwood Drive (1 family)
29-05-05	Linda J. Payne 109 Midwood Drive, Liverpool, NY 13088	109 Midwood Drive (1 family)
29-05-04	Carl P. & Bonnie P. Sigona 107 Midwood Drive, Liverpool, NY 13088	107 Midwood Drive (1 family)
29-05-03	Harold Hemingway Jr. 100 Brookline Drive, Mattydale, NY 13211	105 Midwood Drive (1 family)
29-05-02	Lloyd A. & Joanne L. Lathrop 103 Midwood Drive, Liverpool, NY 13088	103 Midwood Drive (1 family)
29-05-01	Donald R. & Barbara A. Tarson 101 Midwood Drive, Liverpool, NY 13088	101 Midwood Drive (1 family)
29-04-18	Gerald M. & Lynda A. Smith 107 Brookview Lane, Liverpool, NY 13088	107 Brookview Lane (1 family)
29-04-19	Town of Salina 201 School Road, Liverpool, NY 13088	Drainage (Brook)
29-04-20	Daniel J. & Clara Bader 105 Brookview Lane, Liverpool, NY 13088	105 Brookview Lane (1 family)
29-04-27	Robert & Lisa Cussen 404 Sunflower Drive, Liverpool, NY 13088	404 Sunflower Drive (1 family)
29-04-28	Michael O'Hora 406 Sunflower Drive, Liverpool, NY 13088	406 Sunflower Drive (1 family)
29-03-06	John A. Caiella 403 Sunflower Drive, Liverpool, NY 13088	403 Sunflower Drive (1 family)
29-03-07	Town of Salina 201 School Road, Liverpool, NY 13088	Drainage (Brook)
29-03-08	Joseph A. & Genevieve M. Trovato 401 Sunflower Drive, Liverpool, NY 13088	401 Sunflower Drive (1 family)
29-03-09	James & Hermine Duerr 102 Floradale Drive, Liverpool, NY 13088	102 Floradale Drive (1 family)
29-03-10	Michael Cohen & Edna McCarthy 104 Floradale Drive, Liverpool, NY 13088	104 Floradale Drive (1 family)
29-01-21	Henry T. Varner, Jr. & Adrienne Varner 113 Floradale Road, Liverpool, NY 13088	113 Floradale Drive (1 family)

TAX MAP	OWNER	PROPERTY ADDRESS
29-01-22	Town of Salina 201 School Road, Liverpool, NY 13088	Floradale Drive (Drainage)
29-01-23	Wayne A. & Kathleen A. Buehner 109 Floradale Drive, Liverpool, NY 13088	109 Floradale Drive (1 family)
03-09-41	Home Properties of New York LP 850 Clinton Square, Rochester, NY 14604	200 Pearl Street (Apartments)
03-09-42	County of Onondaga IDA c/o Young & Franklin 942 Old Liverpool Road, Liverpool, NY 13088	Salina Street (Distribution Facility)
91-01-26	Michael J. McLaughlin, McDonalds 031/0125 3 Jonathan Court, Whitesboro, NY 13492	920 Old Liverpool Road (Dining)
91-01-27.1	Condren Realty Management Corp. 110 Managers Place, Syracuse, NY 13209	922-924 Old Liverpool Road (Multiple Use)
91-01-29	Marie D'Agosinto et al. 7 Easton Road, Liverpool, NY 13090	926 Old Liverpool Road (Vacant)
91-01-30	County of Onondaga IDA 421 Montgomery Street, Syracuse, NY 13202	Old Liverpool Road (Parking Lot)
91-01-31	County of Onondaga IDA 421 Montgomery Street, Syracuse, NY 13202	942 Old Liverpool Road (Parking Lot)
91-01-32	Home Properties Harborside Manor LLC 805 Clinton Square, Rochester, NY 14604	21 Towngarden Drive (Apartments)
91-01-33	Home Properties Harborside Manor LLC 805 Clinton Square, Rochester, NY 14604	20 Towngarden Drive (Apartments)
91-01-41	Home Properties Harborside Manor LLC 805 Clinton Square, Rochester, New York 14604	Towngarden Drive (Apartments)
90-01-03	Lawrence J. Belluci, Lakeshore Shopping Plaza Partnership 1401 Erie Boulevard East, Syracuse, NY 13210	911 Old Liverpool Road (Shopping Center)
90-01-04	913 Old Liverpool road Associations c/o The Widewaters Group, Inc. P.O. Box 3, 5788 Widewaters Parkway, Syracuse, NY 13214	913 Old Liverpool Road (Office Building)
93-01-03	CSX Tax Department 500 Water Street, Dept. J910, Jacksonville, FL 32202	Oswego Street (Railroad Center)
93-01-01.1	County of Onondaga Division of Parks 6760 Onondaga Lake Parkway, P.O. Box 146, Liverpool, NY 13088	Onondaga Lake Parkway (Public Park)

APPENDIX C

LIST OF INTERESTED PARTIES