



# **Bloody Brook**

**ONONDAGA COUNTY**

**LIVERPOOL, NEW YORK**

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## **Periodic Review Report March 31, 2018 to July 31, 2019 July 2019**

**Prepared for:**

Lockheed Martin Corporation  
497 Electronics Parkway  
Building EP-6, Room 100B  
Liverpool, New York 13088

**Prepared by:**

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## Engineering Certification

I certify that I am currently a NYS registered professional engineer and that this Periodic Review Report covering the period of March 31, 2018 to July 31, 2019 for the Bloody Brook site was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved scope of work and any DER-approved modifications.

Respectfully submitted,  
AECOM



July 31, 2019

Nickcole Evans  
Registered Professional Engineer  
New York License No. 085978

Date



## Executive Summary

AECOM, on behalf of Lockheed Martin Corporation, is submitting this Periodic Review Report (PRR) along with a completed Institutional Controls and Engineering Controls (IC/EC) Certification Form for the Bloody Brook site ("site"). This report is being submitted as requested by the New York State Department of Environmental Conservation in its letter dated June 19, 2019 to Jill Fonte of Lockheed Martin Corporation. The letter provides guidance for preparing the PRR and IC/EC certification form and requires they be submitted no later than August 30, 2019.

While this reporting period is from March 31, 2018 through July 31, 2019, inspections and monitoring completed before the start of the reporting period have been included herein, since this is the first PRR prepared for the site.

### Site Summary

The site was broken into four distinct areas based on land use characteristics including a wooded/wetland area, residential areas, an apartment complex area, and commercial areas, extending from Bloody Brook just below the New York State Thruway to the upstream side of the Onondaga Lake Parkway. Between 2014 and 2017, remedial construction and restoration activities were completed for the site to remove cadmium impacted soil and sediment in accordance with the 2014 Decision Document (NYSDEC, 2014), the 2013 *Remedial Action Work Plan* (RAWP) (AECOM, 2013), and subsequent annual Construction Work Plans and Restoration Work Plans. Following completion of excavation, a cover system was placed over the site in the areas where soil was removed to return the area to pre-existing grade and to prevent exposure to remaining residual cadmium. Following placement of the soil cover, site restoration was comprised of seeding, landscaping, and construction of replacement wetland habitats.

### Effectiveness of Remedial Program

Since completion of the site restoration in 2017, inspections and monitoring have shown that the remedy continues to be effective as designed.

### Compliance

In reference to the NYSDEC Approved Site Management Plan (AECOM, 2018a - updated 2019), there have been no areas of non-compliance throughout the reporting period identified in this PRR.

### Recommendations

No changes to the site activities are recommended at this time.

## 1.0 Site Overview

The site is located in the town of Salina, and a portion of the site is located in the Village of Liverpool, Onondaga County, New York. Site location and area maps are included as Figures 1 and 2, respectively. The site consists of the West Branch of Bloody Brook (WBBB) and Bloody Brook from below the confluence of the west and middle branches of Bloody Brook (collectively referred to as WBBB). Also included in the site is soil surrounding the WBBB and Bloody Brook downstream of the Thruway and ending at the upstream side of the Onondaga Lake Parkway. This portion of the site is approximately 5,000 feet long and flows through lands of varied use including a wooded area, a residential area, an apartment complex, and a commercial/light industrial area.

Upstream of the site, the WBBB originates in a wetland area surrounded by industrial properties. This wetland is located between Vine Street and Crossroads Industrial Park. The WBBB flows southward and is routed through culverts that transmit the WBBB underneath Electronics Business Park and the Thruway. Downstream of the site, Bloody Brook flows under Onondaga Lake Parkway and discharges into Onondaga Lake. The WBBB and Bloody Brook obtains a substantial fraction of its flow from storm water runoff from surrounding areas.

### 1.1 Site Background and Remedial History

Various investigations have been completed at the site. Those investigations including soil, biota, surface water, and sediment sampling along the WBBB and Bloody Brook have been performed by the New York State Department of Environmental Conservation (NYSDEC), Lockheed Martin, and Onondaga County from September 1994 through September 2015. Investigations of water quality and biota within the WBBB were initiated by NYSDEC in September 1994 (NYSDEC, 1996). In April 1996, NYSDEC shared the results of the 1994 investigations with Lockheed Martin. Lockheed Martin conducted sediment and surface water sampling from May 1996 through May 1999, and additional sediment sampling in January 2008 in support of a 2008 Interim Remedial Measure (IRM). In addition to the biota, surface water, and sediment investigations, Lockheed Martin conducted soil sampling from November 2001 through September 2015. Lockheed Martin conducted these site investigations pursuant to a series of work plans approved by NYSDEC. Site data are summarized in the NYSDEC approved 2018 *Final Engineering Report* (FER) for the site (AECOM, 2018b).

As requested by NYSDEC, early studies typically focused on polychlorinated biphenyls (PCBs), cadmium, copper, and mercury. In 1997 under NYSDEC oversight, Lockheed Martin removed all sediments from within the 200-foot long culvert beneath the Thruway and the adjacent downstream 750-foot segment of the WBBB (BBL, 1997). In January 1997, NYSDEC concluded that the concentrations of cadmium were elevated in the WBBB sediments, and PCBs, copper, and mercury did not pose a concern (NYSDEC, 1997). In 1999, a specific set of sediment samples was collected and analyzed for a more comprehensive list of organic and inorganic constituents. The results of the comprehensive analyses supported NYSDEC focus on cadmium, which became the contaminant of potential concern (COPC) for the site.

A detailed summary of the historical sampling and remedial investigation activities that were completed at the site is provided in the NYSDEC approved Site Management Plan (SMP) (AECOM, 2018a - updated 2019).

Between 2014 and 2017, remedial construction and restoration activities were completed for the site in accordance with the 2014 Decision Document (NYSDEC, 2014), the 2013 *Remedial Action Work Plan* (RAWP) (AECOM, 2013), and subsequent annual Construction Work Plans and Restoration Work Plans.

Remedial construction consisted of excavation and off-site disposal of contaminated soil and sediment including the following:

- All sediment from the WBBB and Bloody Brook from below the confluence of the West and Middle Branches of Bloody Brook, between the New York State Thruway and the Onondaga Lake Parkway;
- Top two feet of side bank soil from the WBBB and Bloody Brook, from below the confluence of the West and Middle Branches of Bloody Brook, between the New York State Thruway and Old Liverpool Road;
- Side bank soil from Bloody Brook between Old Liverpool Road and the Onondaga Lake Parkway with known cadmium concentrations greater than 4 mg/kg in the top two feet;
- The wooded/wetland area: soils in the top two feet with known cadmium concentrations greater than 4 mg/kg, and soils from two to six feet below grade with known cadmium concentrations greater than 100 mg/kg;
- Residential properties: soils in the top two feet with known cadmium concentrations greater than 2.5 mg/kg, and soils from two to four feet below grade with known cadmium concentrations greater than 10 mg/kg;
- Apartment complex area: soils in the top two feet with known cadmium concentrations greater than 4.3 mg/kg and soils from two to four feet below grade with known cadmium concentrations greater than 10 mg/kg;
- Drainage District easement: soils in the top two feet with known cadmium concentrations greater than 10 mg/kg; and
- Former drive-in theater area: soils in the top two feet with known cadmium concentrations greater than 9.3 mg/kg where surface disposal of brook dredge spoils had previously occurred.

Following completion of excavation, a cover system was placed over the site in the areas where soil was removed to return the area to pre-existing grade and to prevent exposure to remaining residual cadmium. This cover system is comprised of a minimum of 24 inches of clean soil and other components as appropriate. Site restoration was comprised of planting, seeding, and landscaping to pre-existing conditions or as agreed upon with the property owner. A 2018 FER documents the site's completed remedial actions (AECOM, 2018b).

Restoration in the wooded area included construction of wetland, upland, and transitional habitats following an adaptive management approach and in accordance with the NYSDEC-approved *Restoration Maintenance Work Plans* (AECOM 2014, 2017, and 2018c). See Figure 3 for locations of constructed habitat areas.

## **1.2 Remedial Action Objectives**

The Remedial Action Objectives (RAOs) for the site as listed in the 2014 Decision Document and the 2018 SMP are as follows for soil and sediment.

## Soil

### RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

### RAOs for Environmental Protection

- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

## Sediment

### RAOs for Public Health Protection

- Prevent direct contact with contaminated sediments.

### RAOs for Environmental Protection

- Prevent impacts to biota from ingestion/direct contact with sediments causing toxicity or impacts from bioaccumulation through the marine or aquatic food chain.
- Restore sediments to pre-release/background conditions to the extent feasible.

## **2.0 Evaluate Remedy Performance, Effectiveness, and Protectiveness**

Because remaining contamination exists below a soil cover system on the site after completion of the remedial work, annual site inspections are required to ensure the remedy continues to perform as designed. Three site-wide inspections and vegetation monitoring events have been conducted since completion of remedial activities in accordance with the NYSDEC approved 2018 SMP, with the first completed in May 2017 and the most recent being conducted during the current reporting period in June and July 2019. The sections below summarize the overall results of these site-wide inspections and vegetation monitoring, and Section 4 summarizes compliance with monitoring requirements.

### **2.1 Summary of Erosion Inspections**

No major areas of concern along the brook channel were noted during the annual site inspections completed in 2017, 2018, or 2019. The stream bottom and side banks were intact and showed little signs of damage during the inspections. However, several areas were noted as requiring over seeding, minor placement of additional rip rap, or adjustment of the existing rip rap. The site-wide inspection forms for 2017, 2018, and 2019 are included in Appendix A of this PRR. Detailed results of the erosion inspections are provided in the July 2017 and August 2018 *Annual Post Construction Restoration Monitoring Summary Reports* (AECOM, 2017b and 2018e). This summary report is currently being developed for the 2019 inspections and monitoring and will be provided to NYSDEC during the next reporting period.

Following completion of the 2018 monitoring activities, during the preparation of the related summary report, AECOM was notified by Onondaga County Department of Water Environment Protection (OCDWEP) that armor material had washed away from a portion of the channel bank below Old Liverpool Road following a heavy rain event. This location had been identified during the earlier May 2018 inspection and was noted as being an area with some rip rap erosion requiring installation of additional armor material. As an interim corrective measure, the armor material was placed by hand back onto the channel slope until the repair was completed in November 2018.

Maintenance activities were completed in accordance with the applicable NYSDEC approved work plans and summarized in the July 2018 and February 2019 Restoration Maintenance Summary Reports (AECOM, 2018d and 2019).

### **2.2 Summary of Vegetation Monitoring Results**

In accordance with the NYSDEC and USACE permitting for the remediation construction activities in the WBBB and its floodplain, Lockheed Martin upgraded the stream habitat of WBBB by constructing replacement wetland habitat and replanting all disturbed areas of upland habitat within the project footprint. Based on the 2017, 2018, and 2019 monitoring events, the habitat areas appear to be developing as anticipated with some exceptions that are currently being addressed following an adaptive management approach in coordination with NYSDEC Fish and Wildlife (F&W), in accordance with the 2018 *Restoration Maintenance Summary Report*, submitted to NYSDEC in February 2019 (AECOM, 2019). The current boundaries for the habitat areas are shown on Figure 3.

Details of the 2017 and 2018 monitoring events were provided to NYSDEC in the July 2017 and August 2018 *Annual Post Construction Restoration Monitoring Summary Reports* (AECOM, 2017b and 2018e). This summary report is currently being developed for the 2019 inspections and monitoring and will be provided to NYSDEC during the next reporting period.

## **2.3 Summary of Biological Monitoring Results**

In July 2014, biota samples were collected from within the Bloody Brook site to evaluate possible cadmium exposure for aquatic receptors prior to the start of remediation activities in the WBBB. Samples were collected from three general locations in WBBB, including an upper location (between Ontario Place and Cranberry Drive), a middle location (downstream from Floradale Road), and a lower location (upstream from Onondaga Lake Parkway). See Figure 4 for approximate sample locations. The 2014 data were provided to New York State Department of Environmental Conservation (NYSDEC) in the September 9, 2014 Monthly Progress Report for the Bloody Brook site and were included in Appendix F (Field Sampling Plan [FSP]) of the SMP.

According to the SMP, biota samples were to be collected in 2018 and 2020 from within the Bloody Brook site from the same locations that were sampled during the 2014 baseline sampling to support the evaluation of the effectiveness of the site remedial program in mitigating potential cadmium impacts in WBBB. In accordance with the SMP, crayfish samples were collected on August 13, 2018 using the kick-net method, per the FSP and consistent with the collection methods used during the baseline sampling. Five samples were collected from the lower location, consistent with the baseline sampling. However, due to the number of crayfish that could be located, only four samples were collected from the upper location, and no samples were collected from the middle location.

Whole body crayfish samples were analyzed by Test America Laboratories for total cadmium by USEPA SW846 Method 6020, and the data underwent full third party data validation. Analytical results for both the 2014 baseline sampling and the 2018 monitoring are summarized below in Table 2-1 and were provided to NYSDEC in October 2018. From the upper location, between Ontario Place and Cranberry Drive, average cadmium concentrations decreased from 3.4 mg/kg in 2014 to 0.79 mg/kg in 2018. The lower location, upstream from Onondaga Lake Parkway, also showed a decrease, with an average cadmium concentration of 0.97 mg/kg in 2014 decreasing to 0.14 mg/kg in 2018. Although no samples were collected from the middle location (downstream from Floradale Road) in 2018, the available samples collected at the upper and lower locations indicate the remedy has been effective in mitigating cadmium impacts as can be seen with the declining cadmium concentrations in the biological samples.

**Table 2-1. Analytical Data for Baseline (July 2014) and First Year (August 2018) Biota Monitoring**

<b>Sample Location</b>	<b>Sample Location</b>	<b>2014 Cadmium (mg/kg-ww)</b>	<b>2018 Cadmium (mg/kg-ww)</b>
Upper Channel - between Ontario Place and Cranberry Drive	CR-1-01	3.1	0.53
	CR-1-02	3.6	0.56
	CR-1-03	3.2	1.3
	CR-1-04	2.5	0.76
	CR-1-05	4.4	
	<b>Average</b>	<b>3.4</b>	<b>0.79</b>
Middle Channel - downstream from Floradale Road	CR-2-01	4.3	Not sampled
	CR-2-02	3.5	Not sampled
	CR-2-03	5.2	Not sampled
	CR-2-04	3.6	Not sampled
	CR-2-05	3.5	Not sampled
	<b>Average</b>	<b>4.0</b>	<b>No samples</b>
Lower Channel-upstream from Onondaga Lake Parkway	CR-3-01	0.97	0.059 J
	CR-3-02	0.76	0.13
	CR-3-03	1.3	0.12
	CR-3-04	1.5	0.22
	CR-3-05	0.33	0.18
	<b>Average</b>	<b>0.97</b>	<b>0.16</b>

## Notes:

1. Biota samples were whole body crayfish.
2. Results are reported in wet weight.
3. No crayfish were located in the "middle" sample from 2018.
4. J - estimated value; detected above the method detection limit but below the reporting limit.

### **3.0 Institutional and Engineering Control Plan Compliance Report**

Because the final site remedy included implementation of both Institutional Controls (ICs) and Engineering Controls (ECs), a SMP was developed to support these controls. A summary of the controls and required site activities per the SMP are summarized in the sections below.

#### **3.1 Institutional Controls - Requirements and Compliance**

A series of ICs is required by the 2014 Decision Document and SMP to: (1) implement, maintain and monitor EC systems; (2) prevent future exposure to remaining contamination; and, (3) limit the use and development of the site to appropriate uses for each area. Adherence to these ICs on the site is required by the 2014 Decision Document and is implemented under the site SMP. The IC boundaries are shown on Figures 5A through 5C and include the following:

- All ECs must be maintained as specified in the SMP;
- All ECs must be inspected at a frequency and in a manner defined in the SMP.
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in the SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with the SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in the SMP;
- Access to the site must be provided to agents, employees, or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the SMP.

Specific ICs as outlined in the 2014 Decision Document and the SMP and compliance with these ICs from the time of remedy completion through the current reporting period are summarized in Table 3-1 below. Details for the various provisions noted in Table 3-1 are provided in the SMP.



**Table 3-1. Specific Institutional Control Requirements and Compliance**

<b>Activity</b>	<b>Frequency</b>	<b>Dates Completed</b>
A provision for further investigation to refine the extent of contamination in the areas where access was previously hindered (e.g., any residential property where access is currently denied or future excavations that require the property owner to contact Lockheed Martin when digging at depths where residual cadmium has been or has the potential to be detected)	Ongoing	Letters sent in March 2018 and March 2019
Maintaining site access controls and Department notification	Ongoing	Ongoing
Tracking of property ownership changes to allow for the continued communication with owners	At least annually	Regularly updating property ownership and mailing addresses
Notification by Lockheed Martin to property owners of Lockheed Martin's offer to implement the remedy for property owners who chose to decline remedy implementation and/or sampling on their property	Annually	As needed for private residences
Reminder from Lockheed Martin to property owners with post remedy residual soil contamination of the presence of such residual contamination, and of Lockheed Martin's commitment to handle (excavate, manage and dispose) residual contaminated soils, as necessary and in accordance with the intended use of the property	Annually	Reminder letters sent in March 2018 and March 2019
A provision for Lockheed Martin to request that the Village of Liverpool Code Enforcement Office and the Town of Salina Department of Planning and Development timely inform Lockheed Martin of any building permits they grant for properties within the site boundaries where residual material remains post remedy. Details of this notification process with the Village of Liverpool and Town of Salina are provided in the following sections.	Ongoing	Reminder letters sent in March 2018 and March 2019
A provision for Lockheed Martin to request that the Town of Salina and Onondaga County timely inform Lockheed Martin of any Town or County plans to conduct intrusive maintenance work within the site boundaries (e.g., soil disturbance work).	Ongoing	Reminder letters sent in March 2018 and March 2019

### **3.2 Engineering Controls - Requirements and Compliance**

Exposure to remaining contamination at the site is prevented by a cover system placed over the site in the areas where soil was excavated. This cover system is comprised of a minimum of 24 inches of clean soil and other components as appropriate. Figure 6A through 6C presents the location of the soil cover. The Excavation Work Plan (EWP) provided in the SMP outlines the procedures required to be implemented in the event the cover system is breached, penetrated or

temporarily removed, and any underlying remaining contamination is disturbed. Inspection of this cover are included as part of an annual site-wide inspection detailed in the Monitoring and Sampling Plan included in the SMP and is conducted to confirm the soil cover and armoring material remains in place and protective of the underlying soil. From the time of remedy completion through the current reporting period, any deficiencies in the soil cover have been corrected and summarized as discussed above in Section 2.1.

### **3.3 IC/EC Certification Form**

See Appendix B for the completed IC/EC Certification Form.

## 4.0 Monitoring Plan Compliance Report

The requirements of and compliance with the monitoring plan as detailed in the SMP are provided below in Table 4-1.

**Table 4-1. Inspection and Monitoring Schedule**

Activity	Frequency Required	Dates Completed	Results Discussed within PRR
Annual Site-Wide Inspections	Annually	May 2017, May 2018, and June 2019	Sections 2.1 and 3.2
Restoration Monitoring in Habitat Areas	Annually	May/June 2017, May/June 2018, and June/July 2019	Sections 2.2 and 3.1
Restoration monitoring on private properties where restoration was completed in 2016	Annually for 5 years	May 2017, May 2018, and June 2019	Discussed with property owners on an as-needed basis.
Restoration monitoring on private properties where restoration was completed in 2017	Annually for 5 years	May 2018 and June 2019	Discussed with property owners on an as-needed basis.
Biological Monitoring	Baseline, 2018, 2020 (once per for a total of three monitoring events)	July 2014 and August 2018	Section 2.3

Restoration was still in progress at the time of the 2017 inspection and monitoring at the properties listed below and identified on Figure 2. Consequently, these areas were excluded from the 2017 inspections and were inspected for the first time during the annual inspection in 2018. The first site inspections and monitoring events were completed prior to the start of the monitoring period noted in the June 19, 2019 NYSDEC letter. Since this is the first PRR for this site, this information has been included herein.

- Apartment complex area including the stream side banks and bottom
- Portion of the commercial property outside of the stream side banks and located between the Old Liverpool Road culvert and the railroad tracks
- Construction access area at Onondaga Lake Parkway

## **5.0 Overall PRR Conclusions and Recommendations**

### **5.1 Compliance with Site Management Plan**

The SMP includes a monitoring and inspection schedule for the site. While the current reporting period for this PRR is March 31, 2018 through July 31, 2019, the first annual site inspection and monitoring was required at the site in 2017 and has therefore been included herein. All requirements have been conducted in accordance with the SMP.

### **5.2 Performance and Effectiveness of the Remedy**

As discussed in previous sections of this PRR, erosion inspections and vegetation monitoring at the site indicate the remedy has been effective and is performing as designed. Some minor adjustments and repairs were required along the stream bank in some areas to address erosion issues; however, that would be expected following placement of the armor as the material settles and becomes stabilized with the flow in the channel.

Vegetation monitoring in the wetlands and surrounding habitat areas suggests that the areas are developing well. As discussed above in Section 2.2, there are areas that require additional plantings. This is currently being coordinated with NYSDEC F&W as part of the adaptive management approach.

### **5.3 Future Periodic Review Report Submittals**

No changes to the activities at the site are recommended at this time and monitoring programs will continue to follow the schedules outlined in Section 4. No changes in the frequency of the PRR submittal are requested at this time. The next PRR will be due in August 2020.

## 6.0 References

- AECOM. 2013. *Remedial Action Work Plan*. West Branch of Bloody Brook. February.
- AECOM. 2014. *Revised Restoration Work Plan*. August.
- AECOM. 2017a. *Restoration Maintenance Work Plan*. October.
- AECOM. 2017b. *Annual Post-Construction Restoration Monitoring Summary Report*. July.
- AECOM. 2018a. *Bloody Brook Site Management Plan*. Updated 2019, March.
- AECOM. 2018b. *Bloody Brook Final Engineering Report*. February.
- AECOM. 2018c. *Restoration Maintenance Work Plan*. October.
- AECOM. 2018d. *2017 Restoration Maintenance Summary Report*. July.
- AECOM. 2018e. *Annual Post-Construction Restoration Monitoring Summary Report*. August.
- AECOM. 2019. *2018 Restoration Maintenance Summary Report*. February.
- BBL, 1997. *West Branch of Bloody Brook Sediment Removal Certification Report*, November.
- NYSDEC, 1996, Memorandum from Robert Bode to Distribution regarding Bloody Brook Tissue Analysis Results, January.
- NYSDEC, 1997, *Statement of Basis for Lockheed Martin Corporation Electronics Park Facility*, January.
- NYSDEC, 2010, DER-10 – “Technical Guidance for Site Investigation and Remediation”, May
- NYSDEC, 2014 *Decision Document*, March.

## Figures



APPROXIMATE SCALE

**REFERENCE:**

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

**AECOM**

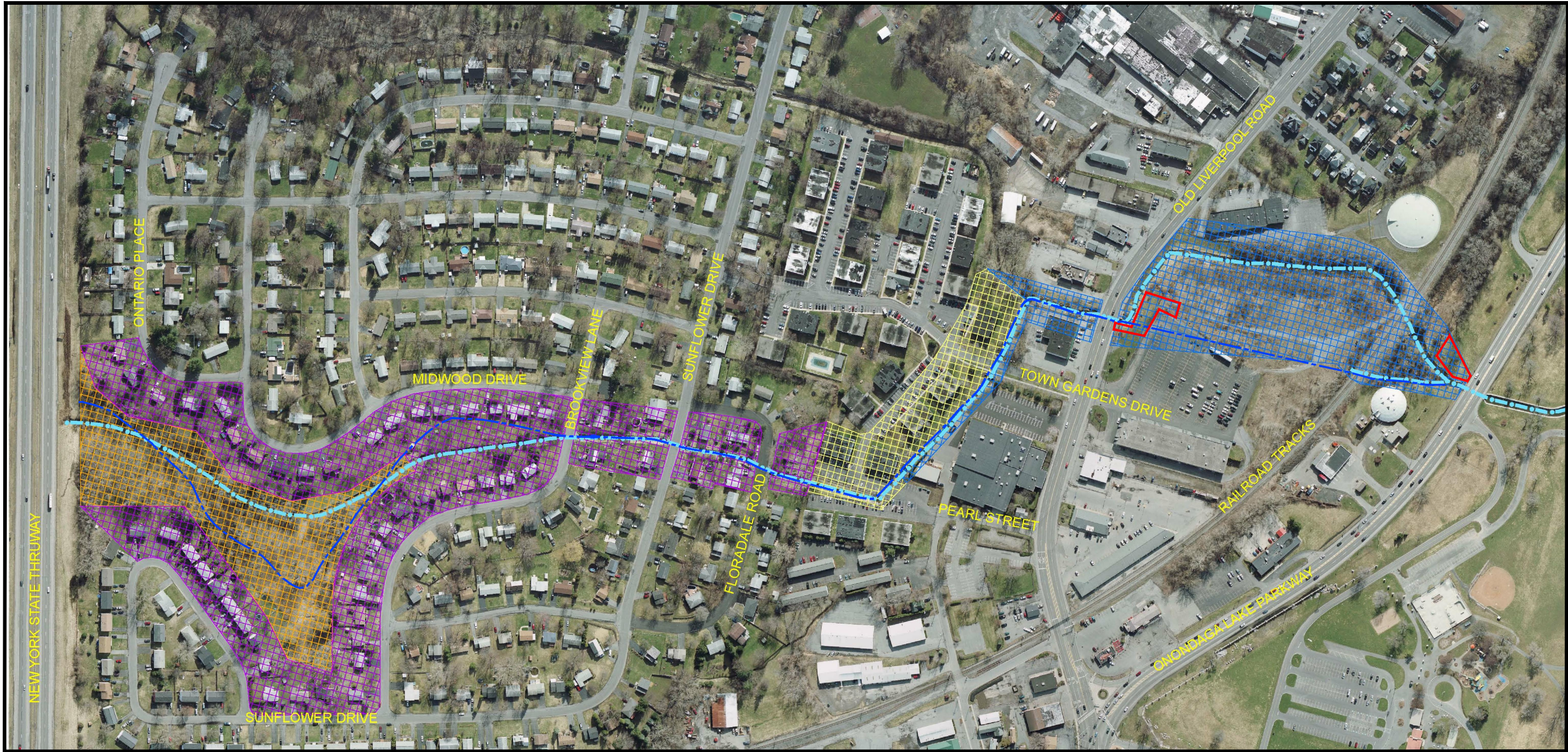
LOCKHEED MARTIN CORPORATION

SITE LOCATION MAP

BLOODY BROOK  
ONONDAGA COUNTY, NEW YORK

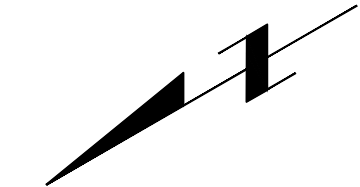
FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
SMP_FIG1.dwg	RNB	60544270	7 / 2019	1





Legend

- CURRENT BROOK ALIGNMENT
- WOODED AREA
- RESIDENTIAL AREA
- APARTMENT COMPLEX AREA
- COMMERCIAL-LIGHT INDUSTRIAL AREA
- COMMERCIAL AREAS EXCLUDED FROM MAY 2017 MONITORING



APPROXIMATE SCALE

**AECOM**

LOCKHEED MARTIN CORPORATION

SITE AREA MAP

BLOODY BROOK  
ONONDAGA COUNTY, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
SMP_FIG2.dwg	RNB	60544270	7 / 2019	2





LEGEND

- BLOODY BROOK DRAINAGE DISTRICT EASEMENT
- PROPERTY BORDER
- TOPOGRAPHIC CONTOUR LINE (PRE-EXCAVATION)
- PROPOSED BLOODY BROOK CENTERLINE
- STREAM/WATER EDGE
- UNDERGROUND DRAIN LINE
- OVERHEAD WIRES
- RETAINING WALL
- GUARD RAIL
- UTILITY MANHOLE
- DRAINAGE MANHOLE
- SANITARY MANHOLE
- RAILROAD TRACKS
- CATCH BASIN
- DRAINAGE STRUTURES
- FLAG POLE
- CULVERT
- E 924,000
- N 1,131,000
- BL-115
- 7+50
- 367.4
- CONIFEROUS TREE
- DECIDUOUS TREE
- LIGHT POLE
- UTILITY POLE / GUY WIRE
- WETLAND ELEVATION CONTROL WEIR LOCATION
- RIP RAP
- EXISTING WETLAND
- WETLAND PIEZOMETER LOCATION
- WETLAND MONITORING STAFF GAUGE

- PSS PALUSTRINE SHRUB / SCRUB
- PEM PALUSTRINE EMERGENT
- PFO PALUSTRINE FORESTED
- UPF FORESTED UPLAND
- USS SHRUB / SCRUB UPLAND
- MOW UPLAND MEADOW
- RIP RIPARIAN
- LAWN LAWN
- W WETLAND

WETLAND MONITORING PHOTOGRAPH LOCATION (MULTIPLE VIEWS)

NOTES

- THE WETLAND BOUNDARIES BASED ON THE MAY 2017 INSPECTION ARE SHOWN.
- DRAWING NOT TO SCALE.



AECOM

LOCKHEED MARTIN CORPORATION  
WETLAND HABITATS  
ONONDAGA COUNTY, NEW YORK  
FILE NAME: 2019 Plant Plan Rev 6.dwg  
DATE: 7/2019  
FIGURE NO: 3

REFERENCES:  
1. BASE MAP SOURCE: IANUZI & ROMANS, P.C. AND CT MALE ASSOCIATES P.C.

Filename: C:\USERS\CARRE\3225\PROJECTS\BLOODY BROOK JULY 2019\2019 PLANT PLAN REV 6.DWG  
Date: 7/2019  
Page: 3 of 3





- LEGEND:
- APPROXIMATE BIOTA MONITORING SAMPLE LOCATION
  - BLOODY BROOK
  - APPROXIMATE SITE BOUNDARY

NOTE:  
1. BASE MAP SOURCE: ESRI ARCGIS STREET MAP.



LOCKHEED MARTIN CORPORATION  
BIOLOGICAL MONITORING LOCATIONS

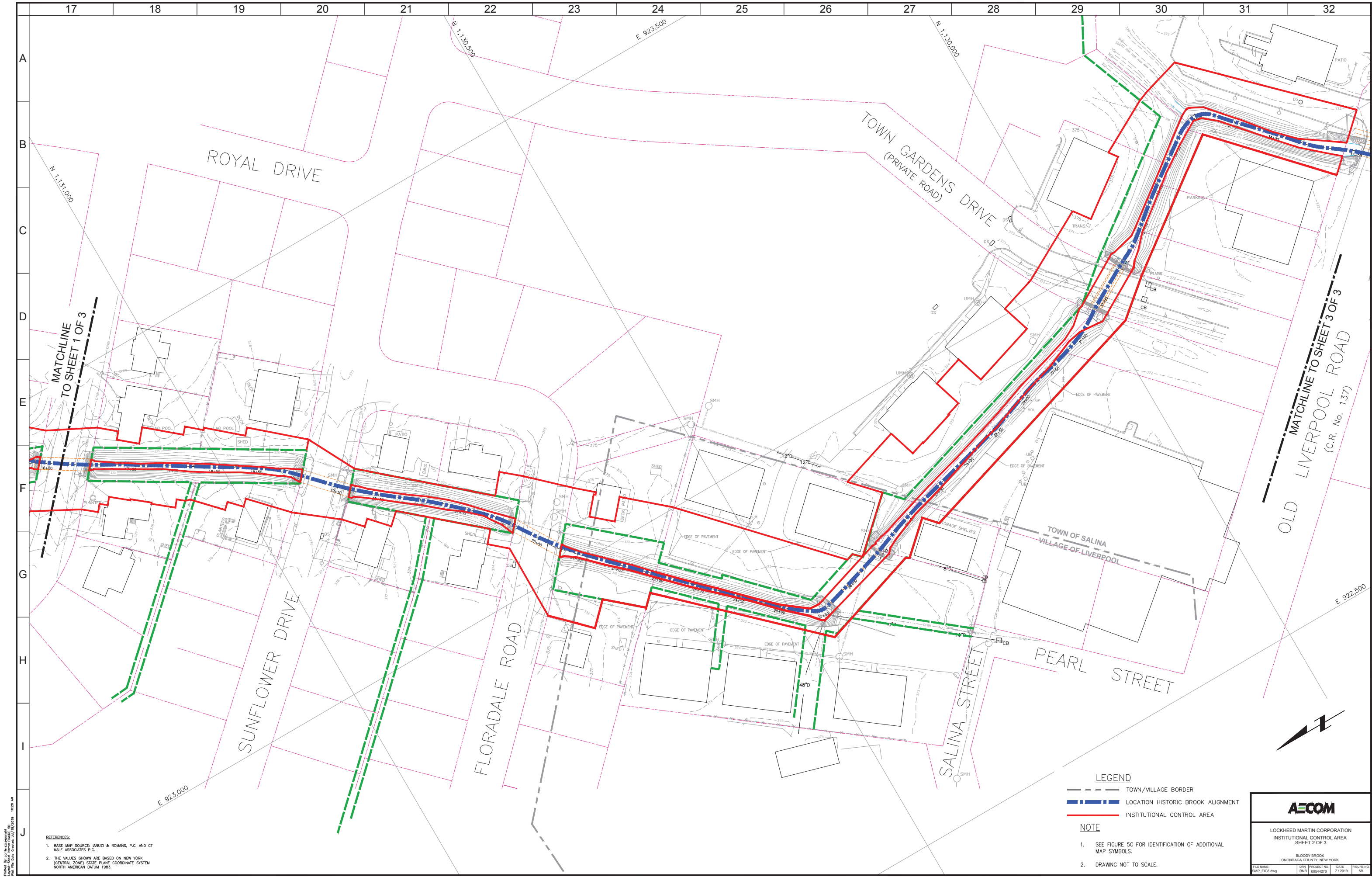
WEST BRANCH OF BLOODY BROOK  
ONONDAGA COUNTY, NEW YORK

FILE NAME: Bio Mon Plan.dwg	DRN ---	PROJECT NO. 60338140	DATE 7 / 2019	FIGURE NO. 4
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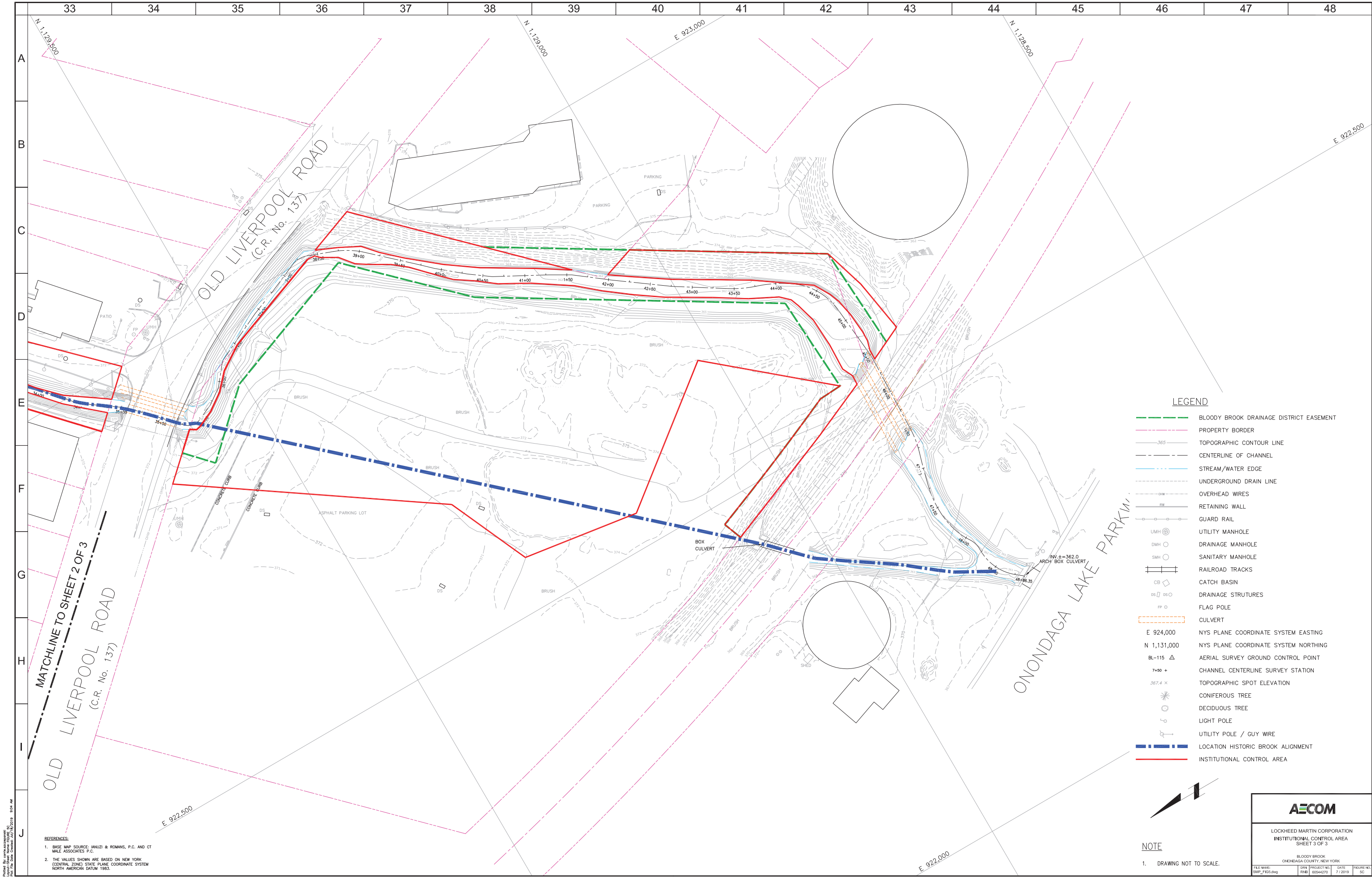
REFERENCES:  
1. BASE MAP SOURCE: UNLUZ & ROMANS, P.C. AND CT MALE ASSOCIATES P.C.  
2. THE VALUES SHOWN ARE BASED ON NEW YORK (CENTRAL ZONE) STATE PLANE COORDINATE SYSTEM NORTH AMERICAN DATUM 1983.

- LEGEND
- TOWN/VILLAGE BORDER
  - LOCATION HISTORIC BROOK ALIGNMENT
  - INSTITUTIONAL CONTROL AREA
- NOTE
- SEE FIGURE 5C FOR IDENTIFICATION OF ADDITIONAL MAP SYMBOLS.
  - DRAWING NOT TO SCALE.

LOCKHEED MARTIN CORPORATION  
INSTITUTIONAL CONTROL AREA  
SHEET 2 OF 3

BLOODY BROOK  
ONONDAGA COUNTY, NEW YORK

FILE NAME: SMP_FIG5.dwg	DIN RWB	PROJECT NO. 80544270	DATE 7/2019	FIGURE NO. 5B
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Date: 7/2/2019 9:04 AM  
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- 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.

NOTE

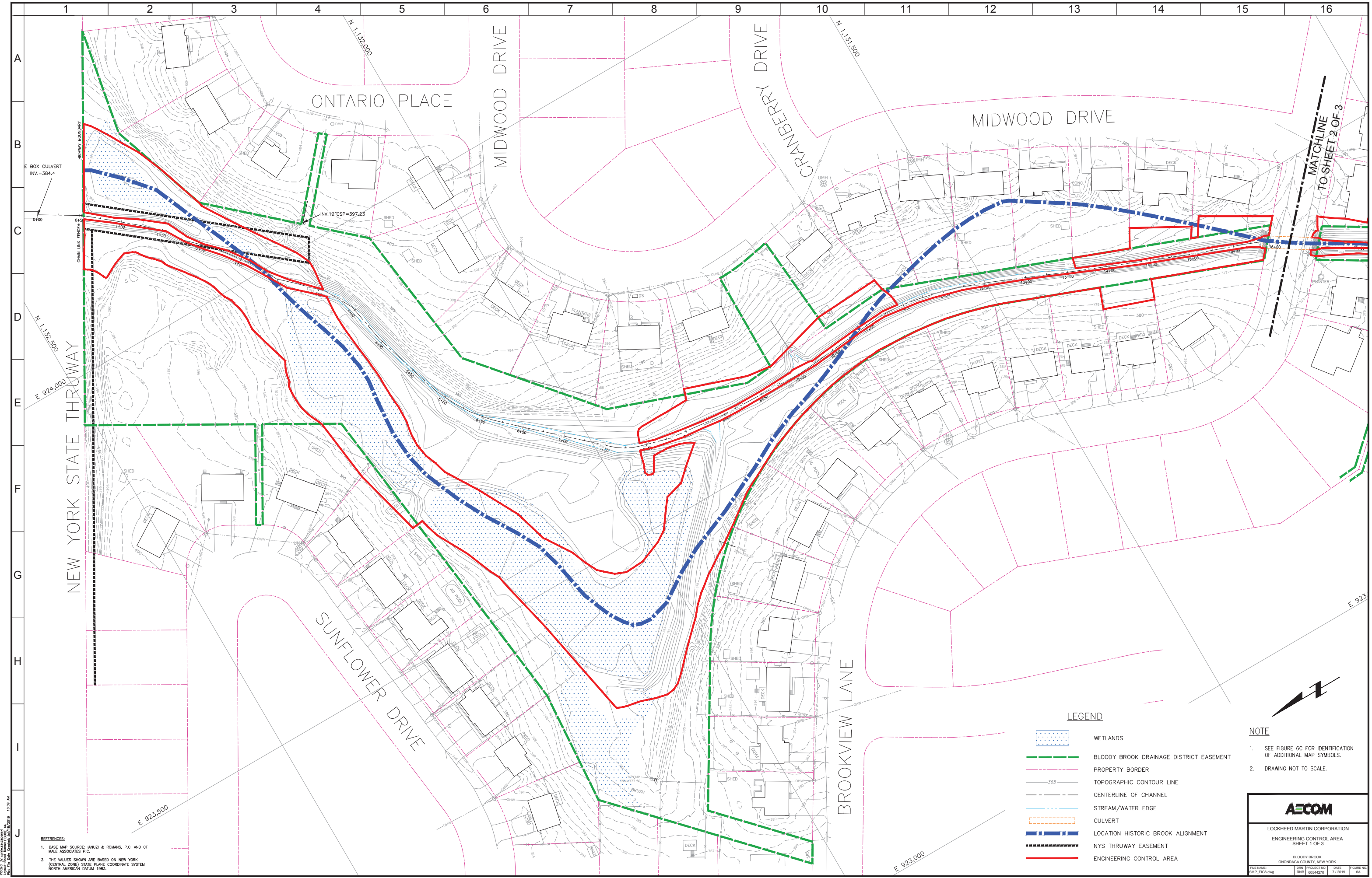
1. DRAWING NOT TO SCALE.

LOCKHEED MARTIN CORPORATION  
INSTITUTIONAL CONTROL AREA  
SHEET 3 OF 3

LOCKHEED MARTIN CORPORATION  
ONONDAGA COUNTY, NEW YORK

FILE NAME: SMP_FIG5.dwg	DRAWN BY: RMB	PROJECT NO.: 60544270	DATE: 7/2/2019	FIGURE NO.: SC
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REFERENCES:  
1. BASE MAP SOURCE: JANUZI & 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

- WETLANDS
- BLOODY BROOK DRAINAGE DISTRICT EASEMENT
- PROPERTY BORDER
- TOPOGRAPHIC CONTOUR LINE
- CENTERLINE OF CHANNEL
- STREAM/WATER EDGE
- CULVERT
- LOCATION HISTORIC BROOK ALIGNMENT
- NYS THRUWAY EASEMENT
- ENGINEERING CONTROL AREA

NOTE

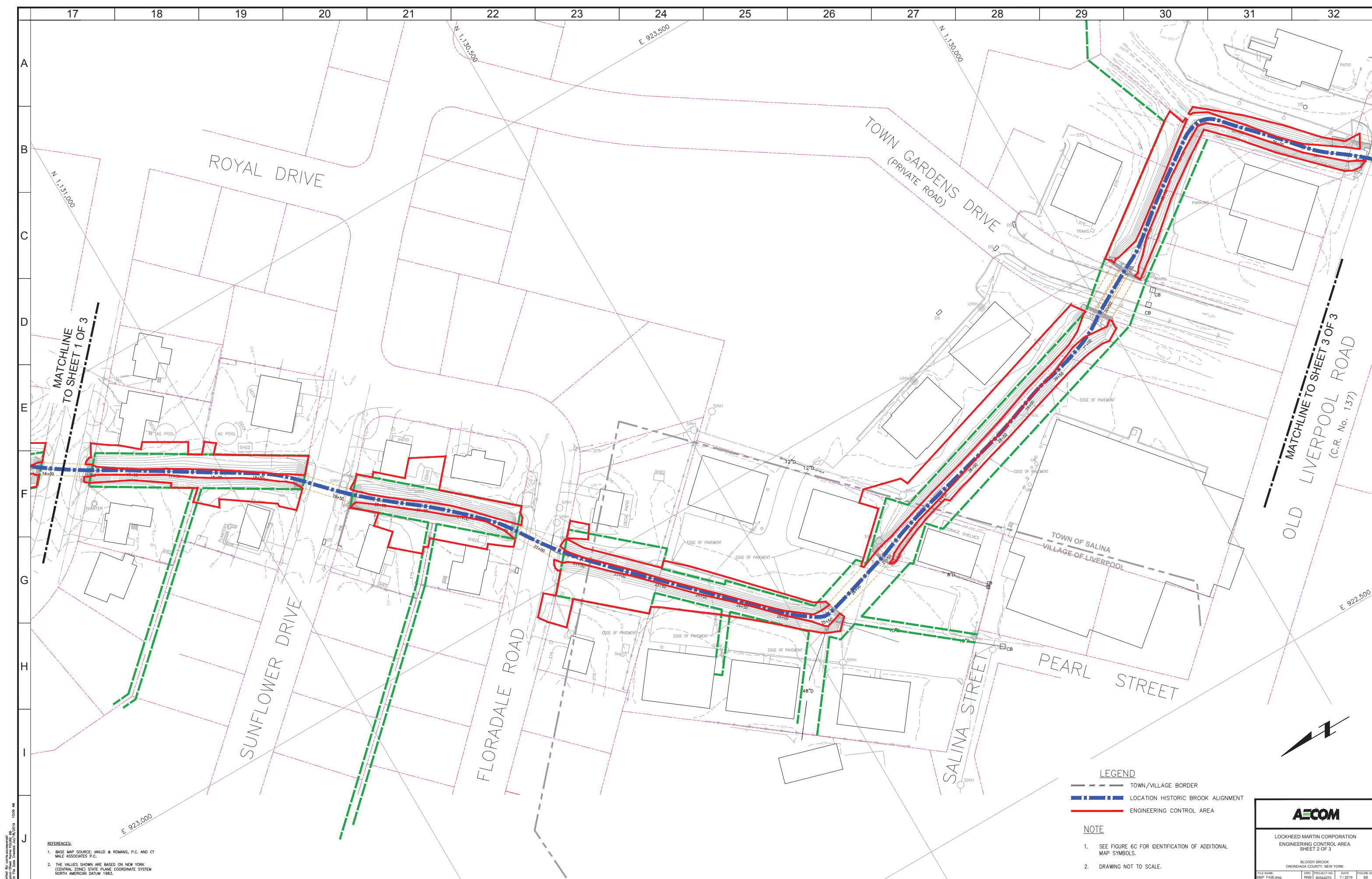
- SEE FIGURE 6C FOR IDENTIFICATION  
OF ADDITIONAL MAP SYMBOLS.
- DRAWING NOT TO SCALE.



LOCKHEED MARTIN CORPORATION  
ENGINEERING CONTROL AREA  
SHEET 1 OF 3  
BLOODY BROOK  
ONONDAGA COUNTY, NEW YORK  
FILE NAME: SMP\_FIG6.dwg  
PROJECT NO: 00544270  
DATE: 7/2/19  
FIGURE NO: 6A

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User: [unclear]  
File: SMP\_FIG6.dwg





REFERENCES:  
1. BASE MAP SOURCE: UNLUZ & 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
  - ENGINEERING CONTROL AREA

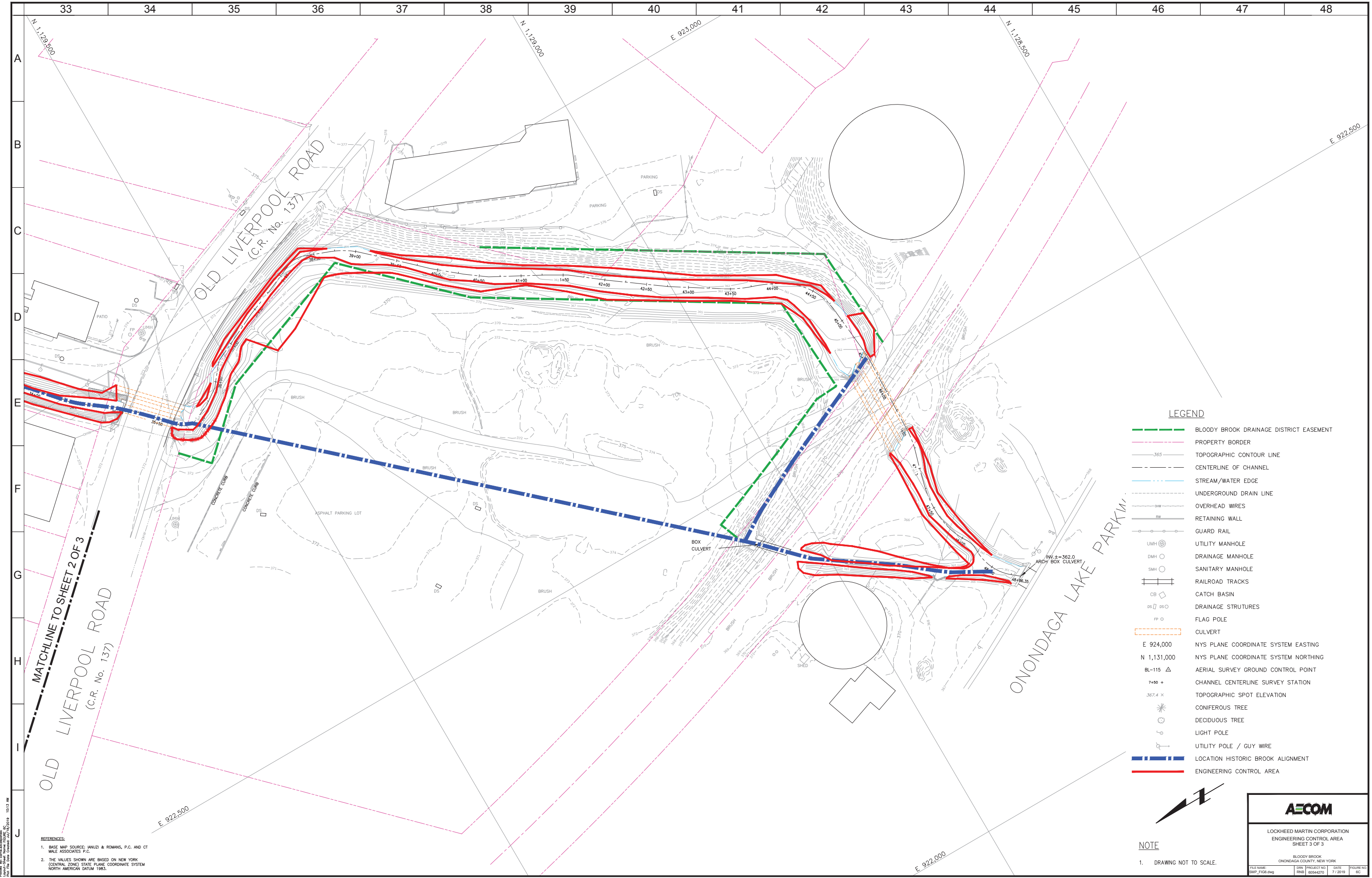
- NOTE**
- SEE FIGURE 6C FOR IDENTIFICATION OF ADDITIONAL MAP SYMBOLS.
  - DRAWING NOT TO SCALE.

LOCKHEED MARTIN CORPORATION  
ENGINEERING CONTROL AREA  
SHEET 2 OF 3

BLOODY BROOK  
ONONDAGA COUNTY, NEW YORK

FILE NAME: SMP_FIG6.dwg	DIN RWB	PROJECT NO. 80544270	DATE 7/2/19	FIGURE NO. 6B
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LEGEND

- BLOODY BROOK DRAINAGE DISTRICT EASEMENT
- PROPERTY BORDER
- TOPOGRAPHIC CONTOUR LINE
- CENTERLINE OF CHANNEL
- STREAM/WATER EDGE
- UNDERGROUND DRAIN LINE
- OVERHEAD WIRES
- RETAINING WALL
- GUARD RAIL
- UTILITY MANHOLE
- DRAINAGE MANHOLE
- SANITARY MANHOLE
- RAILROAD TRACKS
- CATCH BASIN
- DRAINAGE STRUCTURES
- FLAG POLE
- CULVERT
- NYS PLANE COORDINATE SYSTEM EASTING
- NYS PLANE COORDINATE SYSTEM NORTHING
- AERIAL SURVEY GROUND CONTROL POINT
- CHANNEL CENTERLINE SURVEY STATION
- TOPOGRAPHIC SPOT ELEVATION
- CONIFEROUS TREE
- DECIDUOUS TREE
- LIGHT POLE
- UTILITY POLE / GUY WIRE
- LOCATION HISTORIC BROOK ALIGNMENT
- ENGINEERING CONTROL AREA



NOTE

1. DRAWING NOT TO SCALE.



LOCKHEED MARTIN CORPORATION  
ENGINEERING CONTROL AREA  
SHEET 3 OF 3

BLOODY BROOK  
ONONDAGA COUNTY, NEW YORK

FILE NAME: SMP_FIG3.dwg	DRAWN: RNB	PROJECT NO: 80544270	DATE: 7/2019	FIGURE NO: 6C
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REFERENCES:

1. BASE MAP SOURCE: JANUZI & 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.



## **Appendix A**

### **Site Wide Inspection Forms**

**Bloody Brook  
Onondaga County, New York  
Restoration Inspection Form**

Inspection Date: 5/30/17

Item	Yes	No	N/A	Comments
Was ponding observed in any areas of the soil cover outside of the wetlands?		✓		
Were areas of erosion observed in the soil cover or along the stream side banks and bottom?	✓			- Areas of erosion were noted in the 2017 Erosion Inspection
Overall does the soil cover appear to be in good condition?	✓			
Overall do the stream side banks and bottom appear to be in good condition?	✓			
Were the weirs and piezometers within the wetland areas inspected and appear to be in good condition and functioning as designed?	✓			
Were the permanent plot, transect, and photo locations within the wetlands clearly marked?	✓			
Has there been any apparent intrusive activity, excavation, or construction at the site? If so, was Lockheed Martin notified of the activities prior to them being started?		✓		- No apparent intrusive activity
Were vegetation and wetland monitoring completed during this restoration inspection? If so, were the vegetation inspection logs completed?	✓			

Note:

Upon completion of the form, any non-conforming items warranting corrective action should be identified above and shown on site figure.

Name of Inspector: Joshua Cesario  
Inspector's Company: AECOM

Signature of Inspector: Joshua Cesario  
Date: 5/30/17

**Bloody Brook  
Liverpool, NY  
Site-Wide Inspection Form**

Engineering Control: Soil Cover

Inspection Date: 5/17/18

Item	Yes	No	N/A	Comments
Was ponding observed in any areas of the soil cover? If so, identify the stream mile marker in the comment section of this form.		✓		
Were areas of erosion observed in the soil cover or along the streambed? If so, identify the stream mile marker in the comment section of this form.	✓			- Areas of ension were noted in the 2018 Erosion Inspection
Based on the above items, does the engineering control continue to perform as designed?	✓			
Were the weirs and piezometers within the wetland areas inspected and appear to be in good condition, functioning as designed?	✓			
Were the permanent plot, transect, and photo locations within the wetlands clearly marked?	✓			
Has there been any apparent intrusive activity, excavation, or construction at the site? If so, were the activities performed in accordance with the SMP?		✓		
Were vegetation and wetland monitoring completed during this site inspection? If so, were the vegetation inspection logs completed?		✓		

Note: Upon completion of the form, any non-conforming items warranting corrective action should be identified here within.

Name of Inspector: Joshua Cesario  
Inspector's Company: AECOM

Signature of Inspector: *Joshua Cesario*  
Date: 5/17/18

**Bloody Brook  
Liverpool, NY  
Site-Wide Inspection Form**

Engineering Control: Soil Cover

Inspection Date: 6/4/19

Item	Yes	No	N/A	Comments
Was ponding observed in any areas of the soil cover? If so, identify the stream mile marker in the comment section of this form.		<input checked="" type="checkbox"/>		
Were areas of erosion observed in the soil cover or along the streambed? If so, identify the stream mile marker in the comment section of this form.	<input checked="" type="checkbox"/>			- Areas of erosion were noted in the 2019 erosion inspection
Based on the above items, does the engineering control continue to perform as designed?	<input checked="" type="checkbox"/>			
Were the weirs and piezometers within the wetland areas inspected and appear to be in good condition, functioning as designed?	<input checked="" type="checkbox"/>			
Were the permanent plot, transect, and photo locations within the wetlands clearly marked?	<input checked="" type="checkbox"/>			
Has there been any apparent intrusive activity, excavation, or construction at the site? If so, were the activities performed in accordance with the SMP?		<input checked="" type="checkbox"/>		
Were vegetation and wetland monitoring completed during this site inspection? If so, were the vegetation inspection logs completed?		<input checked="" type="checkbox"/>		

Note: Upon completion of the form, any non-conforming items warranting corrective action should be identified here within.

Name of Inspector: Josh Cesano  
Inspector's Company: AECOM

Signature of Inspector: [Signature]  
Date: 6/4/19

## **Appendix B**

### **IC/EC Certification Form**



Enclosure 2  
**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION**  
**Site Management Periodic Review Report Notice**  
**Institutional and Engineering Controls Certification Form**



Site Details		Box 1	
Site No.	V00501		
Site Name <b>Bloody Brook</b>			
Site Address: West Branch of Bloody Brook ( WBBB )		Zip Code: 13088-	
City/Town: Salina			
County: Onondaga			
Site Acreage: 23.000			
Reporting Period: March 31, 2018 to July 31, 2019			
		YES	NO
1. Is the information above correct?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
If NO, include handwritten above or on a separate sheet.			
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.			
5. Is the site currently undergoing development?		<input type="checkbox"/>	<input checked="" type="checkbox"/>

		Box 2	
		YES	NO
6. Is the current site use consistent with the use(s) listed below? Residential, Restricted-Residential, Commercial, and Industrial		<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Are all ICs/ECs in place and functioning as designed?		<input checked="" type="checkbox"/>	<input type="checkbox"/>

**IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.**

**A Corrective Measures Work Plan must be submitted along with this form to address these issues.**

Signature of Owner, Remedial Party or Designated Representative	Date
---	------

**Description of Institutional Controls**Parcel

028.-02-47.0

Owner

Town of Salina

Institutional Control

Soil Management Plan  
Monitoring Plan  
Site Management Plan

1. a provision for further investigation to refine the extent of contamination in the areas where access was previously hindered (e.g., any residential property where access is currently denied or future excavations that require the property owner to contact Lockheed Martin when digging at depths where residual cadmium has been or has the potential to be detected);
2. maintaining site access controls and Department notification;
3. tracking of property ownership changes to allow for the continued communication with owners;
4. annual notification by Lockheed Martin to property owners of Lockheed Martin's offer to implement the remedy for property owners who chose to decline remedy implementation and/or sampling on their property;
5. an annual reminder from Lockheed Martin to property owners with post remedy residual soil contamination of the presence of such residual contamination, and of Lockheed Martin's commitment to handle (excavate, manage and dispose) residual contaminated soils, as necessary and in accordance with the intended use of the property;
6. a provision for Lockheed Martin to request that the Village of Liverpool Code Enforcement Office and the Town of Salina Department of Planning and Development timely inform Lockheed Martin of any building permits they grant for properties within the site boundaries where residual material remains post remedy. Details of this notification process with the Village of Liverpool and Town of Salina are provided in the following sections; and
7. a provision for Lockheed Martin to request that the Town of Salina and Onondaga County timely inform Lockheed Martin of any Town or County plans to conduct intrusive maintenance work within the site boundaries (e.g., soil disturbance work).

**Description of Engineering Controls**Parcel

028.-02-47.0

Engineering Control**Cover System**

Exposure to remaining contamination at the site is prevented by a cover system placed over the site in the areas where soil was excavated. This cover system is comprised of a minimum of 24 inches of clean soil and other components as appropriate.

**Periodic Review Report (PRR) Certification Statements**

1. I certify by checking "YES" below that:

- a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;
- b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and complete.

YES NO

☒ ☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

- (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;
- (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;
- (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;
- (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and
- (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES NO

☒ ☐

**IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and  
DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.**

**A Corrective Measures Work Plan must be submitted along with this form to address these issues.**

\_\_\_\_\_  
Signature of Owner, Remedial Party or Designated Representative

\_\_\_\_\_  
Date



IC CERTIFICATIONS  
SITE NO. V00501

Box 6

**SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE**

I certify that all information and statements in Boxes 1, 2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Jill Fonte at Lockheed Martin Corporation  
497 Electronics Parkway  
Liverpool, NY 13088  
print name print business address

am certifying as Remedial Party (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

Jill Fonte  
Signature of Owner, Remedial Party, or Designated Representative  
Rendering Certification

7/31/19  
Date

IC/EC CERTIFICATIONS

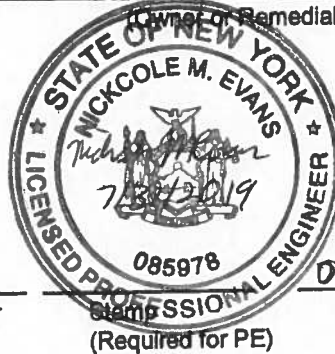
Box 7

Professional Engineer Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Nickole Evans at 5015 Campuswood Drive East Syracuse, NY  
print name print business address

am certifying as a Professional Engineer for the Remedial Party  
(Owner or Remedial Party)



Nickcole M. Evans  
Signature of Professional Engineer, for the Owner or  
Remedial Party, Rendering Certification

07/31/2019  
Date  
(Required for PE)