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Culvert and 2015 Construction Season Waste Characterization Soil Sampling Work Plan

West Branch of Bloody Brook
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

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List of Acronyms

ASP – Analytical Services Protocol

BGS – below ground surface

CAMP – Community Air Monitoring Program

ELAP – Environmental Laboratory Accreditation Program

HASP – Health and Safety Plan

NYSDEC – New York State Department of Environmental Conservation

NYSDOH – New York State Department of Health

PPE – Personal Protective Equipment

USEPA – United States Environmental Protection Agency

VCA – Voluntary Cleanup Agreement

WBBB – West Branch of Bloody Brook

1.0 Introduction

This *Culvert and 2015 Construction Season Waste Characterization Soil Sampling Work Plan* (Work Plan) has been developed by AECOM Technical Services Northeast, Inc. (AECOM) on behalf of Lockheed Martin Corporation (Lockheed Martin) and is being submitted to the New York State Department of Environmental Conservation (NYSDEC) for approval. This work plan describes the sample collection and analysis to be completed for soil adjacent to the West Branch of Bloody Brook (WBBB) in the vicinity of the culverts on Brookview Lane, Floradale Road, Pearl Street, and Town Gardens Drive, as well as sediment and soil samples to be collected and analyzed for the purpose of characterizing waste soils and sediments associated with the remedial activities planned for the 2015 construction season.

For the purposes of this Work Plan, the site is defined as that portion of the WBBB and the surrounding area commencing on the southern boundary of the New York State Thruway (Thruway) and ending at Onondaga Lake Parkway. A site location map has been included as Figure 1. The sampling activities will be performed pursuant to a Voluntary Cleanup Agreement (VCA) between Lockheed Martin and NYSDEC (Index #; D7-0001-01-09, effective July 20, 2002).

All sampling proposed in this Work Plan will be conducted in conformance to the site Community Air Monitoring Plan (CAMP), attached as Appendix A, the site Health and Safety Plan (HASP), available under separate cover, and where necessary when sampling in the roadway, the Traffic Control Plan, included as Appendix B.

2.0 Soil Sampling Around Culverts

This section of the Work Plan summarizes the proposed activities for the soil samples to be collected in the vicinity of the culverts that transfer the WBBB under Brookview Lane, Floradale Road, Pearl Street, and Town Gardens Drive. Samples were collected in the vicinity of the Sunflower Drive culvert on April 29, 2014 per the *Sunflower Drive Water Main Replacement Soil Sampling Plan* dated April 10, 2014. The objective of these sampling activities is to define the proper management of the soils that will be disturbed to allow for replacement of these culverts. This will be achieved using a flexible analysis approach consistent with previous sampling events and is further discussed below in Section 2.2. The proposed soil sample locations and depths were determined based on the existing analytical results adjacent to the culverts as well as the required distance from the edge of the culverts needed for construction purposes. The existing soil sample analytical data are summarized in Table 1 and the existing sample locations are shown on Figures 2 through 5. The location, number, and depth of soil samples are subject to change based on observations and physical conditions encountered during sampling activities and the ability of sampling personnel to safely collect a sample. Soil boring sampling activities around the culverts will be completed in conformance with the site CAMP (Appendix A), the Traffic Control Plan (Appendix B), and the site HASP.

The appropriate town and/or county officials will be contacted to obtain any necessary permits for working in the roadways.

2.1 Soil Sampling Locations

This section summarizes the locations of soil samples to be collected from around the culverts.

2.1.1 Brookview Lane

For the samples collected adjacent to the Brookview Lane culvert, 72 samples will be collected from six locations within the roadway and submitted to the laboratory for cadmium analysis (USEPA SW-846 Method 6010C). The proposed sample locations are shown on Figure 2. At the proposed locations, a sample will be collected from each 1-foot depth interval down to 12 feet, starting below the road pavement and sub-base (approximately 3-foot from road surface). Additional detail regarding sample collection, field procedures, analytical protocols and data validation are provided in the Sections 2.2 through 2.6.

2.1.2 Floradale Road

For the samples collected adjacent to the Floradale Road culvert, 144 samples will be collected from 12 locations within the roadway and submitted to the laboratory for cadmium analysis (USEPA SW-846 Method 6010C). The proposed sample locations are shown on Figure 3. At the proposed locations, a sample will be collected from each 1-foot depth interval down to 12 feet, starting below the road pavement and sub-base. Additional detail regarding sample collection, field procedures, analytical protocols, and data validation are provided in Sections 2.2 through 2.6.

2.1.3 Pearl Street

For the samples collected adjacent to the Pearl Street culvert, 108 samples will be collected from 9 locations within the parking lot and submitted to the laboratory for cadmium analysis (USEPA SW-846 Method 6010C). The proposed locations are shown on Figure 4. At the proposed locations, a sample will be collected from each 1-foot depth interval down to 12 feet, starting below the road pavement and sub-base. Additional detail regarding sample collection, field procedures, analytical protocol, and data validation are provided in Sections 2.2 through 2.6

2.1.4 Town Gardens Drive

For the samples collected adjacent to the Town Gardens Drive culvert, 72 samples will be collected from 6 locations within the roadway and submitted to the laboratory for cadmium analysis (USEPA SW-846 Method 6010C). The proposed locations are shown on Figure 5. At the proposed locations, a sample will be collected from each 1-foot depth interval down to 12 feet, starting below the road pavement and sub-base. Additional detail regarding sample collection, field procedures, analytical protocol, and data validation are provided in Sections 2.2 through 2.6.

2.2 Sample Collection and Ground Surface Restoration

Sample collection 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 during sampling activities that include recording of sample locations, sample depth, and site conditions (e.g., weather). Physical observations of the soil will be made for each 1-foot sample interval.

The samples will be collected using a direct push drill rig to drive the sampling tools into the formation to facilitate the soil sample collection. The samples will be collected in two-foot acetate sleeves. The sleeves will be removed from the sampling equipment and cut open to expose the soil sample. The sample will then be split into one-foot intervals and thoroughly mixed prior to placement in laboratory supplied sample containers. The samples will be collected and handled using new, disposable nitrile gloves. All down-hole equipment will be decontaminated as summarized in Section 4.3, and each of the borings will be abandoned with the excess soil by placing the soil back into the boring in same order it was removed. The road asphalt will be patched to cover the bore hole.

Following sample collection, select samples will be sent to the laboratory and analyzed, and other samples will be sent to the laboratory and held for possible future analysis depending on the results of the other samples. The analysis approach for each proposed sample is summarized in Table 2. Analysis of samples will be for cadmium using United States Environmental Protection Agency (USEPA) SW-846 Method 6010C.

2.3 Field Observation and Documentation of Samples

Samples will be observed for physical properties such as color, sorting, grain size, etc. Field observations regarding each sample will be recorded on a field log. In addition, sampling documentation will consist of detailed notes made during sampling activities that include recording of sample locations, sample depth, and site conditions (e.g., weather). Physical observations of the soil will be made for each 1-foot sample interval. Sample locations will be marked and surveyed prior to demobilization from the site.

2.4 Analytical Protocols

All samples collected pursuant to this Work Plan will be analyzed by a New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) certified laboratory. The laboratory will provide a NYSDEC Analytical Services Protocol (ASP) Category B deliverable data package to allow for data validation.

To support the future validation data needs, quality control samples (blind field duplicate, matrix spike, and matrix spike duplicate samples) will be collected in the field and will be analyzed by the laboratory.

2.5 Quality Control Sample Collection

Quality control samples will be collected to provide necessary data for future validation of the laboratory data. Blind field duplicates, matrix spike, and matrix spike duplicate samples will be collected at a frequency of one for every 20 samples collected.

Based on the quantity of proposed samples to be collected (i.e., 396 samples), approximately 20 blind duplicate, matrix spike, and matrix spike duplicate samples will be collected at locations to be determined in the field. Blind field duplicate samples will be created by collecting double volume for a sample location then splitting the sample volume between two sample containers to be used for the sample and the blind field duplicate sample. The matrix spike and matrix spike duplicate samples will be created by providing triple sample volume for a sample location then splitting the sample volume into three sample containers to be used for the sample, the matrix spike sample, and the matrix spike duplicate sample.

2.6 Data Validation

The laboratory will provide a NYSDEC ASP Category B deliverable data package in order to allow for data validation. Copies of the laboratory reports will be forwarded to a third party data validator. The data validator will review the project quality control samples, holding times, and laboratory precision. A validation report will be obtained for each laboratory analytical report.

3.0 Waste Characterization Sampling

This section provides the sampling procedures to be followed for the characterization of waste soils, including side bank soils and sediment associated with remedial activities planned for the 2015 construction season. Sampling and analysis of soil and sediment will be conducted in conformance with applicable regulatory requirements for waste characterization and the requirements of the permitted off-site treatment/disposal and/or recycling facility/facilities. Waste characterization activities will be conducted in accordance with the site CAMP (Appendix A) and HASP.

Soil and sediment samples will be collected from the proposed excavation areas to confirm that the excavated material meets the requirements of the receiving facility. Analytical methods, frequency of sampling, and method of sample collection are specified in the following sections.

3.1 Sample Collection

Sample collection 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. Samples will be collected in accordance with the methods and frequency described herein. For the collection of each sample, material will be collected from five locations. Samples collected for volatile organic compound (VOC) analysis will be collected from one location per approximately 650 cubic yards (CY), which is about one sample per 1,000 tons of soil for the site. All other samples will be collected from four locations per 650 CY and homogenized into one sample per 650 CY. Methods for VOC sample collection are further discussed in Section 3.2. Homogenization of soil and sediment for analyses other than VOCs is described in Section 3.3. Figure 6 provides the proposed sample location points for each area within the excavation limits.

3.2 Collection of VOC samples

Soil and sediment to be sampled for VOC analysis will be collected using appropriate sampling tools (e.g., stainless steel hand auger) from the proposed central sample location points shown on Figure 6. Samples will be collected from the average depth of excavation planned at each sample location. Specifically, a sample location within a 2-foot excavation will require a VOC sample collected from soils 1-foot below ground surface (bgs), a sample location within the 4-foot excavation will require a VOC sample collected from soils 2 feet bgs, and a sample location within a sediment excavation will require a sample from approximately midway between the surface of the sediment to the underlying clay layer within the brook. Samples will be collected using new, disposable nitrile gloves and placed directly into a sample jar provided by a New York State certified laboratory.

3.3 Field Sample Homogenization

Samples collected for analysis other than VOCs and listed in Section 3.9 will be field composited from four composite sample locations within each sampling area (Figure 6). Grab samples will be collected from each one-foot interval inside each soil sample location and from the sediment sample, where applicable. For example, a sample from a composite located within a four foot excavation area will require collection of a grab sample from the 0- to 1-foot, 1- to 2-foot, 2- to 3-foot, and 3- to 4-foot intervals. Collected grab samples will be transferred from the sampler to a large plastic bag and will be homogenized using new, disposable nitrile gloves. An appropriate mass of the homogenized material will be transferred to a laboratory-supplied sample container(s) for shipment to the laboratory. Samples will be stored and handled according to procedures outlined in this work plan.

3.4 Spoils

Soil collected from borings that are not sent to a laboratory for analysis will be placed in the open boring from which it came. The remaining void space left from the boring will be filled with sand or similar. Sediment collected from the stream and not sent to the laboratory will be placed back in the brook from the location it was removed. Caution will be taken to minimize disturbance to the sediment in the brook and to place the spoils in a manner that minimizes turbidity downstream of the sample location. Equipment and tools that have come in contact with samples and non-contact sampling equipment will either be disposed of after each use or will be decontaminated and re-used according to the procedure described in Section 4.3.

3.5 Ground Surface Restoration

All efforts will be made to limit the amount of surficial disturbance potentially caused by the sampling crew and equipment. At each soil sample location, a patch of the vegetative cover will be removed down to the root and set aside to be replaced on the surface of the sample location after the boring has been backfilled. Any damage that may occur to the vegetated areas where soil borings are advanced will be repaired and seeded following the completion of the field activities.

3.6 Field Observation and Documentation of Samples

Field observations regarding each sample will be recorded on a field log. In addition, sampling documentation will consist of detailed notes made during sampling activities that include recording of sample locations, sample depth, and site conditions (e.g., weather). Sample locations will be identified using a small flag or similar article and surveyed prior to demobilization from the site.

3.7 Sample Analysis

Analyses conducted under this Work Plan will be conducted by a laboratory certified under the NYSDOH ELAP for the constituents to be analyzed and to the extent that such certification is available. The samples described in Section 3.1 will be submitted for laboratory analysis for the parameters presented in the table below.

Analyte(s)	Analytical Method
Sulfide (Reactive)	SW-846-C7
Reactivity	SW-846-C7
Ignitability	SW-846-C7
TCLP RCRA 8 Metals	SW-846-1311/SW846-7470 (Mercury); SW-846-1311/SW-846-6010 (other RCRA metals)
PCBs	SW-846-1311/SW-846-8082
TCLP SVOCs	SW-846-1311/SW-846-8270
TCLP VOCs	SW-846-1311/SW-846-8260
TCLP Pest/Herb	SW-846-1311/SW-846-8081
Percent Solids	SM-2540.B

4.0 Sample Handling and Equipment Decontamination

This section summarizes the sample identification, containerization and shipping, and equipment decontamination activities for the soils sampling around the culverts and waste characterization sampling.

4.1 Sample Identification

Collected samples will be identified on sample containers and chains of custody immediately following sample collection. The chain of custody will, at a minimum, identify the following:

- A unique sample number;
- The date the sample was collected;
- The name of the project;
- Analyses requested; and
- Sampling personnel.

Sample identification for the samples to be collected from around the culverts will be identified using the labels assigned to the proposed sample locations shown on Figures 2 through 5 and the depth interval the sample was collected from. For example, the sample collected from the 0-to1-foot depth interval from proposed location DI-84-01 would be identified as “DI-84-01-0001.”

Sample identification for waste characterization samples will be as follows: “LMC-WBBB-WC-SAMPLENUMBER-DATE”, beginning with the sample number left off at from the previous waste characterization sampling. For example, the twentieth waste characterization sample (as numbered on Figure 6) collected on November 15, 2014 was identified as “LMC-WBBB-WC-020-111514.”

4.2 Sample Containerization and Shipping

Prior to the soil sampling activities, sample containers will be pre-cleaned by the laboratory and delivered to the field representative. The field representative will place a label on the sample containers. As soil samples are collected, the label will be used to record the sample identifier, date and time of sample collection, and the name of the person collecting the sample. After the samples have been collected, they will be kept in a cooler with ice, as needed, and will be delivered to the laboratory under proper chain of custody.

4.3 Equipment Decontamination

Field decontamination for both the soil sampling around the culverts and the waste characterization sampling will be minimized to the extent practical by using disposable equipment or pre-cleaned reusable equipment. However, as necessary, reusable sampling equipment will be decontaminated before use. The decontamination procedure will consist of a wash with a phosphate-free detergent and potable water, a potable water rinse, a 10% nitric acid rinse, and a final distilled water rinse. The decontaminated equipment will then be placed in a plastic bag or wrapped in aluminum foil to keep the equipment clean.

5.0 Investigation Derived Waste Management

Decontamination wastewater will be containerized and transported to Veolia Environmental Services located at the Lockheed Martin Electronics Park facility for proper identification and disposal or to Bloody Brook construction site and treated using the on-site construction water treatment system. Used personal protective equipment (PPE) and general trash will be containerized and transported to the Lockheed Martin Electronics Park facility or the Bloody Brook construction site for proper disposal as de minims sampling waste.

6.0 Green and Sustainable Remediation

As summarized in this section, the implementation of green and sustainable practices has been considered in the development of this Work Plan and will be utilized during the investigation activities. By using a hand auger instead of gas or diesel-powered drilling equipment to collect soil samples where possible, energy consumption will be minimized and less greenhouse gases or pollutants will be emitted. The use of less intrusive sampling equipment will also minimize disruption to the environment by preventing unintended damage of the groundcover and soil. In addition, vehicle idling will be reduced with the requirement that all vehicles and equipment will be shut off when not in use for more than five minutes. Mobilization and demobilization to and from the site by field personnel will be minimized, and car-pooling will be used when feasible. Material management and waste reduction practices will be implemented for the project. For example, paper usage and disposal/recycling will be minimized by requesting that all analytical data and analytical reports be delivered in an electronic format.

7.0 Contingency Plan

This section of the Work Plan has been developed to identify steps that will be taken in response to events that may reasonably occur during this work. These events include weather conditions, sample refusal or limited sample recovery, and access.

7.1 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 when the rain event stops. 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.

7.2 Sample 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 field and analytical data, at least three additional attempts will be made to advance the sampler within the same general location as that proposed in this Work Plan. In the event of refusal, limited sample recovery, or the presence of obstructions, Lockheed Martin will not collect the sample and will document the reason for not collecting it.

7.3 Access

The soil sampling described herein will be conducted within the maintenance easements granted to Onondaga County and through the consent of private property owners. Lockheed Martin and Onondaga County have an access agreement to perform activities within the Bloody Brook Drainage District easement. However, many of the sampling locations are located outside of the maintenance easements granted to Onondaga County. Lockheed Martin will attempt to obtain access for the collection of soil samples at those locations.

If access to complete the scope of investigations described herein is denied, Lockheed Martin will consult with the NYSDEC regarding potential relocation of any affected sampling location(s). If relocation is not an option, Lockheed Martin 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, Lockheed Martin will notify the NYSDEC in accordance with paragraph XIV.C. of the VCA for assistance in obtaining access.

8.0 Schedule and Reporting

Upon NYSDEC approval, implementation of this Work Plan will begin. Within 30 days of approval, Lockheed Martin will begin organizing the field team as well as begin contacting property owners to gain access for sampling activities. It is unknown how long it will take to obtain access; however, once access has been granted, Lockheed Martin anticipates that sampling activities will take approximately one to two weeks to complete. Lockheed Martin will verbally communicate progress, schedule, and potential access issues to the NYSDEC Project Manager and summarize the activities in the monthly project progress reports.

For the samples collected from around the culverts, the laboratory data package will be forwarded for data validation after all the sampling results are available from the laboratory (approximately two weeks following the last sample collected). Following receipt of the data validation report(s), Lockheed Martin will develop and provide to NYSDEC a report including a table and a figure summarizing the results from the samples collected from around the culverts. In addition, Lockheed Martin will provide to each property owner the sampling results from their property.

For the waste characterization samples collected to facilitate the remedial activities planned for the 2015 construction season, Lockheed Martin will develop and provide to NYSDEC a report including a table and a figure summarizing the sampling activities and the analytical results.

TABLES

Table 1
Summary of Soil Classification and Analytical Data Adjacent to Brookview Lane, Floradale Road, Pearl Street, and Town Gardens Drive Culverts
West Branch of Bloody Brook
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

Boring ID	Sampling Interval	Analyte	Surface Elevation (ft)	Brook Elevation (ft)	Sample Elevation at Bottom of Interval (ft)	Sample Relation to Brook Level	General Soil Classification	Collection Date	Result (mg/kg)
DI-43-01	0' - 1'	Cadmium	375.75	370.42	374.75	Above	Clayey silt, sandy silt	4/28/2011	13.1
	1' - 2'	Cadmium		370.42	373.75	Above	Sandy silt, silt	4/28/2011	0.29 J [0.74 J]
	2' - 3'	Cadmium		370.42	372.75	Above	Silty clay	4/28/2011	0.24 J
	3' - 4'	Cadmium		370.42	371.75	Above	Silty clay	4/28/2011	0.24 J
DI-43-02	0' - 1'	Cadmium	376.96	370.41	375.96	Above	Clayey silt, silty sand	4/28/2011	0.35
	1' - 2'	Cadmium		370.41	374.96	Above	Silty clay	4/28/2011	0.23 J
DI-44-01	0' - 1'	Cadmium	376.35	370.53	375.35	Above	Silt, fine sand with some silt at 3"	4/28/2011	0.37
	1' - 2'	Cadmium		370.53	374.35	Above	Silty sand	4/28/2011	0.50
	2' - 3'	Cadmium		370.53	373.35	Above	Sandy silt	4/28/2011	0.19 J
	3' - 4'	Cadmium		370.53	372.35	Above	Sandy silt	4/28/2011	0.22 J
DI-62-01	0' - 1'	Cadmium	375.54	370.44	374.54	Above	Clay and silt, some sand and gravel	6/5/2013	31.2 J [16.6 J]
	1' - 2'	Cadmium		370.44	373.54	Above	Silty clay, some sand and gravel	6/5/2013	0.73
DI-62-02	0' - 1'	Cadmium	375.92	370.52	374.92	Above	Clay and silt, some sand and gravel	6/5/2013	6.1
	1' - 2'	Cadmium		370.52	373.92	Above	Silty clay, some sand and gravel	6/5/2013	2.8
SB-207	0' - 1'	Cadmium	---	---	---	---	Topsoil	11/2002	45.8
	1' - 2'	Cadmium		---	---	---	Sandy Silt	11/2002	233
	2' - 3'	Cadmium		---	---	---	Sandy Silt	11/2002	71.4
	3' - 4'	Cadmium		---	---	---	Silty Sand	11/2002	125
SB-27	0" - 2"	Cadmium	---	---	---	---	---	06/2002	11.9
OCDDS-5	0" - 6"	Cadmium	---	---	---	---	---	10/1996	26.4
	0" - 6"	PCBs		---	---	---	---	10/1996	0.193
SB-60	0' - 1'	Cadmium	---	---	---	---	Silty Sand	11/2002	7.8
	1' - 2'	Cadmium		---	---	---	Clayey Silt	11/2002	10.9
	2' - 3'	Cadmium		---	---	---	Clayey Silt	11/2002	4.5
	3' - 4'	Cadmium		---	---	---	Clayey Silt/Peat	11/2002	139
DI-30-01	0' - 1'	Cadmium	376.03	370.79	375.03	Above	Clayey silt, sandy silt, silty sand	4/28/2011	1.0
	1' - 2'	Cadmium		370.79	374.03	Above	Sandy silt, silty sand	4/28/2011	0.89
	2' - 3'	Cadmium		370.79	373.03	Above	Sandy silt, silty sand, clayey silt	4/28/2011	0.32
	3' - 4'	Cadmium		370.79	372.03	Above	Sandy silt, silty sand, clayey silt	4/28/2011	0.11 J [0.17 J]
DI-31-01	0' - 1'	Cadmium	373.64	370.63	372.64	Above	Clayey silt, silt	4/28/2011	0.19 J
	1' - 2'	Cadmium		370.63	371.64	Above	Clayey silt, silty clay	4/28/2011	0.22 J
	2' - 3'	Cadmium		370.63	370.64	At	Silty clay, clay	4/28/2011	0.13 J
	3' - 4'	Cadmium		370.63	369.64	Below	Silty clay, clay	4/28/2011	0.15 J
OCDDS-6	0" - 6"	Cadmium	---	---	---	---	---	10/1996	0.14
	0" - 6"	PCBs		---	---	---	---	10/1996	<0.025
SB-206	0" - 2"	Cadmium	---	---	---	---	---	11/2002	31.7
	0' - 1'	Cadmium		---	---	---	Topsoil	11/2002	29.4
	1' - 2'	Cadmium		---	---	---	Sandy Silt	11/2002	1.2
	2' - 3'	Cadmium		---	---	---	Sandy Silt/Peat	11/2002	79.8
	3' - 4'	Cadmium		---	---	---	Peat	11/2002	82.6
SA-SB-04-01	0" - 2"	Cadmium	379.69	370.68	379.52	Above	Topsoil	10/20/2003	<0.654
	0' - 1'	Cadmium		370.68	378.69	Above	Silty Sand	10/20/2003	<0.613
	1' - 2'	Cadmium		370.68	377.69	Above	Silty Sand	10/20/2003	<0.589
	2' - 3'	Cadmium		370.68	376.69	Above	Silty Sand	10/20/2003	<0.566
	3' - 4'	Cadmium		370.68	375.69	Above	Silty Sand	10/20/2003	<0.572
	4' - 5'	Cadmium		370.68	374.69	Above	Clay/Silt	10/20/2003	<0.573
	5' - 6'	Cadmium		370.68	373.69	Above	Clay/Silt	10/20/2003	<0.610
	6' - 7'	Cadmium		370.68	372.69	Above	Clay/Silt	10/20/2003	<0.583
	7' - 8'	Cadmium		370.68	371.69	Above	Clay/Silt	10/20/2003	<0.629
	8' - 9'	Cadmium		370.68	370.69	At	Clay/Silt	10/20/2003	7.84
	9' - 10'	Cadmium		370.68	369.69	Below	Organic Silt/Sand	10/20/2003	<0.671
	10' - 11'	Cadmium		370.68	368.69	Below	Clay	10/20/2003	3.73
SA-SB-04-02	0" - 2"	Cadmium	377.96	370.69	377.79	Above	Topsoil	10/20/2003	<0.677
	0' - 1'	Cadmium		370.69	376.96	Above	Silty Sand	10/20/2003	<0.597
	1' - 2'	Cadmium		370.69	375.96	Above	Silty Sand	10/20/2003	<0.602
	2' - 3'	Cadmium		370.69	374.96	Above	Silty Sand	10/20/2003	<0.586
	3' - 4'	Cadmium		370.69	737.96	Above	Silty Sand	10/20/2003	<0.602
	4' - 5'	Cadmium		370.69	372.96	Above	Silty Sand to Sand	10/20/2003	<0.573
	5' - 6'	Cadmium		370.69	371.96	Above	Sand to Silty Sand	10/20/2003	<0.613 [<0.595]
	6' - 7'	Cadmium		370.69	370.96	At	Silty Clay to Organic Clayey Silt	10/20/2003	139
	7' - 8'	Cadmium		370.69	369.96	Below	Organic Silt/Sand	10/20/2003	1.73
	8' - 9'	Cadmium		370.69	368.96	Below	Organic Silt/Sand	10/20/2003	11.9

Table 1

Summary of Soil Classification and Analytical Data Adjacent to Brookview Lane, Floradale Road, Pearl Street, and Town Gardens Drive Culverts

West Branch of Bloody Brook

Bloody Brook Voluntary Cleanup Program

Onondaga County, New York

Boring ID	Sampling Interval	Analyte	Surface Elevation (ft)	Brook Elevation (ft)	Sample Elevation at Bottom of Interval (ft)	Sample Relation to Brook Level	General Soil Classification	Collection Date	Result (mg/kg)
SA-SB-04-03	0" - 2"	Cadmium	377.06	370.70	376.89	Above	Topsoil	10/20/2003	2.7
	0' - 1'	Cadmium		370.70	376.06	Above	Silty Sand	10/20/2003	2.17
	1' - 2'	Cadmium		370.70	375.06	Above	Silty Sand	10/20/2003	<0.588
	2' - 3'	Cadmium		370.70	374.06	Above	Silty Sand	10/20/2003	<0.561
	3' - 4'	Cadmium		370.70	373.06	Above	Silty Sand	10/20/2003	<0.617
	4' - 5'	Cadmium		370.70	372.06	Above	Silty Sand	10/20/2003	<0.603
	5' - 6'	Cadmium		370.70	371.06	At	Silty Sand	10/20/2003	<0.635
	6' - 7'	Cadmium		370.70	370.06	Below	Silty Sand to Organic Silt/Sand	10/20/2003	1,920
	7' - 8'	Cadmium		370.70	369.06	Below	Organic Silt/Sand	10/20/2003	199
SA-SB-04-04	0" - 2"	Cadmium	376.90	370.71	376.73	Above	Topsoil	10/20/2003	7.4
	0' - 1'	Cadmium		370.71	375.90	Above	Silty Sand	10/20/2003	5.3
	1' - 2'	Cadmium		370.71	374.90	Above	Sandy Silt	10/20/2003	<0.62
	2' - 3'	Cadmium		370.71	373.90	Above	Sandy Silt	10/20/2003	<0.56
	3' - 4'	Cadmium		370.71	372.90	Above	Silty Sand	10/20/2003	<0.59
	4' - 5'	Cadmium		370.71	371.90	Above	Silty Sand	10/20/2003	<0.58
	5' - 6'	Cadmium		370.71	370.90	At	Silty Sand to Organic Silt/Sand	10/20/2003	84.7
	6' - 7'	Cadmium		370.71	369.90	Below	Organic Silt/Sand	10/20/2003	112
	7' - 8'	Cadmium		370.71	368.90	Below	Silty Sand	10/20/2003	456
B-6	0.80' - 1.5'	Cadmium	---	---	---	---	---	11/24/2003	0.97
	1.5' - 7.5'	Cadmium		---	---	---	---	11/24/2003	<0.59
B-7	0' - 1.5'	Cadmium	---	---	---	---	---	11/24/2003	2
	1.5' - 10'	Cadmium		---	---	---	---	11/24/2003	2.5
B-9	0' - 1'	Cadmium	---	---	---	---	---	11/24/2003	<0.62
	1' - 10'	Cadmium		---	---	---	---	11/24/2003	<0.57
B-10	0' - 1.5'	Cadmium	---	---	---	---	---	11/25/2003	7
	1.5' - 10'	Cadmium		---	---	---	---	11/25/2003	0.95
DI-04-01	0' - 1'	Cadmium	377.21	369.96	376.21	Above	Silt with little clay & little sand	4/25/2011	1.7
	5' - 6'	Cadmium		369.96	371.21	Above	Silty clay with some fine sand	4/25/2011	0.29
	6' - 7'	Cadmium		369.96	370.21	At	Clay with little silt (organics)	4/25/2011	1.4
	7' - 8'	Cadmium		369.96	369.21	Below	Clay with little silt (organics)	4/25/2011	332
	8' - 9'	Cadmium		369.96	368.21	Below	Clay with little silt (organics)	4/25/2011	0.98
DI-06-01	0' - 1'	Cadmium	375.82	369.18	374.82	Above	Fine sand with little silt	4/25/2011	1.4
	1' - 2'	Cadmium		369.18	373.82	Above	Fine sand with little silt	4/25/2011	0.19 J
	2' - 3'	Cadmium		369.18	372.82	Above	Silt with some fine sand & trace clay	4/25/2011	0.24
	3' - 4'	Cadmium		369.18	371.82	Above	Silt with some fine sand & trace clay	4/25/2011	0.25
	4' - 5'	Cadmium		369.18	370.82	Above	Silt with some fine sand & trace clay	4/25/2011	0.47
	5' - 6'	Cadmium		369.18	369.82	Above	Silt with little sand & little clay	4/25/2011	10.5
	6' - 7'	Cadmium		369.18	368.82	At	Silt with little sand & little clay	4/25/2011	0.48
	7' - 8'	Cadmium		369.18	367.82	Below	Gray clay at 7'-6"	4/25/2011	<0.26 U
DI-06-02	4' - 5'	Cadmium		369.98	371.21	Above	Silt with little clay	4/25/2011	0.20 J
	5' - 6'	Cadmium		369.98	370.21	At	Silt with little clay	4/25/2011	3.2
	6' - 7'	Cadmium		369.98	369.21	Below	Silt with little clay	4/25/2011	0.26 J
DI-10-01	0' - 1'	Cadmium	373.62	366.48	372.62	Above	Silty clay, clayey silt	4/25/2011	5.5 B
	1' - 2'	Cadmium		366.48	371.62	Above	Silty clay, clay	4/25/2011	2.4 B
DI-11-01	0' - 1'	Cadmium	---	---	---	---	Silt & sand/ organics & gravel	8/14/2009	7.21
	1' - 2'	Cadmium		---	---	---	Silt with sand/organics & clay	8/14/2009	6.38
	2' - 3'	Cadmium		---	---	---	Silt with sand/clay & gravel	8/14/2009	3.76
	3' - 4'	Cadmium		---	---	---	Silt with sand/clay & gravel	8/14/2009	49
DI-11-02	0' - 1'	Cadmium	---	---	---	---	Silt with gravel/organics	8/14/2009	0.431 [0.276]
	1' - 2'	Cadmium		---	---	---	Silt with clay/gravel & organics	8/14/2009	0.062 J
	2' - 3'	Cadmium		---	---	---	Silt with gravel	8/14/2009	0.266
	3' - 4'	Cadmium		---	---	---	Silt	8/14/2009	0.240
	4' - 5'	Cadmium		---	---	---	Silt with gravel	8/14/2009	0.213 J
	5' - 6'	Cadmium		---	---	---	Silt with gravel	8/14/2009	0.074 J
DI-11-03	0' - 1'	Cadmium	---	---	---	---	Silt & clay/organics & gravel	8/14/2009	<0.261
	1' - 2'	Cadmium		---	---	---	Silt & clay/organics & gravel	8/14/2009	0.523
	2' - 3'	Cadmium		---	---	---	Silt with gravel/organics	8/14/2009	0.154 J
	3' - 4'	Cadmium		---	---	---	Silt with gravel/organics	8/14/2009	0.327
	4' - 5'	Cadmium		---	---	---	Silt with gravel/organics	8/14/2009	<0.253
	5' - 6'	Cadmium		---	---	---	Silt with gravel/organics, some sand	8/14/2009	0.061 J
	6' - 7'	Cadmium		---	---	---	Silt with gravel/organics, some sand	8/14/2009	<0.243
	7' -8'	Cadmium		---	---	---	Silt with gravel/organics, some sand	8/14/2009	<0.250
	8' - 9'	Cadmium		---	---	---	Silt/clay	8/14/2009	<0.265
	9' -10'	Cadmium		---	---	---	Silty clay/sand	8/14/2009	<0.235
	10' - 11'	Cadmium		---	---	---	Silty clay/sand	8/14/2009	<0.267

Table 1

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West Branch of Bloody Brook

Bloody Brook Voluntary Cleanup Program

Onondaga County, New York

Boring ID	Sampling Interval	Analyte	Surface Elevation (ft)	Brook Elevation (ft)	Sample Elevation at Bottom of Interval (ft)	Sample Relation to Brook Level	General Soil Classification	Collection Date	Result (mg/kg)
DI-13-01	0' - 1'	Cadmium	371.26	364.09	370.26	Above	Fine sand, some gravel, organics	8/23/2011	1.4
	1' - 2'	Cadmium		364.09	369.26	Above	Fine sand, some gravel, organics	8/23/2011	2.7
	2' - 3'	Cadmium		364.09	368.26	Above	Fine sand, little silt, trace gravel	8/23/2011	0.30
	3' - 4'	Cadmium		364.09	367.26	Above	Silty fine sand - silt increasing with depth	8/23/2011	0.35
	4' - 5'	Cadmium		364.09	366.26	Above	Sandy silt to 4'-6" then silty clay	8/23/2011	0.19 J [0.14 J]
	5' - 6'	Cadmium		364.09	365.26	Above	Clay, trace silt	8/23/2011	0.22 J
	6' - 7'	Cadmium		364.09	364.26	At	Clay, trace silt	8/23/2011	0.16 J
DI-13-02	0' - 1'	Cadmium	371.67	364.09	370.67	Above	Fine sand, little gravel, trace silt (organics)	8/23/2011	4.6
	1' - 2'	Cadmium		364.09	369.67	Above	Fine sand, some gravel, little silt (organics)	8/23/2011	2.3
	2' - 3'	Cadmium		364.09	368.67	Above	Fine sand, little silt, trace gravel	8/23/2011	0.38
	3' - 4'	Cadmium		364.09	367.67	Above	Silty sand, trace clay (mottling), trace gravel	8/23/2011	0.30
DI-13-03	0' - 1'	Cadmium	372.25	364.09	371.25	Above	Fine sand, some gravel, organics	8/23/2011	0.91
	1' - 2'	Cadmium		364.09	370.25	Above	Fine sand, some gravel	8/23/2011	0.072 J
	2' - 3'	Cadmium		364.09	369.25	Above	Fine sand, some gravel, organics	8/23/2011	0.25
	3' - 4'	Cadmium		364.09	368.25	Above	Fine sand, some gravel, organics	8/23/2011	0.11 J
	4' - 5'	Cadmium		364.09	367.25	Above	Clayey silt, increasing clay with depth	8/23/2011	5.8
	5' - 6'	Cadmium		364.09	366.25	Above	Silty clay to 5'-8" then silt	8/23/2011	1.1
	6' - 7'	Cadmium		364.09	365.25	Above	Clayey silt	8/23/2011	<0.22
DI-15-01	0' - 1'	Cadmium	372.6	364.55	371.6	Above	Silty sand, little gravel, trace clay	8/22/2011	0.62
	1' - 2'	Cadmium		364.55	370.6	Above	Silty sand, little gravel, trace clay	8/22/2011	15.2
	2' - 3'	Cadmium		364.55	369.6	Above	Silty sand, little gravel, trace clay	8/22/2011	18
	3' - 4'	Cadmium		364.55	368.6	Above	Silty sand, little gravel, trace clay	8/22/2011	4.9
	4' - 5'	Cadmium		364.55	367.6	Above	Silt, trace clay	8/22/2011	0.27
	5' - 6'	Cadmium		364.55	366.6	Above	Silt, little clay	8/22/2011	0.21 J
	6' - 7'	Cadmium		364.55	365.6	Above	Silt, little clay	8/22/2011	0.19 J
DI-15-02	0' - 1'	Cadmium	372.62	364.55	371.62	Above	Silty sand & gravel, trace clay	8/22/2011	2.5
	1' - 2'	Cadmium		364.55	370.62	Above	Silty sand & gravel, trace clay	8/22/2011	3.7
	2' - 3'	Cadmium		364.55	369.62	Above	Sandy silt with little gravel, trace clay	8/22/2011	2.3
	3' - 4'	Cadmium		364.55	368.62	Above	Sandy silt with little gravel, trace clay	8/22/2011	2.9
	4' - 5'	Cadmium		364.55	367.62	Above	Silt, little clay (green & red mottling)	8/22/2011	1.5
	5' - 6'	Cadmium		364.55	366.62	Above	Silt, little clay	8/22/2011	0.26 [0.20 J]
	6' - 7'	Cadmium		364.55	365.62	Above	Silt, little clay	8/22/2011	0.14 J
DI-33-01	0' - 1'	Cadmium	---	---	--	---	Gravel/silt and sand	8/11/2009	2.26
	1' - 2'	Cadmium		---	--	---	Silty clay with gravel	8/11/2009	2.48
	2' - 3'	Cadmium		---	--	---	Silty clay with gravel	8/11/2009	2.05 [2.74]
	3' - 4'	Cadmium		---	--	---	Silty clay with gravel/organics	8/11/2009	3.95
	4' - 5'	Cadmium		---	--	---	Silty clay with gravel/organics	8/11/2009	2.73
DI-34-01	0' - 1'	Cadmium	371.98	365.46	370.98	Above	Fine sandy silt, trace clay & organics	8/24/2011	22.0
	1' - 2'	Cadmium		365.46	369.98	Above	Sandy silt, trace clay	8/24/2011	101
	2' - 3'	Cadmium		365.46	368.98	Above	Sandy silt, trace clay	8/24/2011	5.0
	3' - 4'	Cadmium		365.46	367.98	Above	Silt	8/24/2011	0.51
DI-34-02	0' - 1'	Cadmium	372.31	365.46	371.31	Above	Silt, some fine sand, little clay	8/24/2011	48.2 J
	1' - 2'	Cadmium		365.46	370.31	Above	Silt, little fine sand, little clay	8/24/2011	8.8 J
	2' - 3'	Cadmium		365.46	369.31	Above	Silt, little to trace clay	8/24/2011	23.2 J
	3' - 4'	Cadmium		365.46	368.31	Above	Silt, little fine sand, little clay	8/24/2011	15.6 J
DI-46-01	0' - 1'	Cadmium	377.47	367.00	376.47	Above	Clayey silt, silty clay, trace gravel	4/27/2011	3.6
	1' - 2'	Cadmium		367.00	375.47	Above	Silty clay, clayey silt, gravel	4/27/2011	0.83
DI-46-02	0' - 1'	Cadmium	377.39	367.00	376.39	Above	Clayey silt, silty clay, fine to coarse gravel	4/27/2011	0.79
	1' - 2'	Cadmium		367.00	375.39	Above	Fine to coarse gravel, silty clay	4/27/2011	0.70
DI-47-01	0' - 1'	Cadmium	377.02	366.91	376.02	Above	Clayey silt with little fine sand	4/26/2011	2.2
	1' - 2'	Cadmium		366.91	375.02	Above	Clayey silt with little fine sand	4/26/2011	2.6
DI-47-03	0' - 1'	Cadmium	377.58	366.91	376.58	Above	Clayey silt with little fine sand, trace gravel	4/26/2011	0.60
	1' - 2'	Cadmium		366.91	375.58	Above	Clayey silt with little fine sand, trace gravel, less clay	4/26/2011	1.4
DI-48-01	0' - 1'	Cadmium	373.27	366.79	372.27	Above	Silty clay, roots	4/25/2011	52.6 B
	1' - 2'	Cadmium		366.79	371.27	Above	Silty clay with clay	4/25/2011	9.6 B
	2' - 3'	Cadmium		366.79	370.27	Above	Silty clay with clay	4/25/2011	6.5 B
	3' - 4'	Cadmium		366.79	369.27	Above	Clay with silty clay	4/25/2011	9.8 B
DI-48-02	0' - 1'	Cadmium	373.67	366.79	372.67	Above	Clayey silt, sandy silt, silty sand	4/25/2011	0.31
	1' - 2'	Cadmium		366.79	371.67	Above	Clayey silt	4/25/2011	0.095 J
DI-49-01	0' - 1'	Cadmium	372.96	366.19	371.96	Above	Clayey silt, clay, sandy silt	4/25/2011	4.3 B
	1' - 2'	Cadmium		366.19	370.96	Above	Silty clay, clay	4/25/2011	1.7 B
	2' - 3'	Cadmium		366.19	369.96	Above	Clay, silty clay, little gravel	4/25/2011	3.3 BJ [0.84 BJ]
	3' - 4'	Cadmium		366.19	368.96	Above	Clay, silty clay	4/25/2011	1.7 B
DI-49-02	0' - 1'	Cadmium	373.23	366.18	372.23	Above	Silty clay, clay, roots	4/25/2011	6.4
	1' - 2'	Cadmium		366.18	371.23	Above	Silty clay, clay, coarse gravel	4/25/2011	6.8

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Boring ID	Sampling Interval	Analyte	Surface Elevation (ft)	Brook Elevation (ft)	Sample Elevation at Bottom of Interval (ft)	Sample Relation to Brook Level	General Soil Classification	Collection Date	Result (mg/kg)
DI-49-03	0' - 1'	Cadmium	373.62	366.18	372.62	Above	Silty clay, clay, trace gravel	4/25/2011	0.78
	1' - 2'	Cadmium		366.18	371.62	Above	Silty clay, clay, cobble	4/25/2011	10.7
DI-55-01	0' - 1'	Cadmium	373.13	366.19	372.13	Above	Silty clay, clay	4/25/2011	2.6 B
	1' - 2'	Cadmium		366.19	371.13	Above	Clay	4/25/2011	1.5 B
	2' - 3'	Cadmium		366.19	370.13	Above	Clay, silty clay, clayey silt	4/25/2011	30.5 B
	3' - 4'	Cadmium		366.19	369.13	Above	Clayey silt, silt	4/25/2011	12.5 B
DI-55-02	0' - 1'	Cadmium	373.56	366.21	372.56	Above	Silty clay, clay, roots	4/25/2011	6.9
	1' - 2'	Cadmium		366.21	371.56	Above	Clay	4/25/2011	1.5
	2' - 3'	Cadmium		366.21	370.56	Above	Clay	4/25/2011	0.77
	3' - 4'	Cadmium		366.21	369.56	Above	Clay	4/25/2011	12.4
DI-55-03	0' - 1'	Cadmium	374.18	366.22	373.18	Above	Clay, silty clay, roots	4/25/2011	0.52
	1' - 2'	Cadmium		366.22	372.18	Above	Silty clay, silt, trace gravel	4/25/2011	1.0
	2' - 3'	Cadmium		366.22	371.18	Above	Silty clay, little sand	6/4/2013	1.9
	3' - 4'	Cadmium		366.22	370.18	Above	Silty clay, little sand	6/4/2013	0.87
	4' - 5'	Cadmium		366.22	369.18	Above	Clayey silt, some sand	6/4/2013	35.9
DI-55-04	4' - 5'	Cadmium		365.88	369.93	Above	Silty Clay, some sand	6/4/2013	20.3
DI-57-01	0' - 1'	Cadmium	371.75	365.18	370.75	Above	Gravelly silt, little sand, trace clay	8/24/2011	15.6
	1' - 2'	Cadmium		365.18	372.18	Above	Clayey silt	8/24/2011	0.30 J [1.4 J]
	2' - 3'	Cadmium		365.18	372.18	Above	Clayey silt, clay increases with depth	8/24/2011	1.8
	3' - 4'	Cadmium		365.18	372.18	Above	Gray clay	8/24/2011	2.8
DI-57-02	0' - 1'	Cadmium	371.67	365.12	370.67	Above	Sandy silt, some gravel, trace clay & organics	8/24/2011	26.3 J
	1' - 2'	Cadmium		365.12	372.18	Above	Clayey silt, trace fine sand, trace organics	8/24/2011	24.1 J [41.0 J]
	2' - 3'	Cadmium		365.12	372.18	Above	Clayey silt, clay increases with depth	8/24/2011	38.4 J
	3' - 4'	Cadmium		365.12	372.18	Above	Clay, trace silt	8/24/2011	61.3 J
DI-58-01	0' - 1'	Cadmium	372.98	364.31	371.98	Above	Fine sand	8/23/2011	1.8
	1' - 2'	Cadmium		364.31	372.18	Above	Fine sand, little silt	8/23/2011	10.1
DI-58-02	0' - 1'	Cadmium	372	364.31	371	Above	Silty sand	8/23/2011	17.9
	1' - 2'	Cadmium		364.31	372.18	Above	Silty sand	8/23/2011	61.5
	2' - 3'	Cadmium		364.31	372.18	Above	Silty sand, little clay	8/23/2011	23.1
	3' - 4'	Cadmium		364.31	372.18	Above	Silty sand, some clay	8/23/2011	11.3
DI-58-03	0' - 1'	Cadmium	372.06	364.00	371.06	Above	Clayey silt, some sand	6/4/2013	2.6 [2.1]
	1' - 2'	Cadmium		364.00	370.06	Above	Clay and silt, some sand	6/4/2013	10.8
	2' - 3'	Cadmium		364.00	369.06	Above	Silty clay, some sand	6/4/2013	0.25
	3' - 4'	Cadmium		364.00	368.06	Above	Silty clay, some sand	6/4/2013	16.3
	4' - 5'	Cadmium		364.00	367.06	Above	Clayey silt, some sand, organics	6/4/2013	1.6
	5' - 6'	Cadmium		364.00	366.06	Above	Silty clay, green mottling (organics)	6/4/2013	0.22 J
DI-58-04	1' - 2'	Cadmium		364.00	370.32	Above	Clay and silt, little sand	6/4/2013	7.1
	3' - 4'	Cadmium		364.00	368.32	Above	Clayey silt, some sand, organics	6/4/2013	3.0
DI-58-05	1' - 2'	Cadmium		364.00	364.32	Below	Silt and Clay, some sand, trace gravel	8/13/2013	2.1 B
DI-59-01	0' - 1'	Cadmium	372.12	365.22	371.12	Above	Silt, little sand & clay	8/24/2011	31.7
	1' - 2'	Cadmium		365.22	372.18	Above	Silt, little sand & clay	8/24/2011	3.4
	2' - 3'	Cadmium		365.22	372.18	Above	Silt, little sand & clay	8/24/2011	3.1
	3' - 4'	Cadmium		365.22	372.18	Above	Silt, little clay, trace sand, silt increases with depth	8/24/2011	28.6
DI-59-02	0' - 1'	Cadmium	372.14	365.16	371.14	Above	Silty sand, trace clay	8/24/2011	83.7 J
	1' - 2'	Cadmium		365.16	372.18	Above	Silty sand, little clay	8/24/2011	10.4 J
	2' - 3'	Cadmium		365.16	372.18	Above	Silty sand, little clay	8/24/2011	14.3 J
	3' - 4'	Cadmium		365.16	372.18	Above	Fine sand, silt, trace clay	8/24/2011	11.0 J
DI-64-01	0' - 1'	Cadmium	376.32	367.11	375.32	Above	Clay and sandy silt, some gravel	6/4/2013	3.5
	1' - 2'	Cadmium		367.11	374.32	Above	Sand, sandy silt and clay	6/4/2013	7.2
DI-64-02	0' - 1'	Cadmium	377.12	367.06	376.12	Above	Silt and sand, trace gravel, organics	6/4/2013	4.5
	1' - 2'	Cadmium		367.06	375.12	Above	Clay and silt, little sand	6/4/2013	0.94
DI-64-03	0' - 1'	Cadmium	376.86	367.07	375.86	Above	Sand and Silt, trace gravel	8/13/2013	12.7 B
	1' - 2'	Cadmium		367.07	374.86	Above	Sand and Silt, trace gravel	8/13/2013	14.3 B
	2' - 3'	Cadmium		367.07	373.86	Above	Sand and Silt, trace gravel	8/13/2013	10.8 B
	3' - 4'	Cadmium		367.07	372.86	Above	Clayey Silt and Sand	8/13/2013	5.4 B
DI-64-04	0' - 1'	Cadmium	377.39	367.03	376.39	Above	Sand, some silt, trace gravel	8/13/2013	0.20 U
DI-69-01	0' - 1'	Cadmium	370.33	364.38	369.33	Above	Clayey silt and sand, rock fragments, organics	6/3/2013	17.7
	1' - 2'	Cadmium		364.38	368.33	Above	Clayey silt and sand, increasing clay	6/3/2013	0.89
	2' - 3'	Cadmium		364.38	367.33	Above	Clay and silt, some sand, trace gravel	6/3/2013	14.6
	3' - 4'	Cadmium		364.38	366.33	Above	Clay and silt, some sand, trace gravel	6/3/2013	157
DI-69-02	0' - 1'	Cadmium	370.17	364.38	369.17	Above	Clayey silt, some sand, trace gravel	6/3/2013	13.9
	1' - 2'	Cadmium		364.38	368.17	Above	Clayey silt, little sand	6/3/2013	23.5
	2' - 3'	Cadmium		364.38	367.17	Above	Clay and silt, little sand, trace gravel	6/3/2013	3.1
	3' - 4'	Cadmium		364.38	366.17	Above	Clayey silt, some sand	6/3/2013	17.4

Table 1
Summary of Soil Classification and Analytical Data Adjacent to Brookview Lane, Floradale Road, Pearl Street, and Town Gardens Drive Culverts
West Branch of Bloody Brook
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

Boring ID	Sampling Interval	Analyte	Surface Elevation (ft)	Brook Elevation (ft)	Sample Elevation at Bottom of Interval (ft)	Sample Relation to Brook Level	General Soil Classification	Collection Date	Result (mg/kg)
DI-70-01	0' - 1'	Cadmium	372.59	364.38	371.59	Above	Clayey silt, little sand, organics	6/3/2013	6.1
	1' - 2'	Cadmium		364.38	370.59	Above	Clay and silt, little sand, trace gravel	6/3/2013	0.74
DI-70-02	0' - 1'	Cadmium	373.89	364.38	372.89	Above	Clayey silt, little sand, organics	6/3/2013	2.7
DI-71-01	0' - 1'	Cadmium	369.83	364.39	368.83	Above	Clayey silt, little sand, trace gravel, organics	6/3/2013	21.6
	1' - 2'	Cadmium		364.39	367.83	Above	Clay and silt, some sand, trace gravel	6/3/2013	6.9
	2' - 3'	Cadmium		364.39	366.83	Above	Silty clay, some sand, trace gravel	6/3/2013	59.2
	3' - 4'	Cadmium		364.39	365.83	Above	Silty clay, some sand, trace gravel, increasing clay	6/3/2013	0.35
DI-71-02	0' - 1'	Cadmium	369.47	364.39	368.47	Above	Clayey silt, some sand, trace gravel, organics	6/3/2013	24.5
	1' - 2'	Cadmium		364.39	367.47	Above	Clayey silt, some sand, trace gravel	6/3/2013	52.9
	2' - 3'	Cadmium		364.39	366.47	Above	Sandy silt and clay	6/3/2013	3.3
DI-75-01	0' - 1'	Cadmium	375.26	367.17	374.26	Above	Silt and sand, organics, roots	6/4/2013	3.8
	1' - 2'	Cadmium		367.17	373.26	Above	Silt and sand	6/4/2013	0.084 J
DI-75-02	0' - 1'	Cadmium	374.84	367.09	373.84	Above	Silt, some sand	6/4/2013	7.0
DI-76-01	0' - 1'	Cadmium	373.8	366.14	372.8	Above	Silty clay, some sand, trace gravel	6/4/2013	0.61
	1' - 2'	Cadmium		366.14	371.8	Above	Silty clay, some sand, trace gravel	6/4/2013	8.3 [9.6]
DI-76-02	1' - 2'	Cadmium		366.12	372.13	Above	Silty clay, some sand, trace gravel	6/4/2013	1.6
DI-77-01	0' - 1'	Cadmium	373.84	366.18	372.84	Above	Silty clay, some sand, trace gravel	6/4/2013	2.9
	1' - 2'	Cadmium		366.18	371.84	Above	Silty clay, some sand, trace gravel	6/4/2013	1.2
DI-79-01	0' - 1'	Cadmium	373.48	366.10	372.48	Above	Clayey silt, some sand, trace gravel, organics	6/4/2013	1.1
	1' - 2'	Cadmium		366.10	371.48	Above	Clayey silt, some sand, trace gravel, organics	6/4/2013	0.23 J
	2' - 3'	Cadmium		366.10	370.48	Above	Clayey and silt, little sand, trace gravel	6/4/2013	1.8
	3' - 4'	Cadmium		366.10	369.48	Above	Silty clay, little sand, trace gravel	6/4/2013	1.2
	4' - 5'	Cadmium		366.10	368.48	Above	Silt, some sand, and clay	6/4/2013	29.1
DI-79-02	4' - 5'	Cadmium		366.12	368.48	Above	Clayey silt, some sand, trace gravel	6/4/2013	13.9
DI-SB-07-01	0' - 1'	Cadmium	372.4	364.42	371.4	Above	Course sand, some silt, little gravel, trace clay	8/22/2011	0.93
	1' - 2'	Cadmium		364.42	370.4	Above	Coarse sand, some silt, little gravel & clay	8/22/2011	1.4
	2' - 3'	Cadmium		364.42	369.4	Above	Fine sandy silt, little to trace clay	8/22/2011	0.061 J
	3' - 4'	Cadmium		364.42	368.4	Above	Clayey silt, trace fine sand	8/22/2011	0.12 J
	4' - 5'	Cadmium		364.42	367.4	Above	Silty Clay	8/22/2011	0.060 J
	5' - 6'	Cadmium		364.42	366.4	Above	Silty Clay	8/22/2011	<0.23
	6' - 7'	Cadmium		364.42	365.4	Above	Silty Clay, silt lense 6'-2", clay at 6'-8"	8/22/2011	<0.22
DI-SB-07-02	0' - 1'	Cadmium	372.45	364.42	371.45	Above	Silty Sand, some gravel	8/22/2011	0.32
	1' - 2'	Cadmium		364.42	370.45	Above	Silty fine sand, trace clay & gravel	8/22/2011	0.28
	2' - 3'	Cadmium		364.42	369.45	Above	Silty fine sand, trace clay & gravel	8/22/2011	0.10 J
	3' - 4'	Cadmium		364.42	368.45	Above	Sand, silt, little clay	8/22/2011	0.13 J [0.21 J]
	4' - 5'	Cadmium		364.42	367.45	Above	Clayey silt - increasing clay with depth	8/22/2011	0.064 J
	5' - 6'	Cadmium		364.42	366.45	Above	Silty clay - increasing clay with depth	8/22/2011	0.035 J
	6' - 7'	Cadmium		364.42	365.45	Above	Clay, little to trace silt	8/22/2011	0.059 J
EPSOIL-2	0' - 1'	Cadmium	---	---	---	---	---	10/2001	29.6
EPSOIL-3	0' - 1'	Cadmium	---	---	---	---	---	10/2001	75.6
SB-01	0" - 2"	Cadmium	---	---	---	---	---	11/2001	10.5
	0' - 1'	Cadmium		---	---	---	---	11/2001	1.64
SB-04	0' - 1'	Cadmium	---	---	---	---	---	11/2001	30.4
	1' - 2'	Cadmium		---	---	---	---	11/2001	34.2
SB-05	0' - 1'	Cadmium	---	---	---	---	---	11/2001	41.1
	1' - 2'	Cadmium		---	---	---	---	11/2001	98.2
SB-06	0' - 1'	Cadmium	---	---	---	---	---	11/2001	11.3
	1' - 2'	Cadmium		---	---	---	---	11/2001	8.04
SB-07	0' - 1'	Cadmium	---	---	---	---	---	11/2001	42.1
	1' - 2'	Cadmium		---	---	---	---	11/2001	34.3
SB-08	0' - 1'	Cadmium	---	---	---	---	---	11/2001	5.78
SB-10	0' - 1'	Cadmium	---	---	---	---	---	11/2001	108
	1' - 2'	Cadmium		---	---	---	---	11/2001	114
SB-11	0' - 1'	Cadmium	---	---	---	---	---	11/2001	9.82
SB-34	0" - 2"	Cadmium	---	---	---	---	---	06/2002	3.79
SB-35	0" - 2"	Cadmium	---	---	---	---	---	06/2002	19.0
SB-36	0" - 2"	Cadmium	---	---	---	---	---	06/2002	26.6
SB-37	0" - 2"	Cadmium	---	---	---	---	---	06/2002	11.3
SB-38	0" - 2"	Cadmium	---	---	---	---	---	06/2002	22.4
SB-39	0" - 2"	Cadmium	---	---	---	---	---	06/2002	16.8
SB-40	0" - 2"	Cadmium	---	---	---	---	---	06/2002	6.52
SB-41	0" - 2"	Cadmium	---	---	---	---	---	06/2002	47.3
SB-42	0" - 2"	Cadmium	---	---	---	---	---	06/2002	5.65
SB-43	0" - 2"	Cadmium	---	---	---	---	---	06/2002	7.77
SB-44	0" - 2"	Cadmium	---	---	---	---	---	06/2002	101

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West Branch of Bloody Brook
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Onondaga County, New York

Boring ID	Sampling Interval	Analyte	Surface Elevation (ft)	Brook Elevation (ft)	Sample Elevation at Bottom of Interval (ft)	Sample Relation to Brook Level	General Soil Classification	Collection Date	Result (mg/kg)
SB-45	0" - 2"	Cadmium	---	---	---	---	---	06/2002	17.5
SB-46	0" - 2"	Cadmium	---	---	---	---	---	06/2002	96.1
SB-47	0" - 2"	Cadmium	---	---	---	---	---	06/2002	35.6
SB-48	0" - 2"	Cadmium	---	---	---	---	---	06/2002	29.6
SB-49	0" - 2"	Cadmium	---	---	---	---	---	06/2002	21.6
SB-65	2' - 3'	Cadmium	---	---	---	---	Sandy Silt	11/2002	6.5
	3' - 4'	Cadmium		---	---	---	Sandy Silt	11/2002	23.4
SB-66	0' - 1'	Cadmium	---	---	---	---	Silty Sand	11/2002	29.7
	1' - 2'	Cadmium		---	---	---	Clayey Silt	11/2002	24.2
	2' - 3'	Cadmium		---	---	---	Clayey Silt	11/2002	1.1
	3' - 4'	Cadmium		---	---	---	Clayey Silt	11/2002	<0.60
SB-67	0" - 2"	Cadmium	---	---	---	---	---	11/2002	20.9
SB-68	0' - 1'	Cadmium	---	---	---	---	Silty Sand	11/2002	31.4
	1' - 2'	Cadmium		---	---	---	Silty Sand	11/2002	18.0
	2' - 3'	Cadmium		---	---	---	Sandy Silt	11/2002	3.6
	3' - 4'	Cadmium		---	---	---	Sandy Silt	11/2002	11.6
SB-69	0" - 2"	Cadmium	---	---	---	---	---	11/2002	10.3
SB-72	2' - 3'	Cadmium	---	---	---	---	Silty Sand	11/2002	1.7
	3' - 4'	Cadmium		---	---	---	Silty Sand/Clay	11/2002	4.3
SB-73	0" - 2"	Cadmium	---	---	---	---	---	11/2002	37.6
SB-74	0' - 1'	Cadmium	---	---	---	---	Silty Sand	11/2002	25.0
	1' - 2'	Cadmium		---	---	---	Silty Sand	11/2002	3.8
	2' - 3'	Cadmium		---	---	---	Fill	11/2002	1.4
	3' - 4'	Cadmium		---	---	---	Fill/Sandy Silt	11/2002	<0.62
SB-210	0" - 2"	Cadmium	---	---	---	---	---	11/2002	4.9
	0' - 1'	Cadmium		---	---	---	Silty Sand	11/2002	3.8
	1' - 2'	Cadmium		---	---	---	Silty Sand	11/2002	7.6
	2' - 3'	Cadmium		---	---	---	Silty Sand	11/2002	1.9
	3' - 4'	Cadmium		---	---	---	Silty Sand	11/2002	<0.54
SB-229	0" - 2"	Cadmium	376.82	369.99	376.65	Above	Topsoil	10/21/2003	1.4
	0' - 1'	Cadmium		369.99	375.82	Above	Silty Sand	10/21/2003	1.9
	1' - 2'	Cadmium		369.99	374.82	Above	Silty Sand	10/21/2003	0.67
	2' - 3'	Cadmium		369.99	373.82	Above	Silty Sand	10/21/2003	<0.61 [<0.60]
	3' - 4'	Cadmium		369.99	372.82	Above	Silty Sand	10/21/2003	<0.61
	4' - 5'	Cadmium		369.99	371.82	Above	Silty Sand	10/21/2003	103
	5' - 6'	Cadmium		369.99	370.82	Above	Organic Silt/Sand	10/21/2003	1,390
	6' - 7'	Cadmium		369.99	369.82	At	Organic Silt/Sand to Clayey Silt	10/21/2003	247
	7' - 8'	Cadmium		369.99	368.82	Below	Clayey Silt to Silty Clay	10/21/2003	2.7
SB-230	0" - 2"	Cadmium	376.54	366.99	376.37	Above	Topsoil	10/23/2003	23.5
	0' - 1'	Cadmium		366.99	375.54	Above	Sandy Silt	10/23/2003	10.1
	1' - 2'	Cadmium		366.99	374.54	Above	Fill	10/23/2003	5.2 [1.50]
	2' - 3'	Cadmium		366.99	373.54	Above	Fill	10/23/2003	<0.57
	3' - 4'	Cadmium		366.99	372.54	Above	Silty Sand	10/23/2003	0.81
	4' - 5'	Cadmium		366.99	371.54	Above	Silty Sand	10/23/2003	<0.60
	5' - 6'	Cadmium		366.99	370.54	Above	Silty Sand to Silty Clay	10/23/2003	<0.61
	6' - 7'	Cadmium		366.99	369.54	Above	Organic Silty Clay	10/23/2003	6.0
	7' - 8'	Cadmium		366.99	368.54	Above	Organic Silty Clay	10/23/2003	<0.65 [<0.68]
	8' - 9'	Cadmium		366.99	367.54	Above	Silty Clay	10/23/2003	<0.62
	9' - 10'	Cadmium		366.99	366.54	At	Silty Clay	10/23/2003	<0.59
	10' - 11'	Cadmium		366.99	365.54	Below	Organic Silty Clay	10/23/2003	<0.67
	11' - 12'	Cadmium		366.99	364.54	Below	Silty Clay	10/23/2003	<0.62
SB-415	0" - 2"	Cadmium	373.06	365.92	372.89	Above	Topsoil	10/23/2003	1.6
	0' - 1'	Cadmium		365.92	372.06	Above	Silty Sand	10/23/2003	0.99
	1' - 2'	Cadmium		365.92	371.06	Above	Silty Sand	10/23/2003	2.3
	2' - 3'	Cadmium		365.92	370.06	Above	Silty Sand	10/23/2003	<0.60
	3' - 4'	Cadmium		365.92	369.06	Above	Silty Sand to Clayey Silt	10/23/2003	<0.59
	4' - 5'	Cadmium		365.92	368.06	Above	Silty Sand	10/23/2003	2.1
	5' - 6'	Cadmium		365.92	367.06	Above	Silty Sand	10/23/2003	<0.60
	6' - 7'	Cadmium		365.92	366.06	At	Silty Sand	10/23/2003	<0.55
	7' - 8'	Cadmium		365.92	365.06	Below	Organic Silt/Sand	10/23/2003	<0.61 [<0.59]
	8' - 9'	Cadmium		365.92	364.06	Below	Silty Clay	10/23/2003	<0.64
	9' - 10'	Cadmium		365.92	363.06	Below	Silty Clay to Silty Sand	10/23/2003	<0.57

Table 1

Summary of Soil Classification and Analytical Data Adjacent to Brookview Lane, Floradale Road, Pearl Street, and Town Gardens Drive Culverts

West Branch of Bloody Brook

Bloody Brook Voluntary Cleanup Program

Onondaga County, New York

Boring ID	Sampling Interval	Analyte	Surface Elevation (ft)	Brook Elevation (ft)	Sample Elevation at Bottom of Interval (ft)	Sample Relation to Brook Level	General Soil Classification	Collection Date	Result (mg/kg)
SB-416	0" - 2"	Cadmium	372.03	365.87	371.86	Above	Topsoil	10/23/2003	44.4
	0' - 1'	Cadmium		365.87	371.03	Above	Silty Sand	10/23/2003	20.2
	1' - 2'	Cadmium		365.87	370.03	Above	Silty Sand	10/23/2003	6.8
	2' - 3'	Cadmium		365.87	369.03	Above	Silty Sand	10/23/2003	1.1
	3' - 4'	Cadmium		365.87	368.03	Above	Organic Silt/Sand	10/23/2003	123
	4' - 5'	Cadmium		365.87	367.03	Above	Organic Silt/Sand	10/23/2003	16.8
	5' - 6'	Cadmium		365.87	366.03	At	Organic Silt/Sand	10/23/2003	0.79
	6' - 7'	Cadmium		365.87	365.03	Below	Silty Clay	10/23/2003	<0.62
	7' - 8'	Cadmium		365.87	364.03	Below	Silty Clay	10/23/2003	<0.65
SB-417	0" - 2"	Cadmium	371.96	365.42	371.79	Above	Topsoil	10/24/2003	5.9
	0' - 1'	Cadmium		365.42	370.96	Above	Topsoil	10/24/2003	16.2
	1' - 2'	Cadmium		365.42	369.96	Above	Clayey Silt	10/24/2003	3.0
	2' - 3'	Cadmium		365.42	368.96	Above	Clayey Silt	10/24/2003	0.86
	3' - 4'	Cadmium		365.42	367.96	Above	Organic Clayey Silt	10/24/2003	109.0
	4' - 5'	Cadmium		365.42	366.96	Above	Organic Clayey Silt	10/24/2003	18.4
	5' - 6'	Cadmium		365.42	365.96	Above	Organic Clayey Silt	10/24/2003	<0.73
	6' - 7'	Cadmium		365.42	364.96	At	Organic Clayey Silt to Clay	10/24/2003	<0.63
	7' - 8'	Cadmium		365.42	363.96	Below	Silty Sand	10/24/2003	<0.73
SB-453	0" - 2"	Cadmium	376.77	370.01	376.60	Above	Topsoil	4/29/2004	2.26
	0' - 1'	Cadmium		370.01	375.77	Above	Sandy Silt	4/29/2004	4.03
	1' - 2'	Cadmium		370.01	374.77	Above	Sandy Silt	4/29/2004	<0.590
	2' - 3'	Cadmium		370.01	373.77	Above	Sandy Silt	4/29/2004	<0.612
	3' - 4'	Cadmium		370.01	372.77	Above	Clayey Silt	4/29/2004	<0.623
	4' - 5'	Cadmium		370.01	371.77	Above	Clayey Silt	4/29/2004	3.29
	5' - 6'	Cadmium		370.01	370.77	Above	Clayey Silt	4/29/2004	91.9
	6' - 7'	Cadmium		370.01	369.77	At	Clayey Silt	4/29/2004	130
	7' - 8'	Cadmium		370.01	368.77	Below	Clayey Silt	4/29/2004	<0.734
SB-454	0" - 2"	Cadmium	376.79	367.00	376.62	Above	Topsoil	4/29/2004	4.9
	0' - 1'	Cadmium		367.00	375.79	Above	Silty Sand	4/29/2004	7.5
SB-455	0" - 2"	Cadmium	372.43	365.91	372.26	Above	Topsoil	4/29/2004	3.8
	0' - 1'	Cadmium		365.91	371.43	Above	Sandy Silt	4/29/2004	2.31
	1' - 2'	Cadmium		365.91	370.43	Above	Clayey Silt	4/29/2004	<0.615
	2' - 3'	Cadmium		365.91	369.43	Above	Clayey Silt	4/29/2004	<0.602
	3' - 4'	Cadmium		365.91	368.43	Above	Clayey Silt	4/29/2004	7.04
	4' - 5'	Cadmium		365.91	367.43	Above	Clayey Silt	4/29/2004	<0.681

Notes:

1. Boring locations are shown on Figures 2 through 5.
2. The soil classification descriptions identified in the table represent the predominant soil type for the respective intervals.
3. mg/kg = milligrams/kilograms (equivalent to ppm = parts per million).
4. --- indicates that the information is not available.
5. Duplicate results are presented in brackets.
6. B - Compound was found in the blank and sample.
7. J - The detected concentration is an estimated value.
8. U - Result edited to reflect non-detect by data validation company due to presence of cadmium in the associated preparation blank at similar concentrations.
9. < - Analyte not detected at the reporting limit shown.
10. After three attempts, the sampling personnel were unable to advance the equipment through the sampling depth, and the soil sample was not collected.

TABLE 2
Proposed Soil Investigation Samples Adjacent to Brookview Lane, Floradale Road, Pearl Street, and Town Gardens Drive Culverts[1]
West Branch of Bloody Brook (WBBB)
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

Boring ID	Sample Depth Interval[2]	Analysis Approach[3]
DI-84-01	0' - 1'	Analyze
	1' - 2'	Analyze
	2' - 3'	Analyze
	3' - 4'	Analyze
	4' - 5'	Analyze
	5' - 6'	Analyze
	6' - 7'	Analyze
	7' - 8'	Analyze
	8' - 9'	Analyze
	9' - 10'	Analyze
	10' - 11'	Analyze
	11' - 12'	Analyze
DI-84-02	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-84-03	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-85-01	0' - 1'	Analyze
	1' - 2'	Analyze
	2' - 3'	Analyze
	3' - 4'	Analyze
	4' - 5'	Analyze
	5' - 6'	Analyze
	6' - 7'	Analyze
	7' - 8'	Analyze
	8' - 9'	Analyze
	9' - 10'	Analyze
	10' - 11'	Analyze
	11' - 12'	Analyze
DI-85-02	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold

TABLE 2
Proposed Soil Investigation Samples Adjacent to Brookview Lane, Floradale Road, Pearl Street, and Town Gardens Drive Culverts[1]
West Branch of Bloody Brook (WBBB)
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

Boring ID	Sample Depth Interval[2]	Analysis Approach[3]
DI-85-03	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-86-01	0' - 1'	Analyze
	1' - 2'	Analyze
	2' - 3'	Analyze
	3' - 4'	Analyze
	4' - 5'	Analyze
	5' - 6'	Analyze
	6' - 7'	Analyze
	7' - 8'	Analyze
	8' - 9'	Analyze
	9' - 10'	Analyze
	10' - 11'	Analyze
	11' - 12'	Analyze
DI-86-02	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-86-03	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-86-04	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold

TABLE 2
Proposed Soil Investigation Samples Adjacent to Brookview Lane, Floradale Road, Pearl Street, and Town Gardens Drive Culverts[1]
West Branch of Bloody Brook (WBBB)
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

Boring ID	Sample Depth Interval[2]	Analysis Approach[3]
DI-87-01	0' - 1'	Analyze
	1' - 2'	Analyze
	2' - 3'	Analyze
	3' - 4'	Analyze
	4' - 5'	Analyze
	5' - 6'	Analyze
	6' - 7'	Analyze
	7' - 8'	Analyze
	8' - 9'	Analyze
	9' - 10'	Analyze
	10' - 11'	Analyze
	11' - 12'	Analyze
DI-87-02	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-87-03	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-87-04	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-87-05	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold

TABLE 2
Proposed Soil Investigation Samples Adjacent to Brookview Lane, Floradale Road, Pearl Street, and Town Gardens Drive Culverts[1]
West Branch of Bloody Brook (WBBB)
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

Boring ID	Sample Depth Interval[2]	Analysis Approach[3]
DI-87-06	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-87-07	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-87-08	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-88-01	0' - 1'	Analyze
	1' - 2'	Analyze
	2' - 3'	Analyze
	3' - 4'	Analyze
	4' - 5'	Analyze
	5' - 6'	Analyze
	6' - 7'	Analyze
	7' - 8'	Analyze
	8' - 9'	Analyze
	9' - 10'	Analyze
	10' - 11'	Analyze
	11' - 12'	Analyze
DI-88-02	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold

TABLE 2
Proposed Soil Investigation Samples Adjacent to Brookview Lane, Floradale Road, Pearl Street, and Town Gardens Drive Culverts[1]
West Branch of Bloody Brook (WBBB)
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

Boring ID	Sample Depth Interval[2]	Analysis Approach[3]
DI-88-03	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-88-04	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-88-05	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-88-06	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-89-01	0' - 1'	Analyze
	1' - 2'	Analyze
	2' - 3'	Analyze
	3' - 4'	Analyze
	4' - 5'	Analyze
	5' - 6'	Analyze
	6' - 7'	Analyze
	7' - 8'	Analyze
	8' - 9'	Analyze
	9' - 10'	Analyze
	10' - 11'	Analyze
	11' - 12'	Analyze

TABLE 2
Proposed Soil Investigation Samples Adjacent to Brookview Lane, Floradale Road, Pearl Street, and Town Gardens Drive Culverts[1]
West Branch of Bloody Brook (WBBB)
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

Boring ID	Sample Depth Interval[2]	Analysis Approach[3]
DI-89-02	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-89-03	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-90-01	0' - 1'	Analyze
	1' - 2'	Analyze
	2' - 3'	Analyze
	3' - 4'	Analyze
	4' - 5'	Analyze
	5' - 6'	Analyze
	6' - 7'	Analyze
	7' - 8'	Analyze
	8' - 9'	Analyze
	9' - 10'	Analyze
	10' - 11'	Analyze
	11' - 12'	Analyze
DI-90-02	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-90-03	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold

TABLE 2
Proposed Soil Investigation Samples Adjacent to Brookview Lane, Floradale Road, Pearl Street, and Town Gardens Drive Culverts[1]
West Branch of Bloody Brook (WBBB)
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

Boring ID	Sample Depth Interval[2]	Analysis Approach[3]
DI-91-01	0' - 1'	Analyze
	1' - 2'	Analyze
	2' - 3'	Analyze
	3' - 4'	Analyze
	4' - 5'	Analyze
	5' - 6'	Analyze
	6' - 7'	Analyze
	7' - 8'	Analyze
	8' - 9'	Analyze
	9' - 10'	Analyze
	10' - 11'	Analyze
	11' - 12'	Analyze
DI-91-02	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold
DI-91-03	0' - 1'	Hold
	1' - 2'	Hold
	2' - 3'	Hold
	3' - 4'	Hold
	4' - 5'	Hold
	5' - 6'	Hold
	6' - 7'	Hold
	7' - 8'	Hold
	8' - 9'	Hold
	9' - 10'	Hold
	10' - 11'	Hold
	11' - 12'	Hold

Notes:

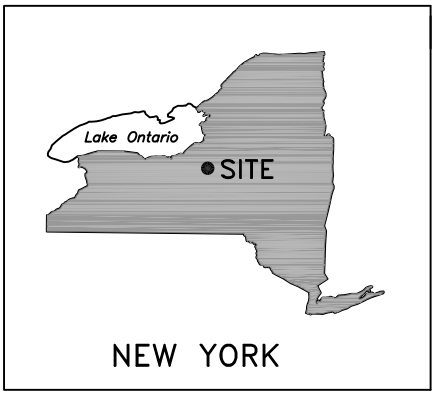
1. Proposed boring locations are shown on Figures 2 though 5.

2. All samples will be collected using a direct push drill rig. If refusal is encountered, additional attempts will be made in the same general area as the proposed sample location. In the event of refusal, limited sample recovery, or the presence of an obstruction, the sample will not be collected, and the reason for not collecting the sample will be documented.

3. As indicated , certain samples will be collected and held at the laboratory and will be analyzed based on the results of other samples. If analysis of held samples is determined to be necessary, the analysis will be performed within laboratory and analytical procedure holding times. All samples that are analyzed will be analyzed for cadmium using USEPA SW-846 Method 6010C.

4. Analysis is contingent on results from successive samples listed above and from samples at consecutive depth intervals. Samples will not be analyzed if results are less than less than the soil cleanup levels.

FIGURES



0' 2000' 4000'

APPROXIMATE SCALE

REFERENCE:

1. NYSDOT 7.5 MIN TOPOGRAPHIC MAP OF SYRACUSE WEST, QUADRANGLE 1990, SCALE: 1" = 2000'.

AECOM

LOCKHEED MARTIN CORPORATION

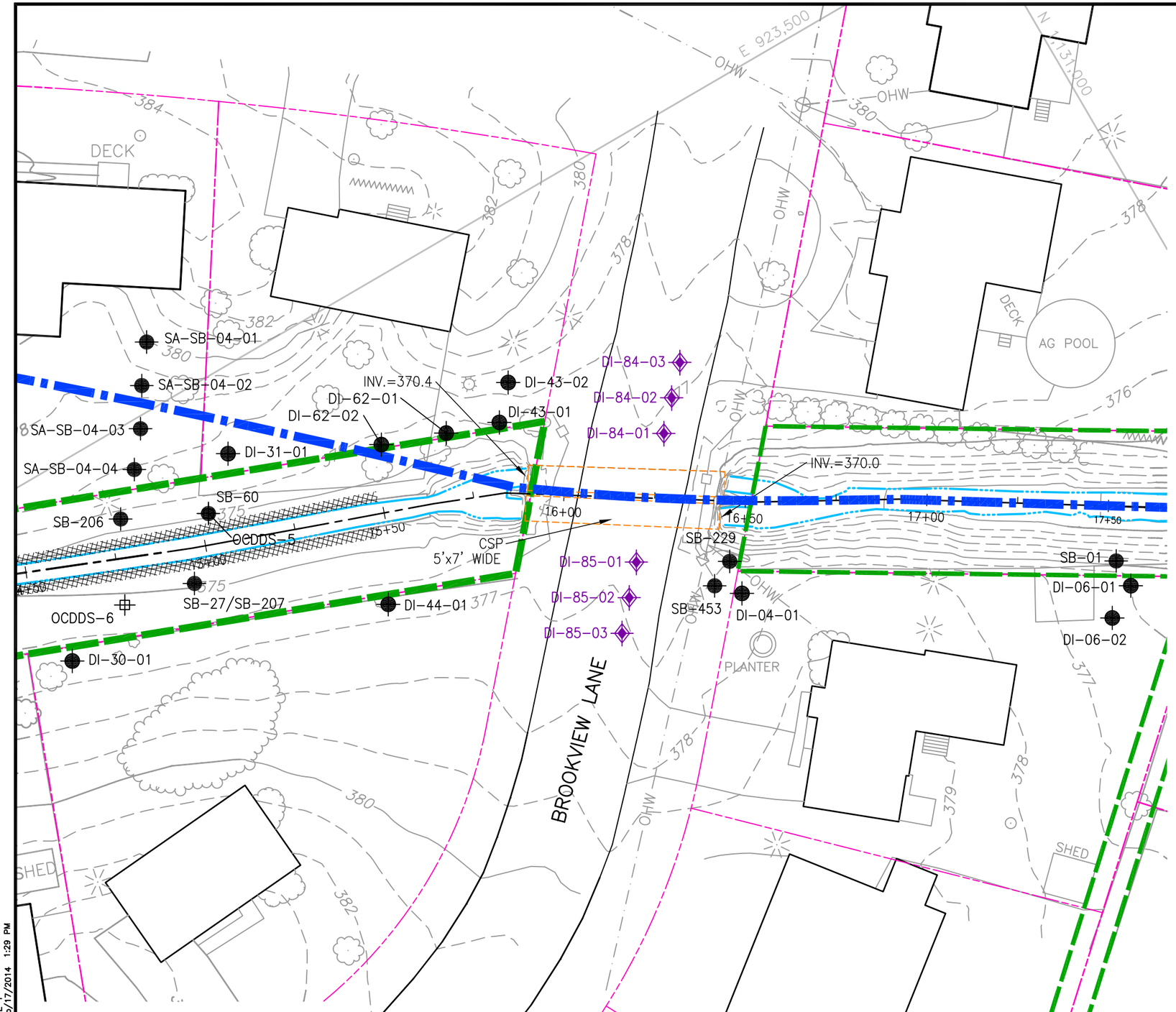
SITE LOCATION MAP

WEST BRANCH OF BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
A1FIG1.dwg	—	60194430	11 / 2013	1

Plotted By: bookasr
Layout-Sheet Name: LAYOUT1
Plot File Date Created: Nov/04/2013 12:05 PM

Filename: N:\MARKETING\PROPOSALS\LOCKHEED MARTIN – BLOODY BROOK\CAD\A1FIG1.DWG



LEGEND

- BLOODY BROOK DRAINAGE DISTRICT EASEMENT
- PROPERTY BORDER
- 365 — TOPOGRAPHIC CONTOUR LINE
- WEST BRANCH OF BLOODY BROOK CENTERLINE
- STREAM/WATER EDGE
- UNDERGROUND DRAIN LINE
- OHW — OVERHEAD WIRES
- RW — RETAINING WALL
- GUARD RAIL
- SMH — SANITARY MANHOLE
- DS DS — DRAINAGE STRUTURES
- CULVERT
- N 1,131,000 — NYS PLANE COORDINATE SYSTEM NORTHING
- BL-115 — AERIAL SURVEY GROUND CONTROL POINT
- 7+50 + — CHANNEL CENTERLINE SURVEY STATION
- CONIFEROUS TREE
- DECIDUOUS TREE
- UTILITY POLE / GUY WIRE
- DI-86-01 — PROPOSED SAMPLING LOCATION
- SB-417 — EXISTING SAMPLING LOCATION
- OCDDS-5 — APPROXIMATE ONONDAGA COUNTY SIDE BANK SAMPLING LOCATION
- GABIONS (ROCK-FILLED WIRE CAGES)
- LOCATION HISTORIC BROOK ALIGNMENT

NOTE

1. THE PROPOSED SAMPLE DEPTH INTERVAL AND ANALYSIS APPROACH FOR SOIL SAMPLES TO BE COLLECTED FROM THE PROPOSED SAMPLE LOCATIONS SHOWN ON THIS FIGURE ARE IDENTIFIED IN TABLE 2 OF THE 2014 CULVERT AND WASTE CHARACTERIZATION SOIL SAMPLING WORK PLAN.

REFERENCES:

1. BASE MAP SOURCE: IANUZI & ROMANS, P.C. AND CT MALE ASSOCIATES P.C.
2. THE VALUES SHOWN ARE BASED ON NEW YORK (CENTRAL ZONE) STATE PLANE COORDINATE SYSTEM NORTH AMERICAN DATUM 1983.

0' 30' 60'

APPROXIMATE SCALE

AECOM

LOCKHEED MARTIN CORPORATION

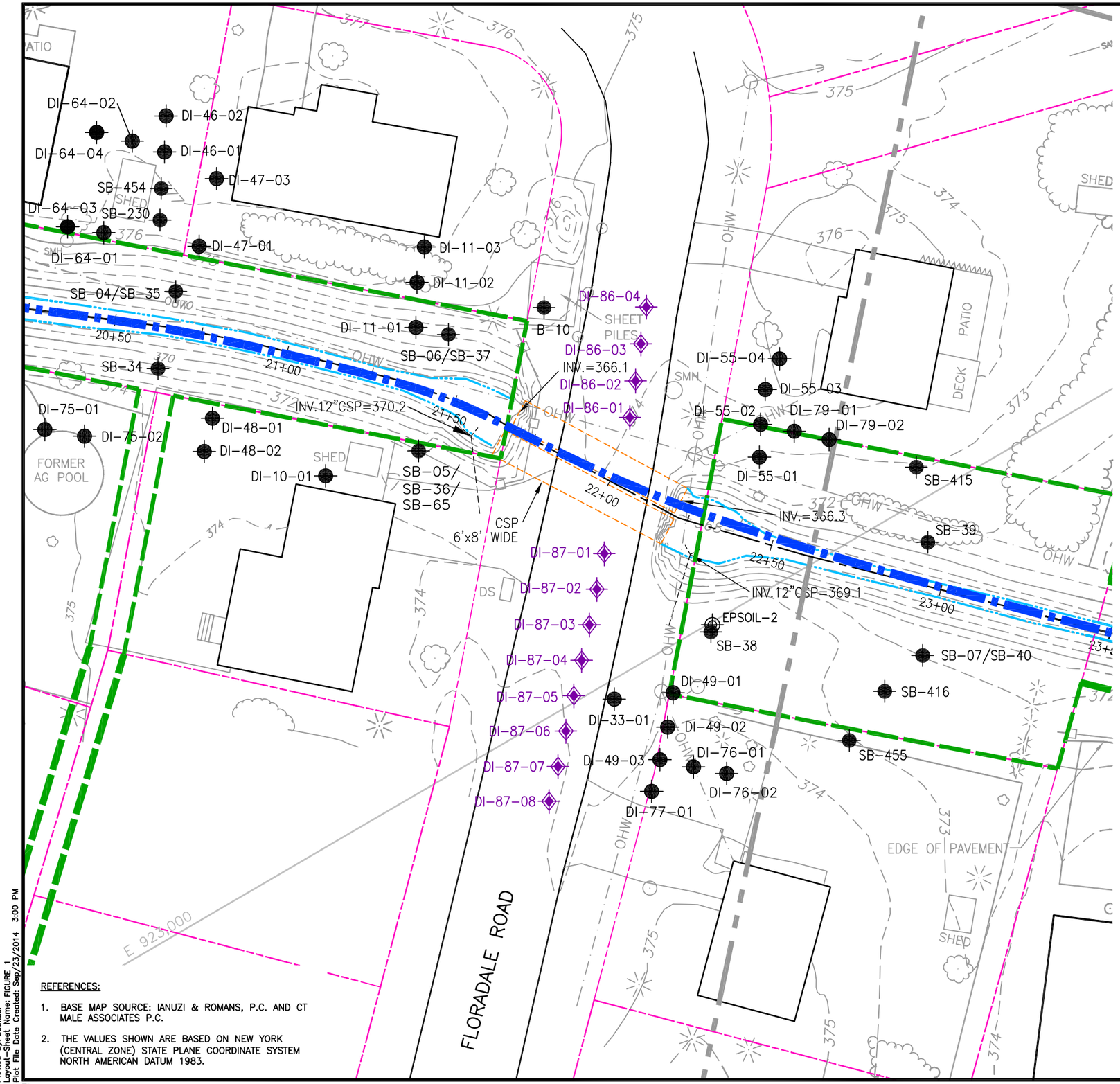
BROOKVIEW LANE CULVERT
EXISTING AND PROPOSED
SOIL SAMPLING LOCATIONS

WEST BRANCH OF BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
BVLFIG2.dwg	RNB	60303286	09 / 2014	2

Plotted By: bookasr
Layout-Sheet Name: FIGURE 1
Plot File Date Created: Sep/17/2014 1:29 PM

Filename: N:\MARKETING\PROPOSALS\LOCKHEED MARTIN - BLOODY BROOK\CAD\CULVERT SAMPLE LOCATIONS\BROOKVIEW LANE FIGURES\BVLFIG2.DWG



LEGEND

- BLOODY BROOK DRAINAGE DISTRICT EASEMENT
- PROPERTY BORDER
- TOPOGRAPHIC CONTOUR LINE
- WEST BRANCH OF BLOODY BROOK CENTERLINE
- STREAM/WATER EDGE
- UNDERGROUND DRAIN LINE
- OVERHEAD WIRES
- RETAINING WALL
- GUARD RAIL
- SANITARY MANHOLE
- DRAINAGE STRUTURES
- CULVERT
- N 1,131,000 — NYS PLANE COORDINATE SYSTEM NORTHING
- BL-115 — AERIAL SURVEY GROUND CONTROL POINT
- 7+50 — CHANNEL CENTERLINE SURVEY STATION
- CONIFEROUS TREE
- DECIDUOUS TREE
- UTILITY POLE / GUY WIRE
- DI-86-01 — PROPOSED SAMPLING LOCATION
- SB-417 — EXISTING SAMPLING LOCATION
- EPSOIL-2 — APPROXIMATE NYSDEC SIDE BANK SAMPLING LOCATION
- LOCATION HISTORIC BROOK ALIGNMENT

NOTE

1. THE PROPOSED SAMPLE DEPTH INTERVAL AND ANALYSIS APPROACH FOR SOIL SAMPLES TO BE COLLECTED FROM THE PROPOSED SAMPLE LOCATIONS SHOWN ON THIS FIGURE ARE IDENTIFIED IN TABLE 2 OF THE 2014 CULVERT AND WASTE CHARACTERIZATION SOIL SAMPLING WORK PLAN.

REFERENCES:

1. BASE MAP SOURCE: IANUZI & ROMANS, P.C. AND CT MALE ASSOCIATES P.C.
2. THE VALUES SHOWN ARE BASED ON NEW YORK (CENTRAL ZONE) STATE PLANE COORDINATE SYSTEM NORTH AMERICAN DATUM 1983.

0' 30' 60'

APPROXIMATE SCALE

AECOM

LOCKHEED MARTIN CORPORATION

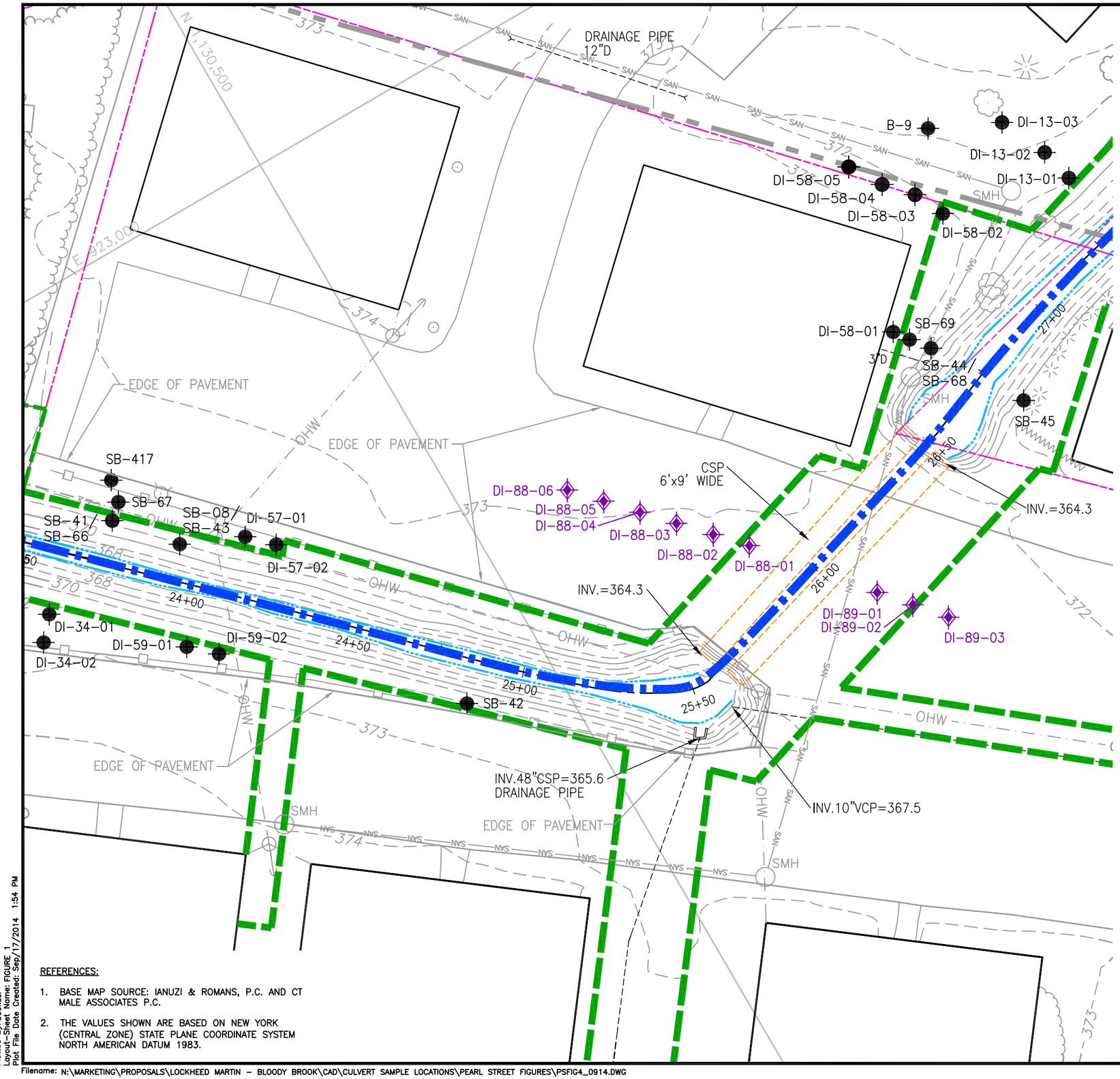
FLORADALE ROAD CULVERT
EXISTING AND PROPOSED
SOIL SAMPLING LOCATIONS

WEST BRANCH OF BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
FRFIG3.dwg	RNB	60303286	09 / 2014	3

Plotted By: bookasr
Layout-Sheet Name: FIGURE_1
Plot File Date Created: Sep/23/2014 3:00 PM

Filename: N:\MARKETING\PROPOSALS\LOCKHEED MARTIN – BLOODY BROOK\CAD\CULVERT SAMPLE LOCATIONS\FLORADALE ROAD FIGURES\FRFIG3.DWG



LEGEND

- BLOODY BROOK DRAINAGE DISTRICT EASEMENT
- PROPERTY BORDER
- 365 TOPOGRAPHIC CONTOUR LINE
- WEST BRANCH OF BLOODY BROOK CENTERLINE
- STREAM/WATER EDGE
- UNDERGROUND DRAIN LINE
- OHW OVERHEAD WIRES
- RW RETAINING WALL
- GUARD RAIL
- SMH SANITARY MANHOLE
- DS DS DRAINAGE STRUTURES
- CULVERT
- N 1,131,000 NYS PLANE COORDINATE SYSTEM NORTHING
- 7+50 + CHANNEL CENTERLINE SURVEY STATION
- CONIFEROUS TREE
- DECIDUOUS TREE
- UTILITY POLE / GUY WIRE
- DI-86-01 PROPOSED SAMPLING LOCATION
- SB-417 EXISTING SAMPLING LOCATION
- LOCATION HISTORIC BROOK ALIGNMENT

NOTE

1. THE PROPOSED SAMPLE DEPTH INTERVAL AND ANALYSIS APPROACH FOR SOIL SAMPLES TO BE COLLECTED FROM THE PROPOSED SAMPLE LOCATIONS SHOWN ON THIS FIGURE ARE IDENTIFIED IN TABLE 2 OF THE 2014 CULVERT AND WASTE CHARACTERIZATION SOIL SAMPLING WORK PLAN.

0' 30' 60'

APPROXIMATE SCALE

REFERENCES:

1. BASE MAP SOURCE: IANUZI & ROMANS, P.C. AND CT MALE ASSOCIATES P.C.
2. THE VALUES SHOWN ARE BASED ON NEW YORK (CENTRAL ZONE) STATE PLANE COORDINATE SYSTEM NORTH AMERICAN DATUM 1983.

AECOM

LOCKHEED MARTIN CORPORATION

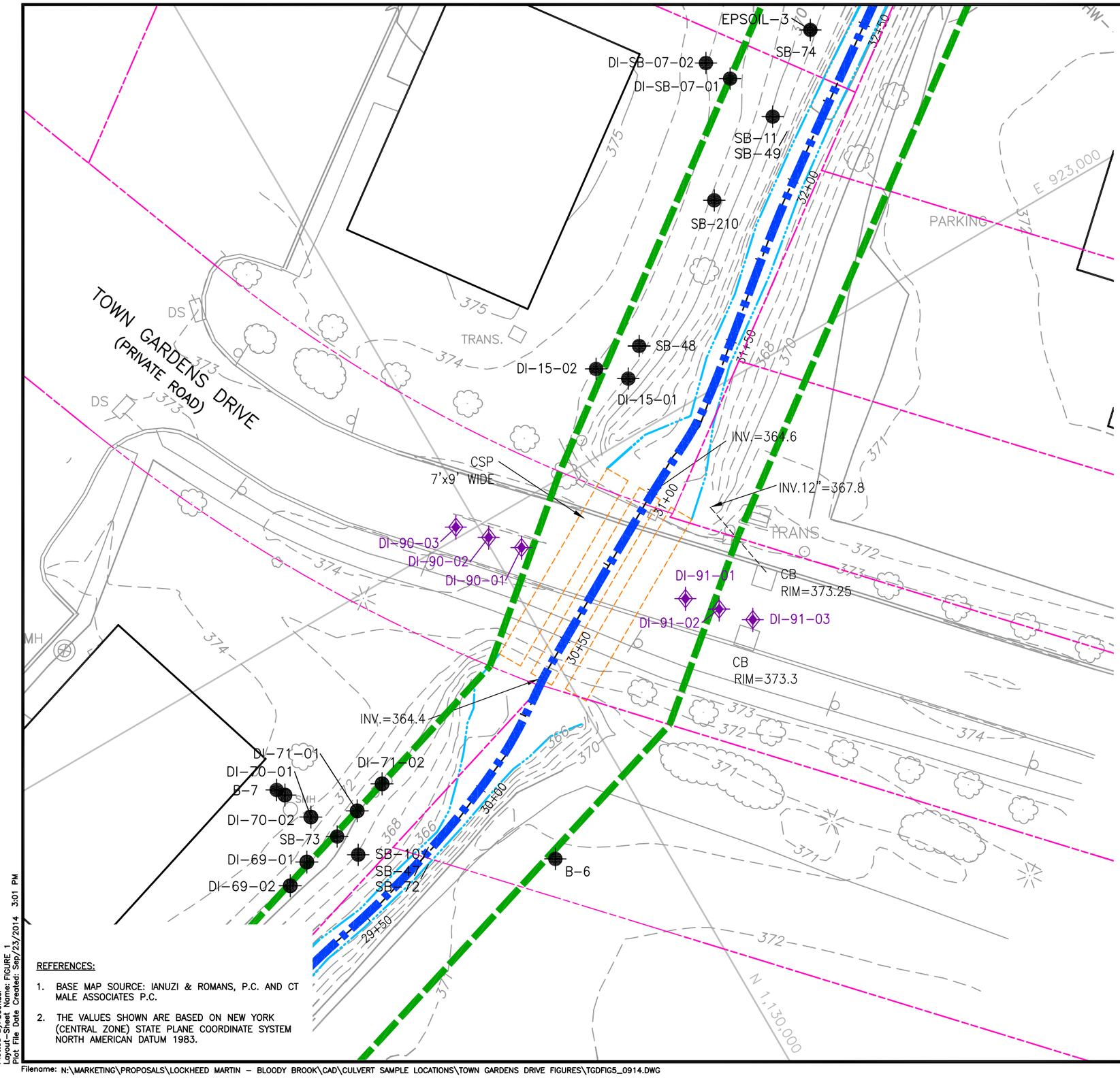
PEARL STREET CULVERT
EXISTING AND PROPOSED
SOIL SAMPLING LOCATIONS

WEST BRANCH OF BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
PSFIG4_0914.dwg	RNB	60303286	09 / 2014	4

Plotted By: bookasr
Layout-Sheet Name: FIGURE_1
Plot File Date Created: Sep/17/2014 1:54 PM

Filename: N:\MARKETING\PROPOSALS\LOCKHEED MARTIN – BLOODY BROOK\CAD\CULVERT SAMPLE LOCATIONS\PEARL STREET FIGURES\PSFIG4_0914.DWG



LEGEND

- BLOODY BROOK DRAINAGE DISTRICT EASEMENT
- PROPERTY BORDER
- TOPOGRAPHIC CONTOUR LINE
- WEST BRANCH OF BLOODY BROOK CENTERLINE
- STREAM/WATER EDGE
- UNDERGROUND DRAIN LINE
- OVERHEAD WIRES
- RETAINING WALL
- GUARD RAIL
- SANITARY MANHOLE
- DRAINAGE STRUTURES
- CULVERT
- N 1,131,000 — NYS PLANE COORDINATE SYSTEM NORTHING
- BL-115 — AERIAL SURVEY GROUND CONTROL POINT
- 7+50 + — CHANNEL CENTERLINE SURVEY STATION
- CONIFEROUS TREE
- DECIDUOUS TREE
- UTILITY POLE / GUY WIRE
- DI-84-01 — PROPOSED SAMPLING LOCATION
- SB-210 — EXISTING SAMPLING LOCATION
- LOCATION HISTORIC BROOK ALIGNMENT

NOTE

1. THE PROPOSED SAMPLE DEPTH INTERVAL AND ANALYSIS APPROACH FOR SOIL SAMPLES TO BE COLLECTED FROM THE PROPOSED SAMPLE LOCATIONS SHOWN ON THIS FIGURE ARE IDENTIFIED IN TABLE 2 OF THE 2014 CULVERT AND WASTE CHARACTERIZATION SOIL SAMPLING WORK PLAN.

REFERENCES:

1. BASE MAP SOURCE: IANUZI & ROMANS, P.C. AND CT MALE ASSOCIATES P.C.
2. THE VALUES SHOWN ARE BASED ON NEW YORK (CENTRAL ZONE) STATE PLANE COORDINATE SYSTEM NORTH AMERICAN DATUM 1983.

0' 30' 60'

APPROXIMATE SCALE

AECOM

LOCKHEED MARTIN CORPORATION

TOWN GARDENS DRIVE CULVERT
EXISTING AND PROPOSED
SOIL SAMPLING LOCATIONS

WEST BRANCH OF BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
TGDFIG5_0914.dwg	RNB	60303286	09 / 2014	5

Plotted By: bookasr
Layout-Sheet Name: FIGURE_1
Plot File Date Created: Sep/23/2014 3:01 PM

Filename: N:\MARKETING\PROPOSALS\LOCKHEED MARTIN – BLOODY BROOK\CAD\CULVERT SAMPLE LOCATIONS\TOWN GARDENS DRIVE FIGURES\TGDFIG5_0914.DWG


ONTARIO PLACE
MIDWOOD DRIVE
CRANBERRY DRIVE
MIDWOOD DRIVE
MATCHLINE TO SHEET 2 OF 2
BROOKVIEW LANE
SUNFLOWER DRIVE
NEW YORK STATE THRUWAY
N 1,132,000
N 1,131,500
N 1,132,500
E 924,000
E 923,500
6'x8' WIDE BOX CULVERT INV.=384.4
INV.12"CSP=397.23 DRAINAGE PIPE
INV.12"CPP=376.79 DRAINAGE PIPE
GABION LINED CHANNEL
30"CMP INV=377.90 DRAINAGE PIPE
CSP 5'x7' WIDE
INV.=370.4
INV.=370.0
BL-114
LEGEND
WETLAND/PHRAGMITES
BLOODY BROOK DRAINAGE DISTRICT EASEMENT
PROPERTY BORDER
TOPOGRAPHIC CONTOUR LINE
WEST BRANCH OF BLOODY BROOK CENTERLINE
STREAM/WATER EDGE
UNDERGROUND DRAIN LINE
OVERHEAD WIRES
RETAINING WALL
GUARD RAIL
UTILITY MANHOLE
DRAINAGE MANHOLE
CATCH BASIN
DRAINAGE STRUTURES
FLAG POLE
CULVERT
E 924,000 NYS PLANE COORDINATE SYSTEM EASTING
N 1,131,000 NYS PLANE COORDINATE SYSTEM NORTHING
BL-115 AERIAL SURVEY GROUND CONTROL POINT
7+50 CHANNEL CENTERLINE SURVEY STATION
CONIFEROUS TREE
DECIDUOUS TREE
LIGHT POLE
UTILITY POLE / GUY WIRE
LMC-WBBB-WC-12 EXISTING WASTE CHARACTERIZATION CENTRAL SAMPLE LOCATION
LMC-WBBB-WC-12B EXISTING WASTE CHARACTERIZATION COMPOSITE SAMPLE LOCATION
LMC-WBBB-WC-20 PROPOSED WASTE CHARACTERIZATION CENTRAL SAMPLE LOCATION
LMC-WBBB-WC-20B PROPOSED WASTE CHARACTERIZATION COMPOSITE SAMPLE LOCATION
GABIONS (ROCK-FILLED WIRE CAGES)
LOCATION HISTORIC BROOK ALIGNMENT
LIMITS OF PROPOSED REMEDIAL ACTION (2FT MAX. DEPTH BGS)
LIMITS OF PROPOSED REMEDIAL ACTION WITHIN EXISTING BROOK CHANNEL.
LIMITS OF PROPOSED REMEDIAL ACTION (3FT DEPTH BGS)
LIMITS OF PROPOSED REMEDIAL ACTION (4FT DEPTH BGS)
LIMITS OF PROPOSED REMEDIAL ACTION (5FT DEPTH BGS)
LIMITS OF PROPOSED REMEDIAL ACTION (6FT DEPTH BGS)
SOIL CHARACTERIZATION BOUNDARY
0' 50' 100'
APPROXIMATE SCALE
REFERENCES:
1. BASE MAP SOURCE: IANUZI & ROMANS, P.C. AND CT MALE ASSOCIATES P.C.
2. THE VALUES SHOWN ARE BASED ON NEW YORK (CENTRAL ZONE) STATE PLANE COORDINATE SYSTEM NORTH AMERICAN DATUM 1983.
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LOCKHEED MARTIN CORPORATION
PROPOSED WASTE CHARACTERIZATION SAMPLE LOCATIONS
SHEET 1 OF 2
WEST BRANCH OF BLOODY BROOK
ONONDAGA COUNTY, NEW YORK
FILE NAME: 2014PWCSLOC.dwg
DRN RNB
PROJECT NO. 60303286
DATE 10 / 2014
FIGURE NO. 6A
Plotted By: bookasr
Layout-Sheet Name: FIGURE 6A
Plot File Date Created: Oct/03/2014 12:08 PM
Filename: N:\MARKETING\PROPOSALS\LOCKHEED MARTIN - BLOODY BROOK\CAD\CULVERT SAMPLE LOCATIONS\2014PWCSLOC.DWG

REFERENCES:

1. BASE MAP SOURCE: IANUZI & ROMANS, P.C. AND CT MALE ASSOCIATES P.C.
2. THE VALUES SHOWN ARE BASED ON NEW YORK (CENTRAL ZONE) STATE PLANE COORDINATE SYSTEM NORTH AMERICAN DATUM 1983.

LEGEND

- TOWN/VILLAGE BORDER
- LOCATION HISTORIC BROOK ALIGNMENT
- APPROXIMATE LIMITS OF PROPOSED REMEDIAL ACTION (2FT MAX. DEPTH BGS)
- APPROXIMATE LIMITS OF PROPOSED REMEDIAL ACTION WITHIN EXISTING BROOK CHANNEL
- APPROXIMATE LIMITS OF PROPOSED REMEDIAL ACTION (4FT MAX. DEPTH BGS)
- LMC-WBBB-WC-24 — PROPOSED WASTE CHARACTERIZATION CENTRAL SAMPLE LOCATION
- LMC-WBBB-WC-24B — PROPOSED WASTE CHARACTERIZATION COMPOSITE SAMPLE LOCATION
- SOIL CHARACTERIZATION BOUNDARY

NOTE

1. SEE FIGURE 6A FOR IDENTIFICATION OF ADDITIONAL MAP SYMBOLS.

0' 50' 100'
APPROXIMATE SCALE

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LOCKHEED MARTIN CORPORATION

PROPOSED WASTE CHARACTERIZATION SAMPLE LOCATIONS SHEET 2 OF 2

WEST BRANCH OF BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
2014PWCSLOC.dwg	RNB	60303286	10 / 2014	6B

Plotted By: bookasr
Layout-Sheet Name: FIGURE 6B
Plot File Date Created: Oct/08/2014 12:26 PM

Filename: N:\MARKETING\PROPOSALS\LOCKHEED MARTIN – BLOODY BROOK\CAD\CULVERT SAMPLE LOCATIONS\2014PWCSLOC.DWG

APPENDIX A

Community Air Monitoring Work Plan

West Branch of Bloody Brook
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

March 2014

Prepared for:

Lockheed Martin Corporation
Syracuse, New York

Prepared by:

AECOM Technical Services Northeast, Inc.
40 British American Boulevard
Latham, New York 12110

Contents

1.0 Introduction

This Community Air Monitoring Plan (CAMP) has been prepared to summarize the air monitoring procedures that will be implemented during field activities associated with the Remedial Action (RA) at the West Branch of Bloody Brook (WBBB) site. For the purposes of this CAMP, the WBBB site, as shown on the Design Drawings included as Attachment A of the March 2014 *Construction Work Plan*, is defined as that portion of the WBBB and the surrounding area commencing on the southern boundary of the New York State Thruway (Thruway) and ending at Onondaga Lake Parkway.[1] The RA activities are described in the March 2014 *Construction Work Plan*. The RA activities will be performed pursuant to a Voluntary Cleanup Agreement (VCA) between Lockheed Martin and New York Department of Environmental Conservation (NYSDEC) (Index #: D7-0001-01-09, effective July 20, 2002).

This CAMP has been developed consistent with NYSDEC's guidance entitled *DER-10 Technical Guidance for Site Investigation and Remediation* (NYSDEC, May 2010) (DER-10) and the *New York State Department of Health Generic Community Air Monitoring Plan* (NYSDOH Generic CAMP) included as Attachment 1A of DER-10. The remedial investigation at the WBBB site has identified cadmium (a heavy metal) as a contaminant of concern. Because a heavy metal was identified as the contaminant of concern, DER-10 requires that the CAMP include real-time monitoring for particulates (i.e., dust) at the downwind perimeter of a work area during ground intrusive activities. The intent of this CAMP is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses) from potential airborne contaminant releases as a direct result of the RA activities. Additionally, the data generated to maintain compliance with the CAMP will confirm that RA activities will not spread contamination off-site through the air. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Instrument readings obtained as part of the CAMP will be recorded and available for NYSDEC and New York State Department of Health (NYSDOH) personnel to review.

Real-time air monitoring for particulates (i.e., dust) will be conducted continuously for all ground intrusive activities (e.g., soil excavation, backfilling, etc.). The remedial investigation at the WBBB site did not identify volatile organic compounds (VOCs) as a contaminant of concern. Therefore, community air monitoring for VOCs is not anticipated at this time.

[1] The term "site" in the VCA is defined as: a portion of the banks, surface waters and sediments of the West and Middle Branches of Bloody Brook located in the Town of Salina, which commences downstream of Interstate 90, the New York State Thruway, and which extends generally southward past the confluence of the West Branch and the Middle Branch of Bloody Brook, and ends on the upstream side of Onondaga Lake Parkway. After examining data developed during remedial investigation work in the Middle Branch, NYSDEC determined that no further action was required for that branch of Bloody Brook. For this reason, the "WBBB site" in this CAMP relates only to those areas within the VCA site where the remedial program continues to be implemented and remedial action is being performed.

2.0 Community Air Monitoring Plan

2.1 CAMP Implementation during RA Activities

CAMP monitoring locations will initially be located at the boundary of the work area. The CAMP monitoring will be performed using a real-time aerosol monitors such as a Thermo MIE pDR-4000 DataRam (data-RAM) or equivalent equipment capable of monitoring airborne dust consisting of particulate matter measuring less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level listed is Section 2.2. The equipment will be equipped with an audible and visual alarm to indicate that a response level has been exceeded. In addition, an electronic alarm will be sent to the site engineer and superintendent's mobile phone or similar electronic device. Location-specific CAMP procedures will be developed daily as weather conditions and RA work areas and activities change. The location-specific procedures will be based on factors such as wind direction and the proximity of potential receptors to each RA work area.

2.2 CAMP Particulate Action Levels

The following action levels for particulates are in accordance with the NYSDOH Generic CAMP:

Action Level	**Response**
>0.1 mg/m^3 Above the background for the 15 minute average or if airborne dust is observed leaving the work area	Employ dust suppression techniques
0.1 to 0.15 mg/m^3	Work may continue with dust suppressions techniques provided downwind PM-10 particulate levels do not exceed 0.15 mg/m^3 above background for the 15-minute average and airborne dust is not observed leaving the work area
>0.15 mg/m^3	Cease operations. Contact PM, Director of Health, and Safety or designee immediately.

Best Management Practices will be implemented to control dust at the WBBB site. In the event any of the conditions presented above, occur additional measures will be implemented. Work stoppage and restart activities will follow the details provided in the NYSDOH Generic CAMP.

Depending on particulate readings taken at the exclusion zone boundary, CAMP monitoring may be extended beyond the perimeter of the exclusion zone to meet the specifications identified in the NYSDOH Generic CAMP.

2.3 Data Recording

Air monitoring readings will be measured and recorded both electronically via the instrument data logger and manually using a logbook, as appropriate. The readings will be exported from the monitoring equipment and placed in the project records. Additionally, instantaneous readings used for decision purposes, if any, will be recorded on the daily notes and/or logs and placed in the project records. Steps taken to control dusts (e.g., watering) and any additional measures taken to address any exceedances will be documented. The air monitoring data and manual recordings will be made available to the NYSDEC and NYSDOH personnel upon request.

2.4 Noise

Work activity scheduling will comply with local noise ordinances, which specify permitted noises as including construction work, between the hours of 7:00 am and 9:00 pm. Unavoidable work outside of these permitted hours shall not emit noise levels above 88 decibels when measured 50 feet from the work (e.g., by-pass pumping operation). No unnecessary construction shall be permitted on weekends unless local proper police, fire, and safety groups are notified.

APPENDIX B

Traffic Maintenance and Safety Plan

Soil Sampling Around Culverts
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

October 2014

Prepared for:

Lockheed Martin Corporation
Syracuse, New York

Prepared by:

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40 British American Boulevard
Latham, New York 12110

Contents

List of Figures

1.0 Introduction

This document is the *Traffic Maintenance and Safety Plan* (TMSP) for work to be completed in parking lots and roadways in the vicinity of the culverts that transfer the West Branch of Bloody Brook under Brookview Lane, Floradale Road, Pearl Street, and Town Gardens Drive. Specifically, soil samples will be collected from these roadways to define the proper management of the soils that will be disturbed to allow for replacement of these culverts.

Because Lockheed Martin Corporation is anticipating traffic flow restrictions in the Town of Salina due to the soil boring activities, a Lockheed Martin Corporation representative will contact the appropriate police department and fire department to notify them of any traffic flow restrictions.

The remainder of this TMSP describes the traffic control measures that will be implemented to facilitate the advancement of the soil borings.

2.0 Traffic Control Procedures

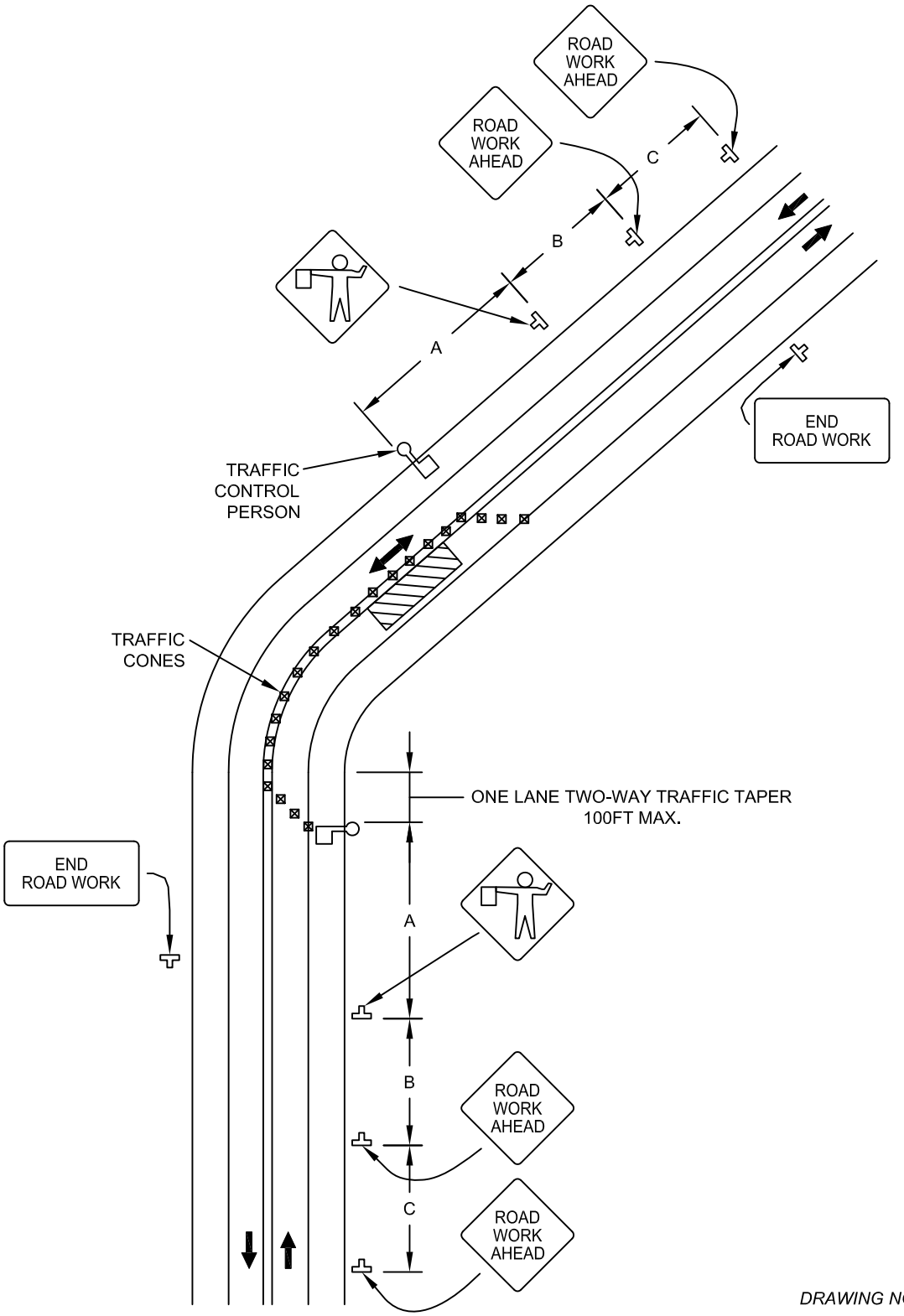
Lockheed Martin Corporation is anticipating some traffic flow restriction during the soil boring activities on Brookview Lane, Floradale Road, and Town Gardens Drive, which is a private road. The locations of planned activities within these roadways are shown on Figures 2, 3, and 5 of the Work Plan. The *Manual on Uniform Traffic Control Devices for Streets and Highways* 2009 Edition (MUTCD) was referenced to compile the procedures to be used for temporary traffic control during the soil boring activities. As described in the remainder of this section, the temporary traffic control plan that will be used to complete the soil boring activities are for lane closure on a two-lane road using a traffic control person.

The locations to be sampled in the vicinity of the Pearl Street culvert, shown on Figure 4, are within a private parking lot. For these samples, the area of the parking lot needed for sampling will be blocked off with cones during sampling activities.

2.1 Lane Closure on Two-Lane Road Using Traffic Control Person

During the soil boring activities on Brookview Lane, Floradale Road, and Town Gardens Drive, a lane of the roadway where the soil borings will be collected will need to be closed during work hours to allow for workers and equipment to maneuver safely. The traffic will be open to normal traffic flow at the end of each work day. In accordance with the MUTCD, Typical Application 10 will be used as the basis for a temporary traffic control plan for a lane closure on a two –lane road using a traffic control person. A typical temporary traffic control plan for a lane closure on a two –lane road using a traffic control person is illustrated on Figure 1.

Figures



DRAWING NOT TO SCALE

NOTE:

1. FOR LOW VOLUME SITUATIONS WITH SHORT WORK ZONES ON STRAIGHT ROADWAYS WHERE THE TRAFFIC CONTROL PERSON IS VISIBLE TO ROAD USERS APPROACHING FROM BOTH DIRECTIONS, A SINGLE TRAFFIC CONTROL PERSON POSITIONED TO BE VISIBLE TO ROAD USERS APPROACHING FROM BOTH DIRECTIONS MAY BE USED.
2. THE BUFFER SPACE SHOULD BE EXTENDED SO THAT THE TWO WAY TRAFFIC TAPER IS PLACED BEFORE A HORIZONTAL (OR CREST VERTICAL) CURVE TO PROVIDE ADEQUATE SIGHT DISTANCE FOR THE TRAFFIC CONTROL PERSON AND A QUEUE OF STOPPED VEHICLES.
3. DIMENSIONS A, B & C = 100 FEET.

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LOCKHEED MARTIN CORPORATION

LANE CLOSURE ON TWO-LANE ROAD

WEST BRANCH OF BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
LaneClosureFIG1.dwg	RNB	60303286	10 / 2014	1

Plotted By: bookasr
Layout--Sheet Name: LANE CLOSURE
Plot File Date Created: Oct/09/2014 9:16 AM

Filename: N:\MARKETING\PROPOSALS\LOCKHEED MARTIN – BLOODY BROOK\CAD\LANECLOSUREFIG1.DWG