August 14, 2020

Maria Kaouris
Honeywell International Inc.
115 Tabor Road
Morris Plains, NJ 07950

Subject: **2020 Supplemental Investigation**
Old Chenango Canal Site, Utica, NY
NYSDEC Site No. 633051

Dear Ms. Kaouris,

This Work Plan identifies the scope for a 2020 Supplemental Investigation (SI) that will be performed at the Old Chenango Canal Site to support evaluation of remedial alternatives as part of the Feasibility Study (FS) and Remedial Design (RD) for the Site. The New York State Department of Environmental Conservation (NYSDEC) requested that Honeywell collect additional characterization data on the extent of PCBs above target clean-up criteria to facilitate review of potential remedial options that will be presented in the FS.

Wood has revised the scope of work to address comments received from the NYSDEC in the series of communications detailed below. In the latest, a letter from the NYSDEC dated July 21, 2020 (Peter Taylor to Maria Kaouris), the Department indicates that scope changes planned by Honeywell (communicated July 8, 2020), are considered acceptable with the exception that the Department requests additional data from transects across the section of the watercourse identified as Segment D. As Wood has noted in prior versions of this Work Plan, this presents significant challenges and health and safety concerns with respect to access and completion of mechanized borings due to the steep rock-armored and wooded slopes bordering the channel in this segment. Wood has revised this Work Plan to indicate that additional locations will be attempted, however, we have not included the exact locations on the figures since they will be dictated by accessibility and considerations regarding safe working practices during the field program.

Recent Project Communications:

July 21, 2020	NYSDEC letter response to Honeywell's proposed Work Plan revisions
July 8, 2020	Honeywell letter summarizing proposed edits to the March 2020 Work Plan
May 15, 2020	NYSDEC letter providing comments on March 2020 Work Plan
March 27, 2020	Honeywell transmitted a revised version of the 2019 Work Plan
December 2, 2019	NYSDEC e-mail with a summary table comparing Department's scope requests in their letter of October 8th to September 2019 Work Plan scope
November 22, 2019	Honeywell and NYSDEC held a call to review the Department's requests and Honeywell agreed to provide a revised Work Plan.
October 8, 2019	NYSDEC issued a letter representing the Department's position on Honeywell's March 2019 conceptual remedial approach submittal. It included requests for additional sampling but was not a complete review of the September 2019 Work Plan.
September 13, 2019	Honeywell submitted a Draft Supplemental Investigation Work Plan for review after the NYSDEC indicated through various phone calls and e-mail exchanges that additional data collection is necessary for the Department to reach a decision on an appropriate remedy.
March 18, 2019	Honeywell submitted a summary of current project understanding and a proposed remedial approach titled: *Feasibility Study Considerations and Conceptual Remedial Approach*.

This revised Sampling Plan identifies activities that will be conducted to provide additional data to refine the nature and extent of PCBs within the system. This additional sampling is intended to achieve the following objectives:

- Collect additional data that NYSDEC states is necessary to evaluate remedial alternatives that may involve containment approaches. Supplemental samples will be obtained from canal and creek bed locations and from adjacent shallow soils to further refine the nature and extent of PCB impacts.
- Collect additional data to support remedial construction evaluations including the following:
    - Measurements to gauge creek flow and response to various storm events
    - Measurements of physical characteristics to support material handling and de-watering design considerations

SCOPE OF WORK

The Site is delineated in successive segments (A through E) that reflect differing physical characteristics that will be considered during the evaluation of remedial alternatives (Figure 1). The following sections describe the supplemental sampling proposed within each segment and the sampling program is summarized on Table 1. While Wood intends to complete the full scope of sampling described herein, the locations and numbers of samples indicated are subject to change based on field conditions found at the time of sampling or other physical and weather-related issues that are encountered during the planned sampling window. We will communicate progress and scope deviations to Honeywell daily and document any decisions made that resulted in changes to the scope performed in the sampling completion report.

Details of sampling and analytical methods that will be employed during this investigation are provided in a Quality Assurance Project Plan (Attachment 1). Prior and proposed sampling locations are illustrated on Figures 2 through 5 and detailed topographic drawings with prior results and planned sampling locations are provided (Attachment 2).

Segment A

Segment A includes a 170-foot long remnant section of canal structure from the outfall of the French Road city storm sewer to a railroad corridor that crosses downstream. It was the subject of an Interim Remedial Measure (IRM) in 2018 that successfully removed 4,800 tons of the most heavily impacted soil and sediment. Over 1,600 tons of this material represented sediment and soil with PCB concentrations greater than 50 ppm. Adjacent upland soil with PCBs above 1 ppm were excavated to depths of between 1 and 5 feet to achieve the desired soil clean-up criteria of 1 ppm where practical and subsequently backfilled with 1000 cubic yards of imported, clean soil. The IRM cleaned and preserved the ca. 1850 canal lock with its vertical limestone block walls and a timber floor and provided a treatment and demarcation layer to address residual impacts. The channel bed was restored with 300 yards of clean stone bedding which was sized for stability and to restore habitat.

The NYSDEC has requested supplemental characterization to delineate the extent of residual impact in three areas:

Canal Floor. PCBs were detected in wood samples from the canal lock floor. The wood floor was determined to be continuous and sound during the IRM. All overlying sediment was removed and the floor was left intact as it is considered by Honeywell to be a barrier to vertical transport of PCBs. Honeywell isolated the floor beneath a carbon treatment material (Sedimite) and beneath a restored stream bed, however there is no data beneath the floor to confirm the presence or absence of any residual impacts.

This sampling program will advance three borings through the wood floor to obtain data from the underlying subsurface soil (Figure 2). Preparation will require removal of a limited area of clean canal bed at each location (e.g. 6 x 6 ft), placement of a trench box that is sealed to the floor with bentonite; dewatering within the trench box using a sump pump and coring through the wood floor using an electric drill. A 4-inch casing may be inserted and sealed at the floor joint to provide additional isolation between any impacted fines that could enter the cored hole and cross-contaminate underlying soil. A Geoprobe will then be stationed above the casing to advance and retrieve soil cores from beneath the floor. Samples will be collected continuously (at two-foot intervals) as the boring is advanced to refusal or a maximum depth of 20 feet. Three intervals beneath flooring at each location will be submitted initially for PCB analysis (e.g., 0-1, 2-3 and 4-5 feet as measured from the floor base). Deeper intervals will be sampled and archived to be considered for subsequent analysis, should that be necessary to delineate the extent of PCB impact above 1 ppm. The sample holes will be sealed using bentonite and the cored plug and a 1.5-inch layer of Sedimite placed on the exposed area of floor followed by restoration of the stone bedding. Because the preparations for coring and drilling through the floor require additional equipment and planning these borings may be accomplished during a separate later mobilization than the September 2020 work window that is currently planned.

Bordering IRM Upland Cells C13 and C14.) The IRM removed all accessible soil, however, the bottom documentation samples collected along the south side of the canal (in the portion of IRM cells C13 and C14 nearest the canal (<400 ft^2) exhibited PCBs greater than 50 ppm at depths of between 3 and 4 feet below original grade. Excavation did not proceed further during the IRM as it was deemed technologically impractical due to the presence of canal wall blocks and saturated soil conditions.

Geoprobe borings will be advanced within the two cells with the elevated IRM bottom sample results (C13 and C14, one in each). Rip-rap that was placed over clean fill will be removed and placed to the side prior to drilling. Samples will be collected continuously at one-foot intervals starting at the bottom of the IRM excavation surface (approximately 3 feet below present grade). The borings will extend to refusal or to a maximum of 20 feet below current grade. Three intervals will be selected for PCB analysis (e.g., 3-4 ft, 4-5 ft, 5-6 ft) and the remaining one-foot intervals will be held at the laboratory for analysis if needed to define the limits of residual PCB concentrations greater than 1 ppm. Three additional borings will be completed adjacent to this area to confirm the lateral extent of any potential impacts at depth. Samples will be submitted from three depths, targeting the same elevations as the samples from the borings within cells C13 and C14.

Railroad Culvert. The culvert beneath the railroad will be examined and if sediment is present, a sample will be collected and analyzed for PCBs.

Segments B and C

Segment B and 150 feet of Segment C (along with Segment A) define the limits of the Consent Order between DEC and Honeywell as Site No. 633051. Parallel and adjacent to the north of Segments B and C is the NYSDOT embankment supporting Highway 5 as well as a National Grid High Voltage Electric Transmission Line. Parallel and adjacent to the south of Segments B and C lies a City Sanitary Sewer. Segment C is also designated as a regulated floodway by the Federal Emergency Management Agency. Segments B and C generally follow the original canal alignment from the railroad crossing to a point approximately 1,040 feet downstream where the original creek channel alignment was diverted into an NYSDOT-engineered channel during highway construction in the early 1960s (Figure 1).

Segment B extends 460 feet from the railroad corridor to a confluence with Upper Nail Creek (also known as Halleck's Ravine), which enters from the south (Figure 3). This segment generally contains finer bed material and exhibits lower flows than downstream segments due to the contribution from Upper Nail Creek.

Segment C extends 580 feet from the confluence with Upper Nail Creek to the end of the original canal alignment. In this segment there are some depositional areas with sandy deposits, however the creek bed is largely uniform consisting of coarse gravel and cobbles with limited fines due to high flow conditions during storm events. At the downstream end of Segment C, historical canal structures (vertical block walls) are present that appear to be similar to the remnant lock walls in Segment A.

Sampling is proposed along the channel bed and in bordering soils to address NYSDEC's request for additional delineation (beneath the remediated and restored channel and bordering soils). Additional locations have been added based on NYSDEC requests, but proposed sampling locations may be altered based on proximity of overhead power lines and underground sanitary sewer.

Channel Bed Borings. Subject to site conditions, eleven Geoprobe borings will be completed through the channel bed in Segments B and C to supplement the existing data set. Figure 3 identifies the proposed locations and summarizes prior data by magnitude of result.

The 2012 RI included six Geoprobe borings in this portion of the channel and provided samples from an average of three depths per boring. The RI borings identified a transition from gravelly sand to dense till at depths of 8-10 feet below the channel bed. Samples from these borings indicated that PCBs were elevated in the upper two feet of material and dropped to below 1 ppm generally by 3 feet below the bed surface. The additional borings will provide greater data density along the length of the channel and for vertical delineation of PCB concentration by depth.

Samples will be collected from the eleven supplemental borings shown on Figure 3 and Table 1 (combined number for Segments B and C). Samples will be collected continuously from geoprobe cores (e.g. typically 4-foot long probes with acetate liners). Five sample depths will be selected for analysis to vertically delineate PCBs. A sample will be obtained from 0-0.5 ft to represent the biologically active bed interval. Default depths for subsequent analysis will be 2-3, 4-5, 6-7 and 8-9. Depths may be changed at the time of collection based on sample recovery and observed geology. The borings will extend to refusal and deeper intervals will be archived for potential analysis. If possible, the lowest sample will be collected from the dense till that underlies the sandy overburden.

Bordering Upland Soil Sampling. Supplemental soil samples will be obtained from bordering areas outside the channel in the floodplain to the north and south. Additional locations have been added for a total of 24 locations in Segment B and 17 locations in Segment C. Sampling will be by hand methods (e.g. hand auger, split spoon sampler or steel tools).

The adjacent upland in Segment B and C are wooded along the south side of the channel. RI data confirmed that the lateral southward extent of PCBs above 1 ppm was limited to immediate the area adjacent to the channel. Figure 3 includes an interpretive limit of PCBs greater than 1 ppm that was presented in the RI Report. Supplemental samples will be collected from locations that are positioned to augment existing data to further refine the lateral extent of PCBs greater than 1 ppm.

On the north side of the creek there is greater uncertainty regarding the distribution of PCBs given the likely redistribution of impacted materials during construction of the highway. Most of the existing data indicate low concentrations, but data density will be increased as part of this sampling program. Hand augering will be completed at the locations shown on Figure 3.

Samples will be collected from 0-1 ft and 1-2 ft intervals at a minimum from all locations, as practical, based on sampling conditions. Deeper samples will be collected from some locations, where possible using the hand methods that are planned for sampling, and held for future analysis, if warranted. Prior data will be considered and some locations will have will target deeper delineation to evaluate the limits for PCBs (e.g. re-visited SS-04, SS-08, SS-05 and SS-54 as requested by NYSDEC).

Segment D

Segment D extends for 1000 feet to a culvert that passes under a highway offramp to Burrstone Road. This section of Nail Creek was re-aligned by NYSDOT during construction of the adjacent highway. The creek bottom and lower portions of the side banks are armored with quarried two-foot thick limestone block that was placed for erosion protection and are undisturbed since placement in the early 1960s. The north bank serves as the embankment of Highway 5 with a continuous steep slope from the channel up to the guardrail. The south bank transitions upward in elevation to an extensive area of historic ash and debris fill (an unregulated city dump). Disturbance of the channel bed and banks requires careful consideration of adjacent impacts and safety concerns during data collection and future remedial activities.

The NYSDEC requested additional characterization to delineate beneath armor stone in multiple recent communications. Access to this segment is challenging with the steep slopes making mechanized drilling extremely difficult with health and safety considerations for site workers a major concern. Prior sampling has been predominantly by hand sampling methods to obtain material from joint space between the armor rock or from surficial soil on banks above the limits of the armoring. A Geoprobe was mobilized into the channel in 2016 to core through armor rock at several locations to obtain samples beneath the stone. This was not an ideal approach due to complexities with access, water depth, material size (i.e. incomplete core retrieval) and safety. Some data was collected to support our understanding of PCB distribution beneath the stone. The data indicates that PCB levels decrease as the watercourse progresses downstream and that dense till is present within a few feet of the channel bed.

In Wood's opinion it is not possible to advance borings as transects that include locations on the steep banks and therefore we have not been able to accommodate NYSDEC's request for transects that will provide data at depth on the banking in Segment D. We will identify and attempt to complete addition borings within the stream channel to provide data as transects where possible based on the physical substrate and access. Wood will also add hand sample locations on the banks opposite the channel borings to supplement existing and planned data and more data density to assess the extent of PCBs. These locations have not been identified on the figures or attached drawings as they will be identified and selected in the field.

Our opinion is that the supplemental scope identified herein, when considered with prior results, will provide a robust data set to define the nature and extent of impacts and allow for a complete evaluations of remedial options in the FS. Additional details regarding the supplemental sampling within the channel bed and banks is described below.

Channel Bed Sampling. This supplemental sampling program includes borings at eight spaced locations along the channel bed to increase the density of data throughout this segment. At each location, Wood will attempt to complete multiple borings (e.g. two or more borings across the channel bottom to provide data for transect interpretation). There are difficulties in access, sample retrieval and safety associated with work in this section and our proposed approach will provide additional information that will be appropriate and sufficient for remedy evaluation and selection.

Given the complexity and heavy duty (large block) armoring of this segment, we will consider multiple methods to attempt to collect the samples. The initial attempt will seek out joints between the stone that are large enough for advancement of sampling tools. Samples will be retrieved from a shallow joint interval (0-0.5 feet) and from below the base of the armor stone layer (e.g. 2-3 and 3-4 ft, as possible) by geoprobe drilling methods and borings will be advanced to refusal with the deepest sample targeting the transition from sandy subsoil to dense till. Prior borings in this segment suggest that till is present within two feet of the stone base. Where geoprobe borings cannot be advanced, hand methods will be used to collect samples from inter-joint spaces.

Adjacent Upland Sampling. Soil Samples will be obtained using hand sampling methods from a minimum of 23 locations on the north and south sides of the channel in Segment D as depicted on Figure 4. It is not possible to access these banks with a mechanized sampler due to the slope and the limited access. Samples will be collected from two depth intervals at each location, as practical, based on sampling conditions with target depths of 0-1 and 1-2 ft below ground surface.

Segments E-1 and E-2

Nail Creek continues within the highway interchange area adjacent to Burrstone Road. The two subareas to the southwest of Burrstone Road (E-1 and E-2) represent 600 feet of engineered ditch that are separated by culverts that run beneath the roadways and offramps (Figure 5).

Prior sampling identified low levels of PCBs in shallow soils that was interpreted to be limited to surficial soil and sediment. The re-aligned NYSDOT channel lies on a parcel where a factory was previously located. Any PCB impacts from Bendix sources in this area are most likely limited to surficial soil and sediment (i.e. sand bars and material between armor block), which is supported by the investigation data collected to date. Channel maintenance by NYSDOT also periodically staged debris and material from maintenance of the channel grate on the adjacent upland areas. The E-2 area was recently used as a contractor staging yard for bridge repair and this may have also re-distributed surficial PCBs impacts on the north side of the channel (see aerial image of Burrstone Road Interchange). Additional surface fill was placed to provide a stable working platform and has modified surface conditions in this area.

Burrstone Road Interchange (NYSDOT Staging Area)

The NYSDEC has requested additional data density to confirm the limits of impact, specifically by completing transects across the E-1 channel and sampling in the E-2 channel upstream of the steel grate (debris accumulates against the grate and often causes ponding and settlement of sand and fines on the upstream side).

Channel Bed Sampling. As shown on Figure 5, we will complete five borings in the channel bottom to supplement existing data. Geoprobe or, if necessary, hand-sampling methods will be attempted to profile subsurface soil and collect samples from successive target depths (e.g. 0-0.5; 2-3, and 3-4). Borings will target joints between rock if armor rock is present.

Adjacent Upland Soil. Borings will be completed at three locations on the top of the banking to supplement existing data and allow for development of profiles across the channel. Three intervals will be selected for analysis from these borings based on soil visual characterization and additional samples will be collected and archived for analysis later if warranted.

Nine locations are also shown where hand samples will be collected to evaluate the potential impacts of surface soil disturbance associated with recent NYSDOT operations. Samples from each location will be submitted from 0-0.5 and 1-2 ft.

ADDITIONAL DATA COLLECTION

Physical Parameters of Sediment and Soil

Samples will be collected from representative channel bed and upland locations to aid in design for materials handling and transport during excavation. Two samples will be collected from Segments B, C and D of channel bed material and upland bank/soil material (total of 12 samples) and submitted to a geotechnical testing laboratory for physical parameters including bulk density, percent moisture, specific gravity, total organic carbon, Atterberg limits and grain size with hydrometer (if warranted).

Measurement of Channel Flow

This scope of work includes the collection of flow measurement data. Since the data was independent of contaminant data collection, the equipment was deployed in Spring 2020 and therefore the measurement portion of this task has been accomplished. Flow measurement data was obtained using the MantaRay Portable Area-Velocity Flow Meter (MantaRay) by Greyline Instruments. The MantaRay measures flow in open channels, partially filled and surcharged pipes using a submerged ultrasonic sensor to measure flow at user-selected time intervals. The sensor is a completely sealed ultrasonic unit with no orifices or ports that mounts inside pipes or at the bottom of an open channel using a stainless-steel mounting bracket. It is hydrodynamically shaped and designed to shed deposits and stringers for reliable operation in sewage, stormwater and stream flow applications. The MantaRay displays and logs flow rate and total flow.

Data was collected from three locations including the railroad culvert (Figure 2), the first steel culvert beneath the highway offramp (Figure 5), and in the large steel culvert near the Burrstone Road interchange.

Locations of Flow Measurements

The ultrasonic sensor was mounted to the base of each culvert to log data and collect flow measurements at 30-minute intervals. They were deployed for approximately eight weeks to capture flow data during baseline flow and storm events.

ANALYTICAL PROGRAM

All samples will be analysed by a NYS Department of Health ELAP-accredited laboratory for PCBs using EPA Method SW-846 8082. Samples for physical parameters will be submitted to a geotechnical testing lab for analyses using appropriate ASTM methods. Sampling locations will be documented using GPS and photographs and supplemented with hand measurements, where necessary.

ACCCESS

Sampling will be conducted on properties owned by the City of Utica and the State of New York and Wood will obtain access for sampling activities based on previously established procedures. Access to the Segment A will require renewal of permits with NYSDOT and the NYS&W Railroad. Access to Segments B, C and D will be conducted through Arcadia Avenue on the south side of the channel and will require approval from the City of Utica. Some brush and tree limb clearance will be required to obtain access to the proposed sample locations. Wood will work with the City to identify acceptable clearing activities and will stage or remove brush and wood materials to meet applicable requirements. Access to Segment E-1 and E-2 will require permitting through NYSDOT.

DELIVERABLES

Laboratory analytical and geotechnical results will be reviewed and evaluated upon receipt from the laboratories. A draft data package will be submitted to NYSDEC summarizing the draft results to support ongoing discussions with the agency. A letter report will be prepared and submitted to the agency that describes the sampling that was performed and include the validated data so that it can be included as part of the FS evaluations.

SCHEDULE

Sampling is currently planned for September pending approval for access by the property owners and Work Plan approval from NYSDEC. Flow measurements were collected during Spring 2020 to capture information associated with snow melt and spring run-off.

Wood will plan a joint field effort with Anchor QEA support and confirm a start date with NYSDEC prior to commencement of work.

Respectfully,

Wood Environment & Infrastructure Solutions, Inc.

Eric Sandin

Eric Sandin

Project Manager

Enclosures:

Figures (5)

Table (1)

Attachment 1: QAPP

Attachment 2: CAD Drawings

Table and Figures

Table 1: 2020 Supplemental Sampling Program

	Segment A			Segment B		Segment C		Segment D		Segment E		
	Canal Floor	Bordering Upland (borings)	Culvert	Canal Bed	Bordering Upland	Canal Bed	Bordering Upland	Channel Bed	Bordering Upland	Channel Bed	Bordering Upland	**TOTALs**
Number of Locations	3	5	1	6	24	5	17	8 + TBD[5]	23 + TBD[5]	5	12	**78**
Default Analytical Intervals[1] (ft)	0 - 2 2 - 4 4 - 6	3 - 4 4 - 5 5 - 6	0-1	0 - 0.5 2 - 3 4 - 5 6 - 7 8 - 9	0 - 1 1 - 2	0 - 0.5 2 - 3 4 - 5 6 - 7 8 - 9	0 - 1 1 - 2	0 - 0.5 2 - 3 3 - 4	0 - 1 1 - 2	0 - 0.5 2 - 3 3 - 4	0 - 1 1 - 2	
Target Depth/ Notes	Geoprobe refusal or 20 feet below grade	Geoprobe refusal or 20 feet below grade	Grab sample of accumulated sediment	Geoprobe refusal or 20 feet below grade	Refusal based on hand sampling method (typically 3-4 feet)	Geoprobe refusal or 20 feet below grade	Refusal based on hand sampling method (typically 3-4 feet)	Geoprobe refusal (anticipated 4 to 6 feet below grade in this segment)	Refusal based on hand sampling method (typically 3-4 feet)	Geoprobe refusal (anticipated 4 to 6 feet below grade in this segment)	Refusal based on hand sampling method (typically 3-4 feet)	
PCB Analyses[2]	9	15	1	30	48	25	34	24	46	12	20	**264**
Physical Samples[3]				2	2	2	2	2	2			**12**
Flow Measurement[4]				1				1		1		**3**

NOTES
1. Depths will be determined in the field based on material characteristics and sample retrieval. Default intervals are shown from current grade.
2. Minimum number of samples targeted for analysis. Additional intervals will be collected, archived and analyzed, if required, at Honeywell's decision.
3. Geotechnical analysis for bulk density, percent moisture, specific gravity, TOC and grain size
4. Flow measurement from velocity meters deployed within three culverts
5. Additional borings and/or hand sampling will be completed, where possible, to create transects across the channel in Segment D and the transects will include upland soil from the adjacent banks

Document: P:\Projects\Honeywell\Utica-Bendix\Utica-3616176062_old\4.0 Project Deliverables\4.5_Databases\GIS\MapDocuments\Supp Investigation 2020\Supp_Investigation_2020_11x17LS.mxd PDF: P:\Projects\Honeywell\Utica-Bendix\IRM 3616176067 and 3616186068\4.0_Deliverables\4.2_Work_Plans\Figure 1 - Project Segments.pdf 06-23-2020 1:21 PM brian.peters

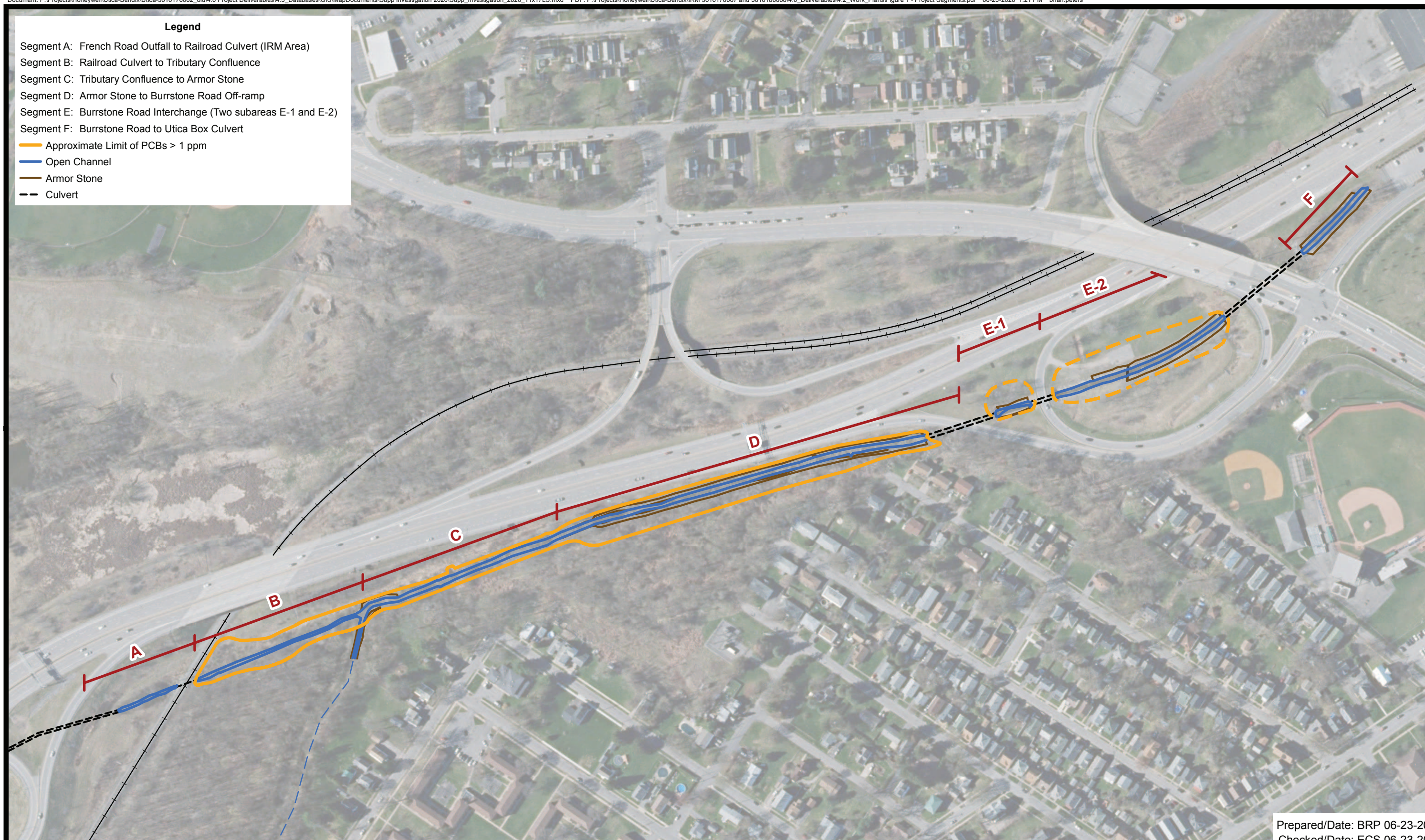


Image Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

OLD CHENANGO CANAL SITE
NYSDEC SITE No. 633051
UTICA, NEW YORK

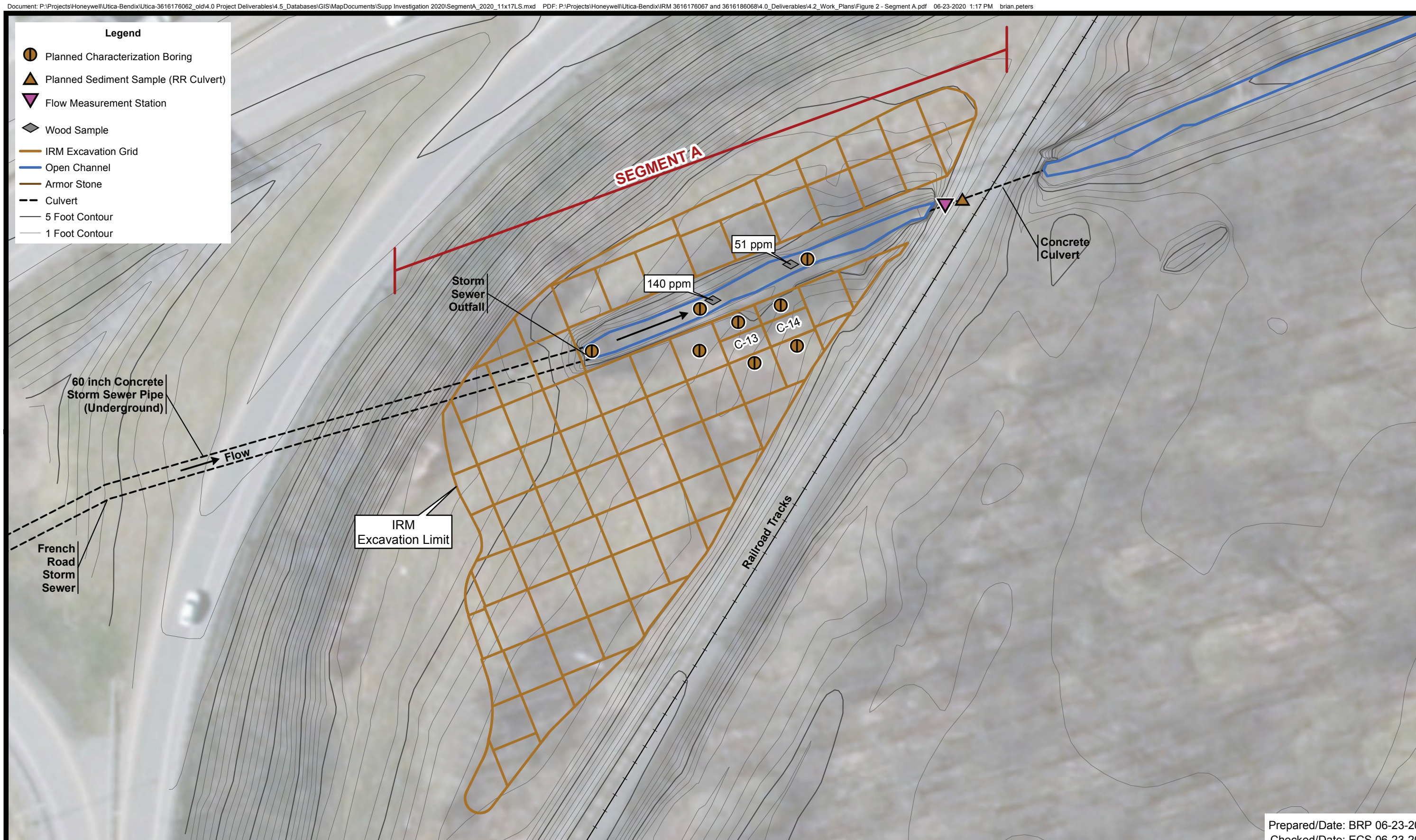
wood.

2020 SUPPLEMENTAL INVESTIGATION
PROJECT SEGMENTS

Project 3616206115

FIGURE 1

Document: P:\Projects\Honeywell\Utica-Bendix\Utica-3616176062_old\4.0 Project Deliverables\4.5_Databases\GIS\MapDocuments\Supp Investigation 2020\SegmentA_2020_11x17LS.mxd PDF: P:\Projects\Honeywell\Utica-Bendix\IRM 3616176067 and 3616186068\4.0_Deliverables\4.2_Work_Plans\Figure 2 - Segment A.pdf 06-23-2020 1:17 PM brian.peters



Prepared/Date: BRP 06-23-20
Checked/Date: ECS 06-23-20

N 0 20 40 Feet

Image Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

OLD CHENANGO CANAL SITE
NYSDEC SITE No. 633051
UTICA, NEW YORK

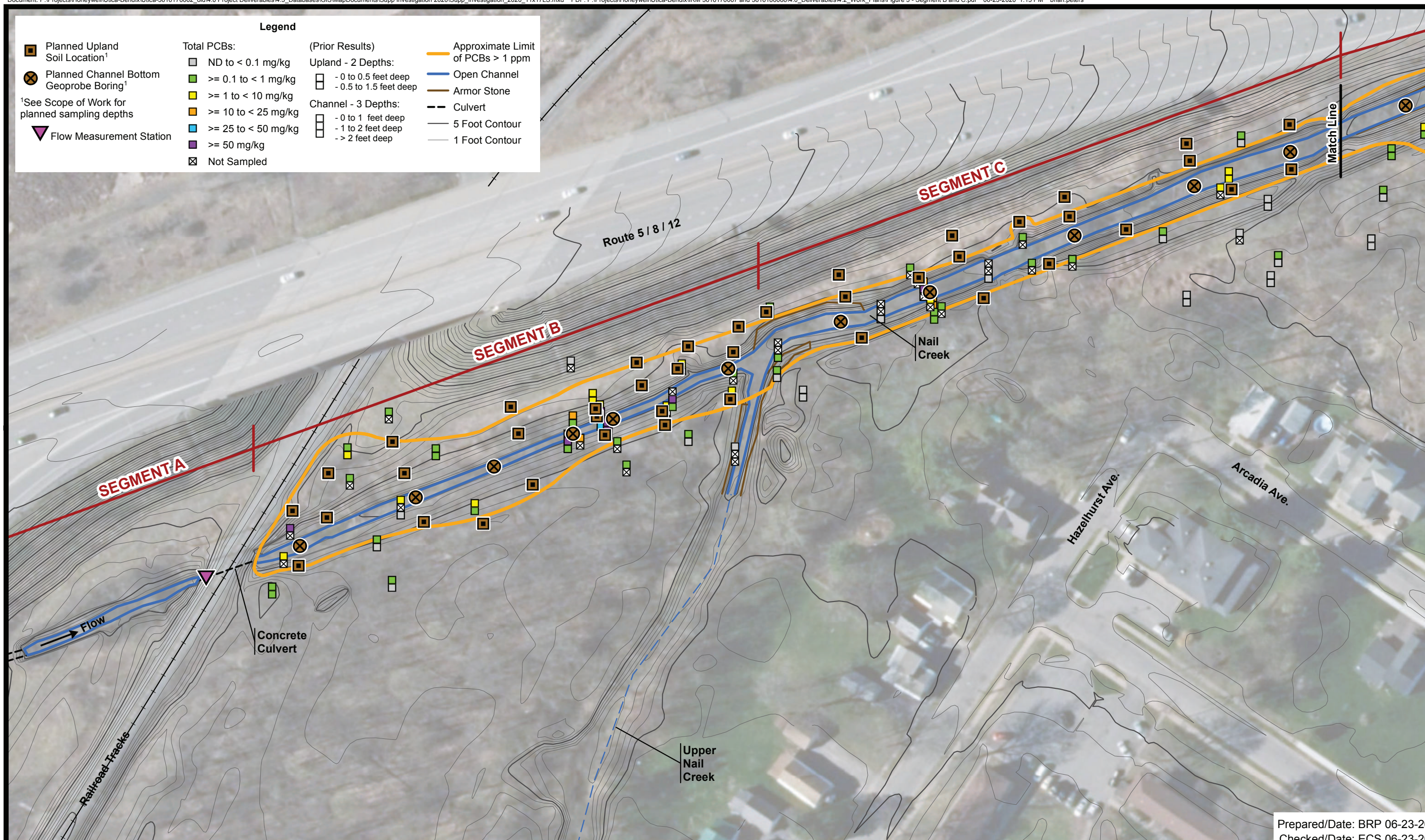
wood.

2020 SUPPLEMENTAL INVESTIGATION
SEGMENT A SAMPLING LOCATIONS

Project 3616206115

FIGURE 2

Document: P:\Projects\Honeywell\Utica-Bendix\Utica-3616176062_old\4.0 Project Deliverables\4.5_Databases\GIS\MapDocuments\Supp Investigation 2020\Supp_Investigation_2020_11x17LS.mxd PDF: P:\Projects\Honeywell\Utica-Bendix\IRM 3616176067 and 3616186068\4.0_Deliverables\4.2_Work_Plans\Figure 3 - Segment B and C.pdf 06-23-2020 1:15 PM brian.peters



N

0 40 80 Feet

Image Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

OLD CHENANGO CANAL SITE
NYSDEC SITE No. 633051
UTICA, NEW YORK

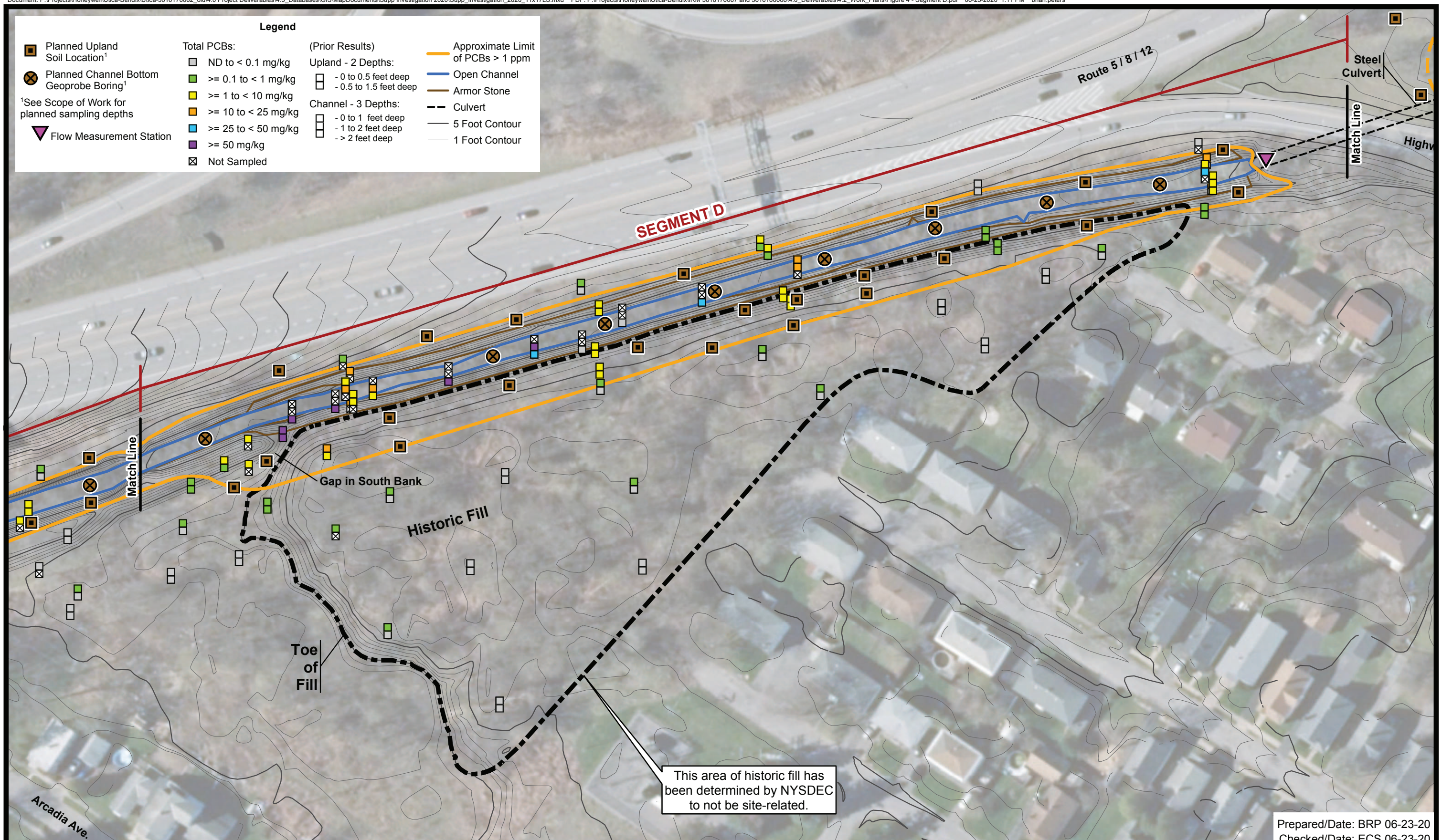
wood.

2020 SUPPLEMENTAL INVESTIGATION
SEGMENT B AND C SAMPLE LOCATIONS

Project 3616186068

FIGURE 3

Document: P:\Projects\Honeywell\Utica-Bendix\Utica-3616176062_old\4.0 Project Deliverables\4.5_Databases\GIS\MapDocuments\Supp Investigation 2020\Supp_Investigation_2020_11x17LS.mxd PDF: P:\Projects\Honeywell\Utica-Bendix\IRM 3616176067 and 3616186068\4.0_Deliverables\4.2_Work_Plans\Figure 4 - Segment D.pdf 06-23-2020 1:11 PM brian.peters



N

0 40 80 Feet

Image Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

OLD CHENANGO CANAL SITE
NYSDEC SITE No. 633051
UTICA, NEW YORK

wood.

2020 SUPPLEMENTAL INVESTIGATION
SEGMENT D SAMPLE LOCATIONS

Project 3616206115

FIGURE 4

Document: P:\Projects\Honeywell\Utica-Bendix\Utica-3616176062_old\4.0 Project Deliverables\4.5_Databases\GIS\MapDocuments\Supp Investigation 2020\Supp_Investigation_2020_11x17LS.mxd PDF: P:\Projects\Honeywell\Utica-Bendix\IRM 3616176067 and 3616186068\4.0_Deliverables\4.2_Work_Plans\Figure 5 - Segment E-1 and E-2.pdf 06-23-2020 1:14 PM brian.peters

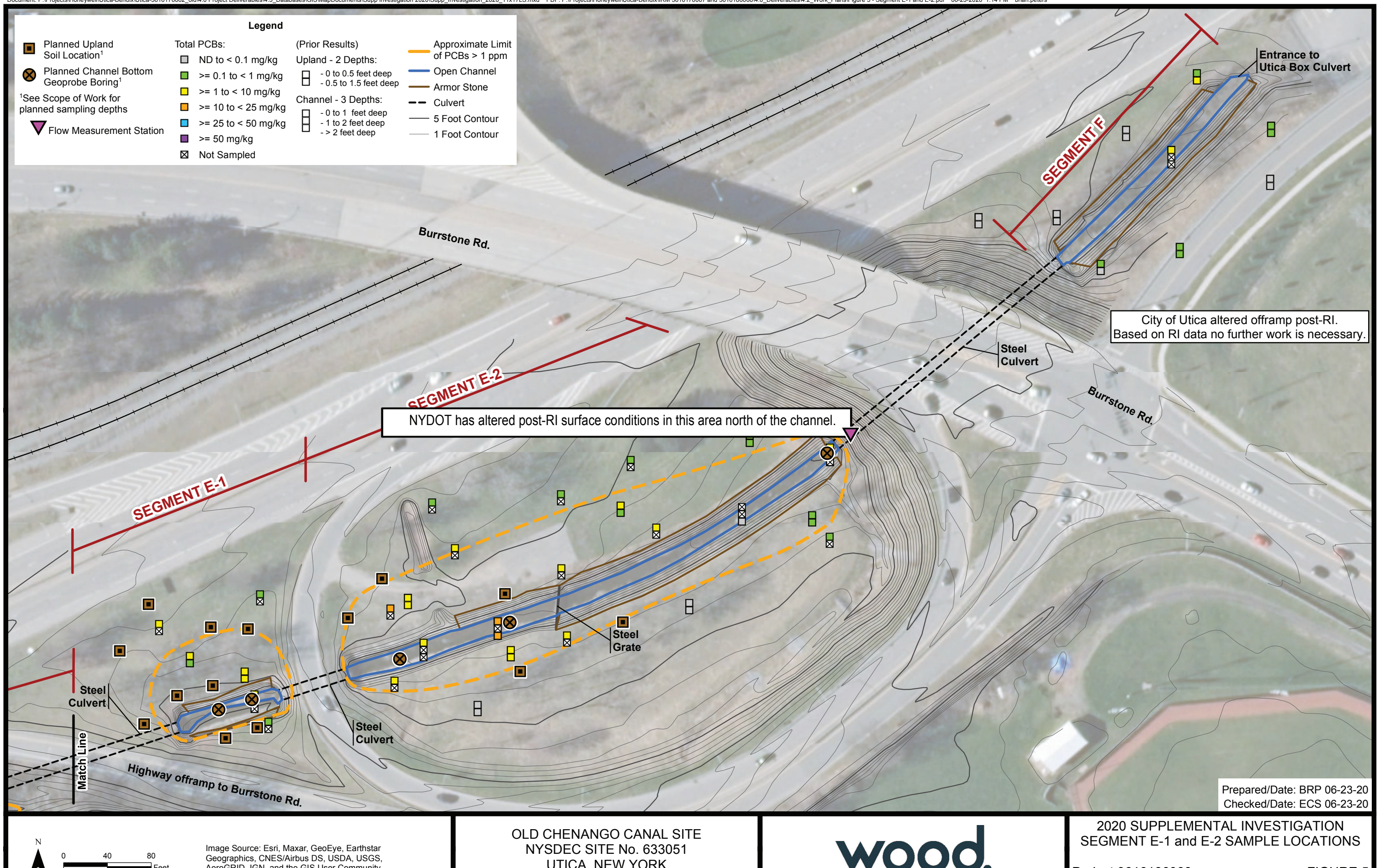


Image Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

OLD CHENANGO CANAL SITE
NYSDEC SITE No. 633051
UTICA, NEW YORK

wood.

2020 SUPPLEMENTAL INVESTIGATION
SEGMENT E-1 and E-2 SAMPLE LOCATIONS

Project 3616186068

FIGURE 5

ATTACHMENT 1:
QUALITY ASSURANCE PROJECT PLAN

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) Plan has been prepared for Honeywell, Inc. (Honeywell) by Wood Environment & Infrastructure Solutions (Wood) to support sampling and analysis for polychlorinated biphenyls (PCBs) as part of a Supplemental Investigation to be performed in 2020 for the Honeywell Old Chenango Canal Site (Site). The 2020 activities consist of soil and sediment sampling by geoprobe and hand methods with analysis for PCBs.

Wood has completed sequential prior investigations using these same methods and field procedures over the past decade at the Site.

The Site is a watercourse that has its headwaters in a remnant section of the Old Chenango Canal in Utica New York. The Site received storm water discharge from a former Bendix facility located at 211 Seward Avenue in Utica. This QAPP provides guidance for the sampling investigation and presents the project organization, data quality objectives, quality assurance and quality control (QA/QC) activities, sample collection procedures; analytical methods, analytical data management, and chemistry data review procedures associated with the activities described in the 2020 Supplemental Investigation scope of work.

1.1 QAPP OBJECTIVES

This QAPP provides a framework of procedures, functional activities, and organization to be used during the execution of environmental work at this Site. The procedures and criteria outlined in this document describe a level of performance required to achieve the project objectives.

The objectives of this document are to:

- Provide a consistent framework for collecting samples and generating analytical data throughout the project.
- Identify detection limit and QC goals for analytical methodologies used to generate chemistry data.

- Set forth review procedures used to demonstrate that the analytical systems are achieving project objectives.
- Set forth record-keeping procedures for field activities, sample collection and handling, and analytical data reporting.
- Provide for generation and documentation of data of known and acceptable quality.
- Set forth procedures that limit the effect of non-laboratory activities on analytical data.

When implemented, the activities described in this document will assure that documentation is generated so that field and analytical measurements can be verified. QA activities include the use of a management system to produce valid data that supports the program and includes a system of checks and reports to monitor the attainment of data quality objectives (DQOs). This management system includes plans that will allow the traceability, completeness, and security of field and analytical documents, and procedures for evaluating data quality relative to DQOs. QC includes specific technical activities performed by field or laboratory personnel to demonstrate that system performance is maintained within established criteria. To document precision, accuracy, and comparability of results, QC activities are included within this QA system.

1.2 SITE DESCRIPTION.

The Site consists of a storm water drainage pathway located alongside and to the south of the North-South Arterial highway (Route 5; Route 8; Route 12) in Utica, New York. The watercourse originates at a 60-inch concrete storm sewer culvert located on the south bank of an on-ramp to the highway. It runs within a remnant section of the Old Chenango Canal for approximately 700 feet at which point a tributary (Upper Nail Creek) enters from the south. The drainage continues as Nail Creek, running largely as open channel and occasionally beneath highway ramps until it enters the Utica box culvert, to the east of Burrstone Road and at a distance of about 3,600 feet from the French Road storm culvert. Channelized Nail Creek continues downstream of the Site for approximately 9,350 feet within the Utica box culvert and storm sewer network, discharging to the north of the city near Haak Avenue. Lower Nail Creek continues as an open channel for 1,200 feet until it reaches the Mohawk River. The watercourse received water contaminated with PCBs which were discharged via a series of underground storm sewers from the former Bendix facility located at 211 Seward Avenue in Utica, New York.

1.3 QAPP ORGANIZATION

This QAPP is organized as follows:

Section 2.0 provides information on the project team and responsibilities;
Section 3.0 discusses data quality objectives;
Section 4.0 describes field procedures;
Section 5.0 data management;
Section 6.0 present procedures for data review and validation, and
Section 7.0 discusses project health and safety

2.0 PROJECT RESPONSIBILITY

A description of the responsibilities for each member of the Honeywell and Wood project team is presented below. Any change in key roles will be submitted to Honeywell for approval so that continuation of services/assignment is not interrupted.

2.1 PROJECT TEAM

Remediation Manager: Maria Kaouris: Ms. Kaouris serves as the Honeywell Technical and Environmental Services Manager for the Old Chenango Canal Site.

Ms. Kaouris can be reached at:

Honeywell, Inc 973 455-3302

State Agency Lead: Peter Ouderkirk, P.E. has been designated as the NYSDEC Project Manager for this project.

Mr. Ouderkirk can be reached at NYSDEC's Region 6 office at:

NYSDEC Division of Environmental Remediation, Watertown, NY 315 785-2513

Project Manager: Eric Sandin is the Wood Project Manager for this project. Mr. Sandin has been in this role since 2011 and manages all technical and project management activities. This includes meeting all scope, schedule, and budget requirements, and communicating with the Honeywell on all cost, contractual, and administrative matters. Mr. Sandin will also serve as the Investigation Technical Lead, responsible for developing, and implementing the field activities. He will coordinate the technical disciplines needed to perform this project. Specific responsibilities include working with other Wood technical staff to develop a technical approach that meets the project objectives; selecting Honeywell-approved qualified subcontractors; ensuring that the technical approach is properly implemented in the field; and providing technical direction during the execution of work tasks.

Mr. Sandin can be reached at: (office) 207 775-5401 (cell) 207 807-1152

Principal Engineer/Senior Technical Reviewer: Nathan Hagelin provides senior-level guidance and input throughout the project and will be responsible for all technical services provided. Mr. Hagelin will monitor and review deliverables to check for completeness, consistency, and overall quality of the data interpretations. Specific portions of each project deliverable may be reviewed by other senior-level technical personnel based on their experience in specific disciplines.

Field Operations Leader. Ian Desjarlais will act as the Field Operations Leader for this project. In this capacity, he will be responsible for implementing and documenting field-related investigation activities. Specific responsibilities include day-to-day coordination and management of technical staff; coordination and oversight of subcontractors assisting the field team; and communication between the field team and necessary persons at the Site. Mr. Rawcliffe will report directly to the PM/Technical Lead.

Mr. Desjarlais can be reached at: (office) 207 775-5401 (cell) 207 228 3778

Project Engineer. Stuart Pearson, PE is responsible for engineering support during project execution.

Project Chemist. <u>Chris Ricardi</u> is Wood's project chemist responsible for laboratory coordination, quality review and evaluation of analytical chemistry data. He will provide technical over-sight to the subcontractor laboratories, and review laboratory data deliverables and coordinate data quality reviews and data validation.

Project Data Manager. William Colby-George is responsible for the management of project data. This will include loading field data and analytical data into the project data base and preparing data outputs to support data evaluation and interpretation activities.

Subcontractors. Wood will use the services of Honeywell-approved and Wood-approved contractors during this project. These will be retained on an as-needed basis for each phase of field work. Initial RI activities require an off-site laboratory for soil, sediment, and water analysis.

Honeywell expects to retain Test America Laboratories, Inc., (TestAmerica) for off-site analyses. TestAmerica is NELAP accredited, New York Environmental Laboratory Approval Program (ELAP) certified laboratory and will meet NYSDEC Analytical Services Protocols. Additional information on TestAmerica laboratory methods and detection and reporting limits are provided in Table A-3 and an attachment. Honeywell has not yet retained TestAmerica and should they wish to select an alternative laboratory, the recommendation and rationale for selection will be transmitted to NYSDEC for approval along with the lab-specific detection and reporting limits.

3.0 QUALITY ASSURANCE OBJECTIVES

The overall QA objective is to develop and implement procedures for field sampling, sample management, laboratory analysis, and reporting that will provide results which are defensible and consistent with established and approved regulatory guidance and requirements.

3.1 REGULATORY COMPLIANCE OBJECTIVES

Site investigation activities will be completed in accordance with NYSDEC regulations and guidelines. Regulations and guidelines provided by the United States Environmental Protection Agency (USEPA) may also be applied. When planning and implementing site-specific investigations, the Wood project team will incorporate requirements and procedures described in the following documents into their planning documents and technical evaluations of site conditions:

DER-10 “Technical Guidance for Site Investigation and Remediation”; New York Department of Environmental Conservation; Division of Environmental Remediation; FINAL, May 2010.

New York Codes, Rules, and Regulations Title 6 (6 NYCRR) Part 375 “Environmental Remediation Program”; New York Department of Environmental Conservation; Division of Environmental Remediation; December 2006.

6 NYCRR Part 371 “Identification and Listing of Hazardous Wastes”; New York Codes, Rules, and Regulations; March 2020.

6 NYCRR Part 700-705 “Water Quality Regulations Surface Water and Groundwater Classifications and Standards”; New York Codes, Rules, and Regulations; February 2008.

“Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels”; New York Department of Environmental Conservation; Division of Hazardous Waste Remediation; January 1994.

Technical and Operational Guidance Series (TOGs) 1.1.1. “Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations”; New York Department of Environmental Conservation; Division of Water; June 1998.

USEPA 542-S-02-001 “Ground-Water Sampling Guidelines for Superfund and Resource Conservation and Recovery Act (RCRA) Project Managers”; United States Environmental Protection Agency (USEPA); Office of Solid Waste and Emergency Response; May 2002.

“Analytical Services Protocols (ASP)”; New York Department of Environmental Conservation; June 2000; Revised July 2005.

“Draft Procedures for Collection and Preparation of Aquatic Biota for Contaminant Analysis”; New York State Department of Environmental Protection; Division of Fish, Wildlife, and Marine Resources; Bureau of Habitat; October 2002.

3.2 PROJECT DATA QUALITY OBJECTIVES

DQOs are established during the development of each project Work Plan to specify the quality of data and project specific goals for each particular data collection activity. The DQOs will ensure that data collected can support project-specific decisions. The DQOs are the starting point in the design of the investigation and based on the concept that the intended use of the data determines the quality and type of the data required. DQOs are established based upon site conditions, project objectives, and available measurement systems. The DQO process matches sampling and analytical capabilities to the data targeted for specific uses and ensures that the quality of the data does not underestimate project requirements.

During the development of project-specific Work Plans, the guidance documents identified in Section 3.1 will be used to establish sampling and analytical testing goals. The Wood project team will evaluate site historical and information and current data and recommend methods and approaches for each planned activity. Each Work Plan will include descriptions of the following information:

- Project description and site investigation objectives
- Planned explorations and sampling procedures
- Summaries of proposed samples for all media at the site
- Summary of analytical procedures
- Data quality goals for each sampling task
- Applicable standards for groundwater, surface water, sediment, and soils

3.3 ANALYTICAL DATA QUALITY LEVELS

The data quality levels identified for this project will consist of on-site field data for monitoring for health and safety (VOC screening) and field measurements taken during sample collection, , and off-site ELAP-approved laboratory definitive data for comparison with risk-based cleanup criteria and evaluate response activities effectiveness. Analytical DQOs for the 2020 Supplemental Investigation are shown on Table A-1.

3.4 QUALITY CONTROL SAMPLES

Several types of field QC samples will be collected to provide additional data that can be used to evaluate whether the sample collection and handling procedures have affected sample quality. QC sample frequency and type will be specified within the description of Scope of Work section within each Work plan that is specific to the Site.

QC samples that may be collected during the Old Chenango Canal RI/FS include:

- Field Duplicates (5 percent) consisting of replicate or co-located samples to evaluate precision;
- Matrix Spike/Matrix Spike Duplicates (5 percent) performed by the laboratory to evaluate the effect of sample matrix on the preparation and analytical procedures;
- Field Blanks to document cleanliness of water sources used for decontamination procedures during the field program;
- Equipment Blanks to evaluate the effectiveness of equipment decontamination

Routing laboratory QC procedures defined by the methods (SW-846) will be established and defined in the contract arrangement with the subcontracted laboratory. The laboratory procedure for sediment sampling may be adjusted to account for high moisture content, including:

- decanting liquid prior to sample preparation and total solids determination;
- centrifuging samples, followed by decanting;
- sample extraction of larger aliquots; and
- sample preparation/cleanup procedures to remove potential interferences.

QC limits for surrogates, spikes and duplicates are summarized in Table A-2.

3.5 ANALYTICAL METHODS

Samples will be submitted to the offsite laboratory for analyses as specified in the Work Plan. Table A-3 lists the analytical methods that may be required during the 2020 Supplemental Investigation and the associated method-specific field preservatives and maximum holding times prior to analysis. Laboratory detection and reporting limits are provided in Attachment 1.

4.0 FIELD PROCEDURES

This section describes field procedures such as including sampling and decontamination procedures. For each sample collection event, specific sampling procedures, including sample types, sampling locations, frequency of collection, and the types of analytical samples will be designated in task-specific work plans.

4.1 SAMPLE MEDIA

The following types of samples will be collected during the 2020 Supplemental Investigation

- Sediment samples
- Soil samples

4.2 SAMPLE DESIGNATIONS

Field samples will be identified as follows:

BU aa bbb cccc ddd zz

where:

BU = Bendix Utica

aa = Sample Type

- BS – boring soil
- SS – surface soil (hand collected)
- SD - sediment
- GW - groundwater
- SW - surface water
- WC - waste characterization
- FB - field blank
- EB - equipment blank
- TB - trip blank

bbb = Location Number (001, 002, etc.)

cccc = Depth Range (interval in tenths of feet below surface)

ddd = month/day collected

zz = Quality Control Designation

XX - regular sample

FD - field duplicate (replicated or collocated) sample

MS - matrix spike

MD - matrix spike duplicate

EXAMPLE:

BUSS0250010915xx defines a surface soil sample collected at Location SS-025 from 0.0 to 1.0 feet depth and is a regular sample.

4.3 SAMPLE COLLECTION PROCEDURES

The following procedures are for the sampling that is anticipated for this project. Sample collection will be documented on field data records (FDRs) that will be completed for each location.

4.3.1 Shallow Soil Sampling.

Shallow soil sampling provides samples of surface and near surface soils suitable for chemical analysis. Shallow soil samples may be obtained by using one of the following devices:

- split-spoon sampler
- hand auger or corer
- trowel or spoon
- spade

The split-spoon sampler consists of a split steel tube or sample barrel threaded at both ends that may be hand-driven using a slide hammer. Two distinct types of hand augers are available: a cup-type auger and a screw-type auger. Use of either device is generally limited to the upper portion of the soil profile (i.e., less than 5 ft). These augers are best suited for obtaining composite samples from relatively shallow depths and in relatively loose soils. Use of trowels or spades is straightforward but usually limited to sampling very shallow depths (i.e., less than 18 inches).

Soil samples can be either grab or composite, depending on the objective of the sampling program described in the project-specific Work Plan. In grab sampling, the soil jar is filled directly. In composite sampling, several methods are available:

- Samples can be composited over depth at a single location.
- Samples can be composited laterally, in which one sample comprises several, usually three or four, soil specimens from the same depth in the vicinity of the sampling site.

During composite sampling, several depths or locations are selected and a stainless-steel bucket is filled with samples from all locations. The material is then mixed and put into appropriate containers. A specific location is chosen and the sample is placed immediately in the appropriate containers with as little agitation or disturbance as possible.

Immediately after taking a sample, COC procedures are initiated and information recorded on an FDR. Information recorded on the FDR will include the sample type, depth, date, time and sample identification. Any special observations (staining, odor, etc.) will also be recorded in the "Notes" portion of the FDR.

4.3.2 Soil Sampling from Direct-push Borings.

A direct-push drilling rig may be employed to advance soil borings to characterize subsurface conditions and collect soil samples for analysis. Direct-Push drilling technique consist of a hydraulic ram unit, usually mounted on a small vehicle (ATV, cargo van, or pick-up truck) that advances small diameter drill rods to obtain overburden soil samples. Advantages in environmental investigations include low cost, maneuverability and access to irregular terrain, minimization of investigation derived wastes.

The direct push device may employ either dual tube methodology which allows the collection of subsurface soil samples through an outer casing that is set to maintain the integrity of the boring or single-rod method that collects soil into a sleeve liner (e.g., macrocore) within the lead rod.

In the dual-tube method borings are advanced by simultaneously driving an outer stainless-steel casing and inner Lexan® tube into the ground. Upon reaching the desired penetration depth, the inner Lexan® tube is extracted to collect the discrete subsurface soil samples, leaving the outer casing in place. To sample the next interval of soil, a new length of Lexan® tubing is then inserted into the outer casing (already in the ground) attached to a length of drive pipe, and another length of outer casing is attached to the top of the outer casing that is already in the ground.

In the single-rod method, ¾-inch diameter rods are advanced in 4-ft sections. The lead section is fitted with an inner polyethylene sleeve. When the top of the desired sampling interval is reached, a tool is used to unlock the drive point and the rod is driven ahead to obtain the soil sample. The entire drill rod is retrieved and the liner removed for characterization. The process is then repeated to collect the next desired sample.

Wood will use a qualified field scientist to collect soil samples for physical and analytical testing and geologic classification during completion of soil borings and direct push explorations.

The samples for laboratory analysis shall be collected using a split-spoon (soil borings) or sampling probe with disposable acrylic liner (direct push). The collection of the samples shall be in accordance with the following procedures:

1. Remove the rods and sampler from the borehole/exploration. Open the sampler by unscrewing the cutting shoe and retrieve the liner containing the soil sample. In the case of direct push explorations cut open the acetate liner. Recovered soils contained in the sampler shall be characterized using the USCS, as described previously.
2. Scan the soil sample with a photoionization detector (PID) and record measurements.
3. Collect sample for chemical analysis as described for Surface Soil Sampling.
4. Decontaminate the sampling device.
5. Record the boring lithology on a Soil Boring Log (Figure 4-4).

Information regarding sample location, depth, and character shall be recorded on the Soil Boring Log (Figure 4.4).

4.3.3 Surface Water Sampling.

No surface water sampling is planned for this 2020 Supplemental Investigation.

4.3.4 Sediment Sampling

Sediment and deeper soil samples will be collected by geoprobe and/or hand methods in the same manner as soil collection. Samples designated as sediment are from the Nail Creek or the Old Chenango Canal bed which consists of sandy to rock-dominated channel floor between 15 and 20 feet wide. Stream baseflow is typically light with water depth averaging a few inches. Sampling may be suspended during or after rain events that can produce higher transient storm flow from urban run-off.

Sampling information will be recorded on a Sediment or Boring.

4.4 MANAGEMENT OF INVESTIGATION-DERIVED WASTES

The activities described in the 2020 Supplemental Investigation are expected to produce limited amounts of excess sampling material and waste. Care will be taken to excavate only the approximate volume of material needed to fill the sample containers. Excess soil or bed material collected in sampling tools will be returned to the sampling location as long as it doesn't exhibit visual contamination (e.g., oil) or chemical odor.

Small amounts of wastewater will be generated by washing hand tools between sample locations. Washing will be performed in upland areas along the watercourse and water will be allowed to infiltrate into surface soils as long as it does not exhibit odor or shows evidence of residual oil. Waste water or sample material that contains evidence of such contamination will be containerized and staged at the Site in an appropriate location pending analysis and disposal.

Wastes such as personal protective equipment (e.g. gloves), Geoprobe acetate liners, paper and cardboard trash will be cleaned of any loose soil or sediment and will be bagged and disposed of as municipal waste.

4.5 SAMPLE LOCATION SURVEY

Sample locations will be surveyed by use of a GPS system. GPS coordinates will be recorded or converted to New York State Plane Coordinate System using the North American Datum of 1983.

5.0 DATA MANAGEMENT

Management of chemical data includes the following tasks:

- Organization and storage of project field records including logbooks, instrument calibration records, exploration records, field sample collection records, and sample handling Chain of Custody (COC) records.
- Tracking of off-site laboratory samples and receipt of laboratory deliverables.
- Receipt, organization, and storage of laboratory data packages.
- Receipt of electronic data and entry of results into the project database.
- Data quality review at a validation level specified in the QAPP.
- Entry of data validation qualifiers and preparation of final data tables.
- Preparation of tables and figures for use in the RI/FS report(s).

The data management process will include procedures necessary to ensure consistent and complete collection of field data, tracking of the laboratory analytical and validation processes, consistent and timely production of electronic data deliverables (EDDs) from laboratories, and accurate and timely entry of EDDs into the Honeywell EQuIS Database.

Prior to the field program, the Project Data Manager will set up the valid values in the project database. Valid values consist of the contractor names, laboratory names, method names, units of measure, parameter lists for each method, and QC codes for the field QC samples. Validation requirements, such as holding times and surrogate recoveries for each method and appropriate validation qualifiers are entered at this time as well.

Information specific to each sample will be entered in the field on appropriate field data record (FDR), a Site-dedicated logbook, and on COCs. Wood will use the COCs and supporting field records to review laboratory EDDs to track the completeness of the laboratory data deliverables.

The Project Data Manager will upload the analytical result EDDs. Imperfect EDDs will not be uploaded, but rather will be returned to the laboratory for correction. Returning the EDDs to the laboratory for correction prior to upload minimizes discrepancies between hard copy analytical reports and electronic data. Field data will be uploaded using an EXCEL template after it has been documented as being checked. Field data such as Site photographs or logbooks will be stored in the project files, along with supporting metadata such as author/creator of data, date, location, brief description. Ten percent of the analytical data and field data entered and uploaded to the database will be compared against hard copy. Additional data review will be completed if errors are noted.

Hardcopy data deliverables will be specified for each field program depending on the level of review planned for the sample set and the planned use of the data., The data deliverables will include a full hardcopy data package. Ten percent full validation is planned for the 2020 Supplemental Investigation sampling event, however, a complete (Honeywell Level 4) data package will be provided by the laboratory to be available if necessary. Modified CLP type forms are acceptable provided they contain equivalent information. Deliverable packages will include a narrative that summarizes activities and any problems or issues, forms summarizing sample and QC blank results, forms summarizing QC measurement parameters specified in the method, and associated raw data generated in support of the reported results. Results of QC measurements including calibration data summaries, laboratory control data summaries, MS/MSD summaries (for samples requested on the COC), surrogate summaries, and laboratory duplicate summaries. A modified CLP Form 10, or equivalent, summarizing dual column results will be provided for each sample. Raw data will include copies of associated instrument printouts and laboratory notebook records that were generated during sample preparation and analysis.

6.0 DATA REVIEW AND VALIDATION

Analytical data will be validated by Honeywell Technical Solutions (HTS) and reviewed by the Wood Project Chemist. Validation will be completed prior to use as final data in investigation reports.

The data validation scope for the sediment sampling program at the Site is designated as a Honeywell Level 4 validation. Level 4 validation includes QC and calculation checking and raw data checks as described in USEPA guideline documents. Data validation actions will be based on the following USEPA guidance documents and the professional judgment of the project chemist:

- "Validating PCB Compounds PCBs By Gas Chromatography SW-846 Method 8082A"; HW-45, Revision 1; USEPA Region II Hazardous Waste Support Branch; October 2006.
- “National Functional Guidelines for Organic Superfund Methods Data Review”; EPA-540-R-2017-002; USEPA Office of Superfund Remediation and Technology Innovation (OSRTI); January 2017.

- "Polychlorinated Biphenyls by Gas Chromatography"; USEPA Method 8082A; SW-846; Revision 1; February 2017.

A data validation summary report will be prepared by Wood for data sets reported from each distinct sample collection effort. The validation report will include the findings of the validator, a summary of analytical methods performed, listings of samples included in the review, and summaries of data validation actions or observations.

7.0 HEALTH AND SAFETY

A Health and Safety Plan (HASP) has been prepared to govern the field tasks identified in the Work Plan. The site-specific HASP has been prepared in accordance with NYSDEC DER-10 (NYSDEC, 2010). The HASP will be reviewed and updated, as necessary, prior to every field mobilization to the Site. Site workers will be required to review and sign the plan and a copy of the plan will be available at the Site to govern field activities.

Previous site investigation activities show no indications of VOC impacted soil within the proposed area of investigation, therefore no VOC air monitoring will be performed during proposed site activities. If unexpected VOC-impacted material is encountered during soil boring activities, Wood will monitor activities with PID on an as-needed basis, and in accordance with NYSDEC DER-10 (Appendix 1A-VOC Monitoring, Response levels and Actions). Cores retrieved using drilling methods will be screened with a PID upon opening.

The field activities discussed in this Work Plan are not anticipated to cause increased potential exposure to Site contaminants to the community during sampling. Hand sampling methods for surficial soil, sediment, and water are not likely to release any airborne particulate or chemical contamination. The geoprobe borings will be completed in wet or damp channel bed soils and will not therefore generate any measurable dust. PCBs, the principal COCs at this Site, do not volatilize readily to air and based on prior data, are not present at levels that will require respiratory protection to Site workers or the public. Wood will however setup and record ambient dust levels in direct downgradient proximity to the active work zone with one PM-10 (with 15-minute integration) unit, while direct-push activities are underway. The deployment and placement of the unit will change during each direct-push rig mobilization onsite. Electronic records of the onsite dust monitor will be available for NYSDEC/NYSDOH personnel to review upon request.

Although VOCs are not expected to be encountered at levels that would be a potential concern to workers, a PID will be used during retrieval of drill cores and to evaluate potential COVs in air should odors be detected during subsurface activities Results will be compared to the action levels specified in DER-10 and listed in the HASP. Work activities will be halted if total organic vapors exceed 5 ppm over background at the downwind perimeter of the work area. A copy of the NYSDOH Generic Community Air Monitoring Plan is included as Attachment 2.

The HASP will be amended to cover additional activities, as identified in any subsequent field sampling plans.

Table A-1
QUALITY ASSURANCE PROJECT PLAN
Analytical DQO Levels

Parameter	**Use**	**Data Quality level**
pH, Temperature, Specific Conductance, Turbidity	Provides physical and chemical data on water samples at the time of collection	On-site field data
PID Screening	Provides qualitative instantaneous information on air quality for worker health and safety and identifies potential contamination in sampled media	On-site field data
PCBs using SW-846 methods	Provides analytical information to compare to standards and guidance values; determine the nature and extent of impact; evaluate potential risk to humans and the environment; support remedial action and risk-management decisions	Off-site ELAP-approved laboratory definitive data

Notes:
PCBs = polychlorinated biphenyls
TOC = Total organic carbon

Table A-2
QUALITY ASSURANCE PROJECT PLAN
Summary of QC Limits for Surrogates, Spikes and Duplicates

PARAMETER	QC TEST	ANALYTE	WATER (%R)	SOIL (%R)	Water RPD	Soil RPD
PCBs	Surrogate	All Surrogate Compounds	30 - 150	30 -150		
	LCS	All Target Analytes	50 - 150	50 - 150		
	MS/MSD	All Target Analytes	40 - 140	40 - 140	30	50
	Field Duplicate	All Target Analytes			50	50

Prepared/Date: JAR 06/22/20
Checked/Date: CR 06/23/20

Notes:
LCS - Laboratory Control Sample
MS/MSD - Matrix Spike/ Matrix Spike Duplicate
RPD = Relative Percent Difference
%R = Percent Recovery
QC limits obtained from USEPA Region 2 SOP HW-45 and Honeywell Generic Program QC Limits

Table A-3
QUALITY ASSURANCE PROJECT PLAN
Analytical Methods, Preservation, and Holding Time Requirements

Analyte	Medium	Reference Analytical Method	Preservative	Holding Time
PCBs	Aqueous	SW-846 8082A / 3520	4°C	indefinite
PCBs	Solid	SW-846 8082A / 3540C	4°C	indefinite

Notes
Number and type of containers to be determined during procurement of the analytical laboratory

PCBs = polychlorinated biphenyls
°C = degrees centigrade

LABORATORY DETECTION AND REPORTING LIMITS

ATTACHMENT 1
QUALITY ASSURANCE PROJECT PLAN
LABORATORY DETECTION AND REPORTING LIMITS
EUROFINS TESTAMERICA
NORTH CANTON, OHIO
6/25/20

Sample Matrix	Method Description	Analytical Method	Prep Method	Analyte Description	CAS Number	RL	MDL	Units
Soil	PCBs by Gas Chromatography	8082A	3540C	Aroclor-1016	12674-11-2	50.0	22.0	ug/Kg
				Aroclor-1221	11104-28-2	50.0	24.0	ug/Kg
				Aroclor-1232	11141-16-5	50.0	23.0	ug/Kg
				Aroclor-1242	53469-21-9	50.0	19.0	ug/Kg
				Aroclor-1248	12672-29-6	50.0	24.0	ug/Kg
				Aroclor-1254	11097-69-1	50.0	23.0	ug/Kg
				Aroclor-1260	11096-82-5	50.0	22.0	ug/Kg
				Aroclor-1262	37324-23-5	50.0	31.0	ug/Kg
				Aroclor-1268	11100-14-4	50.0	23.0	ug/Kg
				Total PCBs	1336-36-3	50.0	31.0	ug/Kg

Water	PCBs by Gas Chromatography	8082A	3510C	Aroclor-1016	12674-11-2	0.100	0.0560	ug/L
				Aroclor-1221	11104-28-2	0.100	0.0570	ug/L
				Aroclor-1232	11141-16-5	0.100	0.0740	ug/L
				Aroclor-1242	53469-21-9	0.100	0.0760	ug/L
				Aroclor-1248	12672-29-6	0.100	0.0500	ug/L
				Aroclor-1254	11097-69-1	0.100	0.0400	ug/L
				Aroclor-1260	11096-82-5	0.100	0.0460	ug/L
				Aroclor-1262	37324-23-5	0.100	0.0580	ug/L
				Aroclor-1268	11100-14-4	0.100	0.0620	ug/L
				Total PCBs	1336-36-3	0.100	0.0760	ug/L

PCBs = polychlorinated biphenyls

Prepared by: JAR 6/25/20
Checked by:

2020 SUPPLEMENTAL INVESTIGATION PLANS
OLD CHENANGO CANAL SITE
NYSDEC SITE ID: 633051
UTICA, NEW YORK

LOCUS MAP

MAP SOURCE: NEW YORK GIS WEBSITE. IMAGES IN NEW YORK STATE PLANE NAD 83, US SURVEY FEET

0 200 400 800
SCALE IN FEET

SHEET INDEX

INCLUDED THIS SUBMITTAL	SHEET NUMBER	DRAWING TITLE	DISCIPLINE NUMBER
•	1	COVER SHEET	G-001
•	2	OVERALL PLAN AND KEY MAP	C-101
•	3	CANAL SEGMENT A (2018 IRM) PLAN AND CROSS SECTIONS	C-102
•	4	CANAL SEGMENT B PLAN AND CROSS SECTIONS	C-103
•	5	CANAL SEGMENT C PLAN AND CROSS SECTIONS	C-104
•	6	CANAL SEGMENT D1 PLAN AND CROSS SECTIONS	C-105
•	7	CANAL SEGMENT D2 PLAN AND CROSS SECTIONS	C-106
•	8	CANAL SEGMENT E1 AND E2 PLAN AND CROSS SECTIONS	C-107
•	9	CANAL SEGMENT E2 AND E3 PLAN AND CROSS SECTIONS	C-108

NY PROFESSIONAL ENGINEER LICENSE NUMBER

NO.	DATE	REVISION	BY	APVD

DSGN	DR	CHK	APVD
TDD	TDD	ECS	SCP

Honeywell
115 TABOR RD, MORRIS PLAINS, NJ 07950

2020 SUPPLEMENTAL INVESTIGATION
OLD CHENANGO CANAL SITE
NYSDEC SITE ID 633051
UTICA, NEW YORK

DRAWING STATUS
2020 SUPPLEMENTAL INVESTIGATION

GENERAL

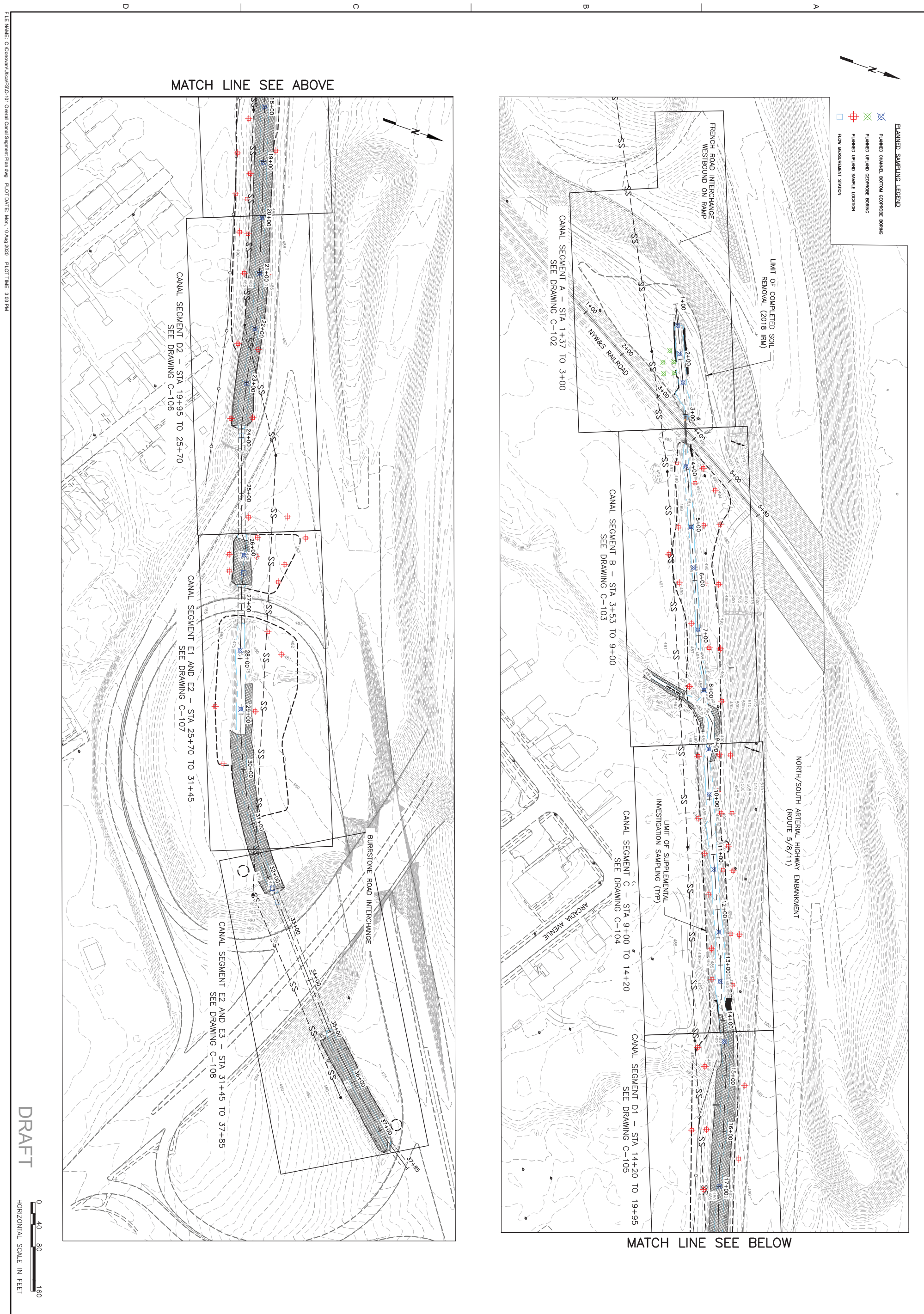
COVER SHEET

wood.
Environment & Infrastructure, Inc.
511 Congress Street, Suite 200
Portland, ME, 04112
(207) 775 - 5401

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"

DATE	8/5/20
PROJ	3616-18-6069
DWG	G-001
SHEET	1 OF 9

FILE NAME: C:\Donovan\Utica\FS\G-001 Supplemental Sampling Cover Sheet.dwg PLOT DATE: Mon, 10 Aug 2020 PLOT TIME: 3:14 PM



DATE	8/5/20
PROJ	3616-18-6069
DWG	C-101
SHEET	2 of 9

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

wood.

Environment & Infrastructure, Inc.
511 Congress Street, Suite 200
Portland, ME, 04112
(207) 775 - 5401

DRAWING STATUS
2020 SUPPLEMENTAL INVESTIGATION

CIVIL

OVERALL CANAL SEGMENT
KEY PLAN

Honeywell
115 TABOR RD., MORRIS PLAINS, NJ 07950

2020 SUPPLEMENTAL INVESTIGATION
OLD CHENANGO CANAL SITE
NYSDEC SITE ID 633051
UTICA, NEW YORK

NO.	DATE	REVISION	BY	APVD

DSGN	DR	CHK	APVD
TDD	TDD	ECS	SCP

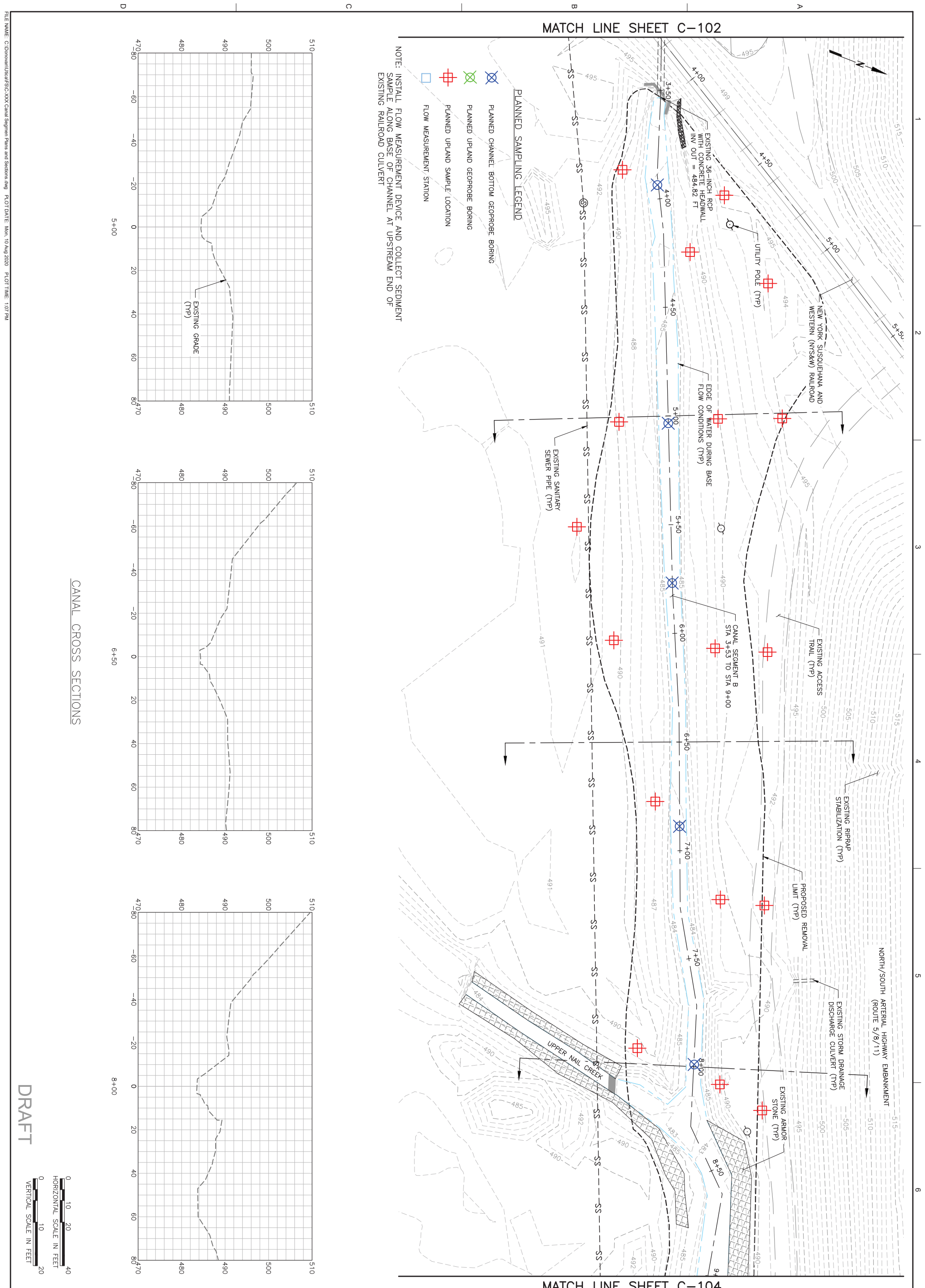
NY PROFESSIONAL ENGINEER
LICENSE NUMBER

SHEET 3 OF 9 DWG C-102 PROJ 3616-18-6069 DATE 8/5/20	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING	wood. Environment & Infrastructure, Inc. 511 Congress Street, Suite 200 Portland, ME, 04112 (207) 775 - 5401	DRAWING STATUS 2020 SUPPLEMENTAL INVESTIGATION CIVIL CANAL SEGMENT A (IRM - 2018) PLAN AND CROSS SECTIONS	Honeywell 115 TABOR RD. MORRIS PLAINS, NJ 07950 2020 SUPPLEMENTAL INVESTIGATION OLD CHENANGO CANAL SITE NYSDEC SITE ID 633051 UTICA, NEW YORK

NO.	DATE	REVISION	BY	APVD

DSGN	DR	CHK	APVD
TDD	TDD	ECS	SCP

NY PROFESSIONAL ENGINEER LICENSE NUMBER



DRAWING STATUS 2020 SUPPLEMENTAL INVESTIGATION	Honeywell 115 TABOR RD. MORRIS PLAINS, NJ 07950		
CIVIL CANAL SEGMENT B PLAN AND CROSS SECTIONS	2020 SUPPLEMENTAL INVESTIGATION OLD CHENANGO CANAL SITE NYSDEC SITE ID 633051 UTICA, NEW YORK		

wood.
Environment & Infrastructure, Inc.
511 Congress Street, Suite 200
Portland, ME, 04112
(207) 775 - 5401

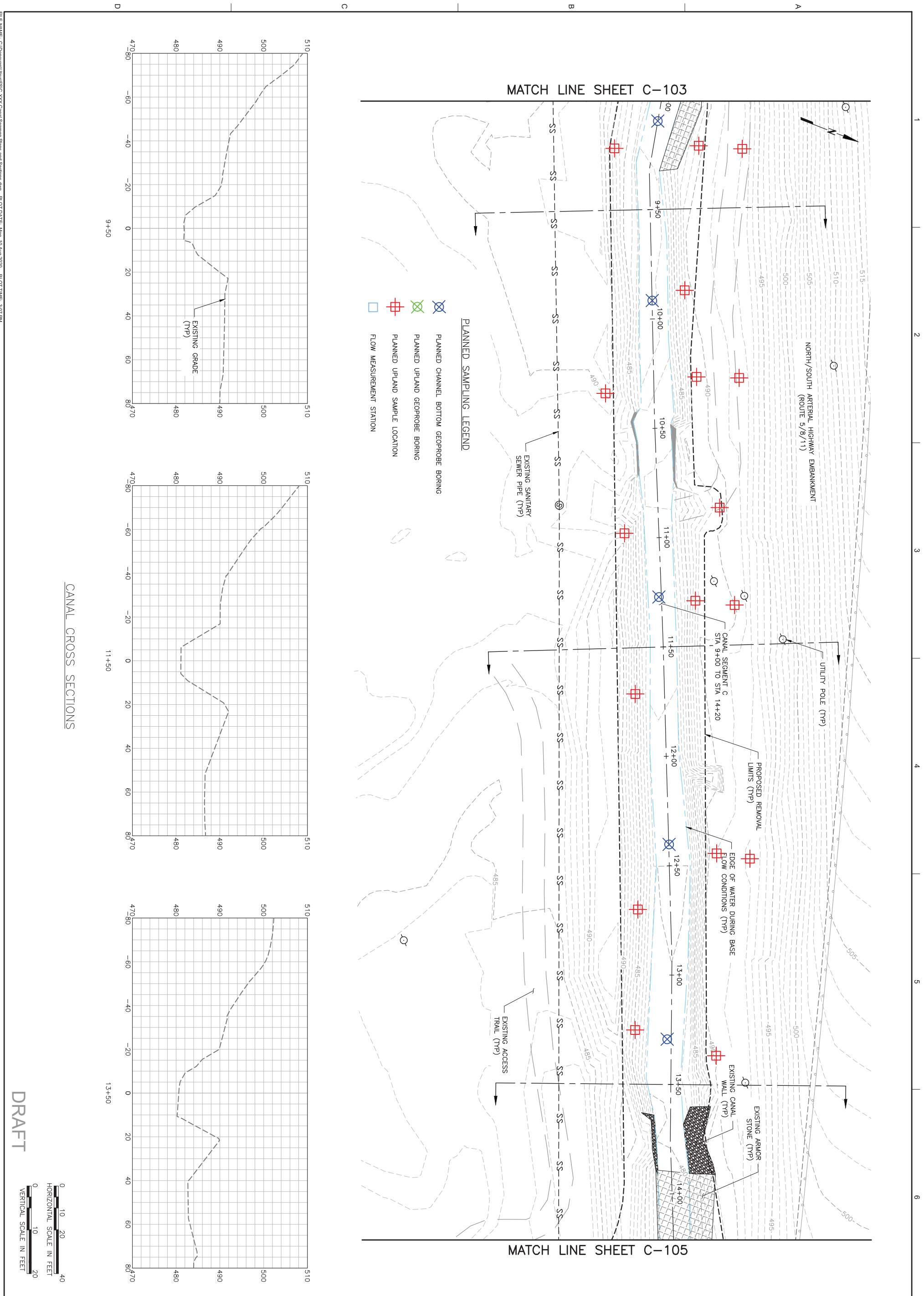
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

DATE 8/5/20
PROJ 3616-18-6069
DWG C-103
SHEET 4 OF 9

NO.	DATE	REVISION	BY	APVD

DSGN TDD | DR TDD | CHK ECS | APVD SCP

NY PROFESSIONAL ENGINEER LICENSE NUMBER



DRAWING STATUS	2020 SUPPLEMENTAL INVESTIGATION
	CIVIL
	CANAL SEGMENT C PLAN AND CROSS SECTIONS

wood.

Environment & Infrastructure, Inc.
511 Congress Street, Suite 200
Portland, ME, 04112
(207) 775 - 5401

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

DATE	8/5/20
PROJ	3616-18-6069
DWG	C-104
SHEET	5 OF 9

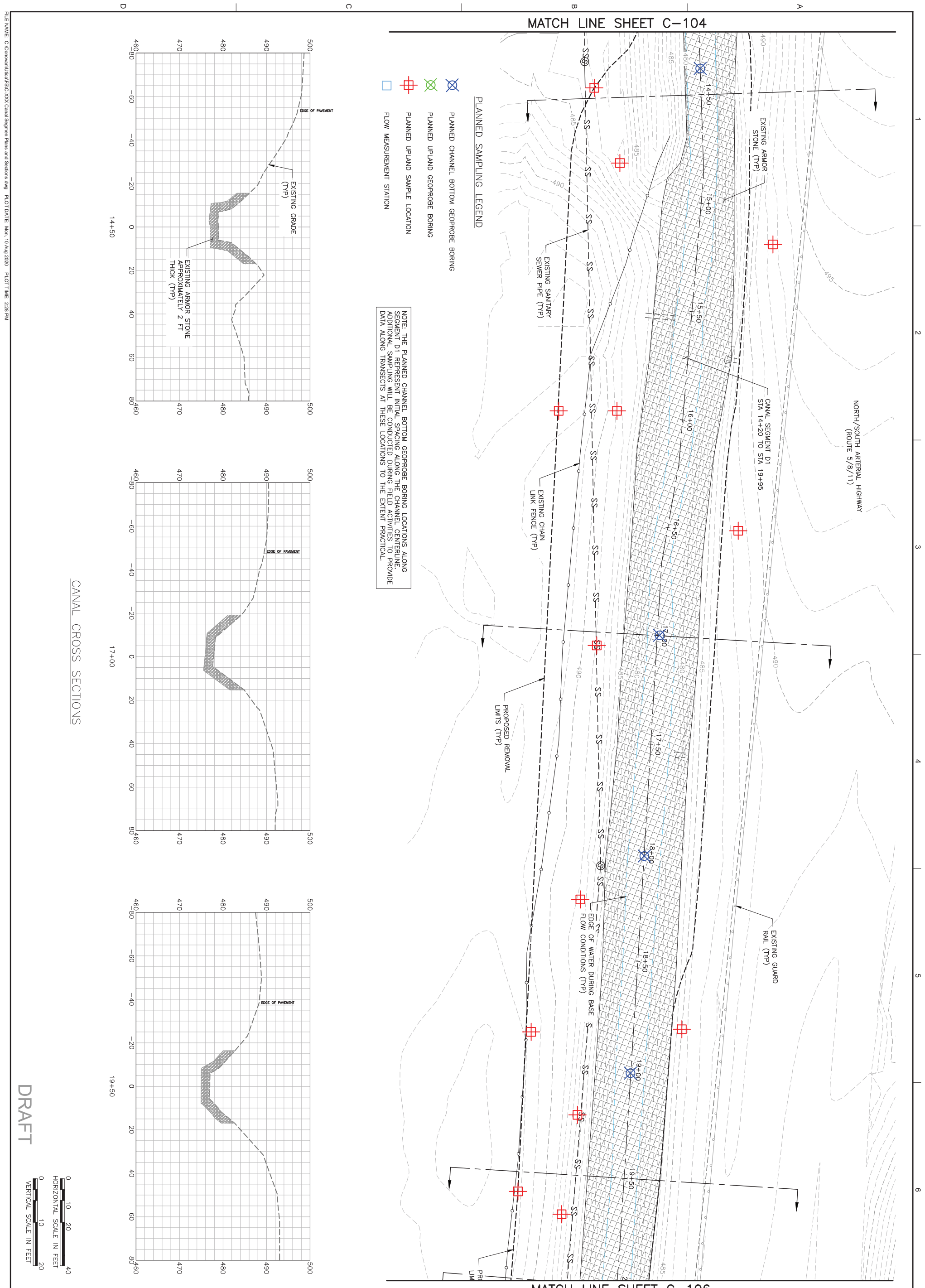
Honeywell
115 TABOR RD., MORRIS PLAINS, NJ 07950

2020 SUPPLEMENTAL INVESTIGATION
OLD CHENANGO CANAL SITE
NYSDEC SITE ID 633051
UTICA, NEW YORK

NO.	DATE	REVISION	BY	APVD

DSGN	DR	CHK	APVD
TDD	TDD	ECS	SCP

NY PROFESSIONAL ENGINEER LICENSE NUMBER



DRAWING STATUS	2020 SUPPLEMENTAL INVESTIGATION
CIVIL	CANAL SEGMENT D1 PLAN AND CROSS SECTIONS
DATE	8/5/20
PROJ.	3616-18-6069
DWG	C-105
SHEET	6 of 9

VERIFY SCALE: BAR IS ONE INCH ON ORIGINAL DRAWING

wood.

Environment & Infrastructure, Inc.
511 Congress Street, Suite 200
Portland, ME, 04112
(207) 775 - 5401

Honeywell

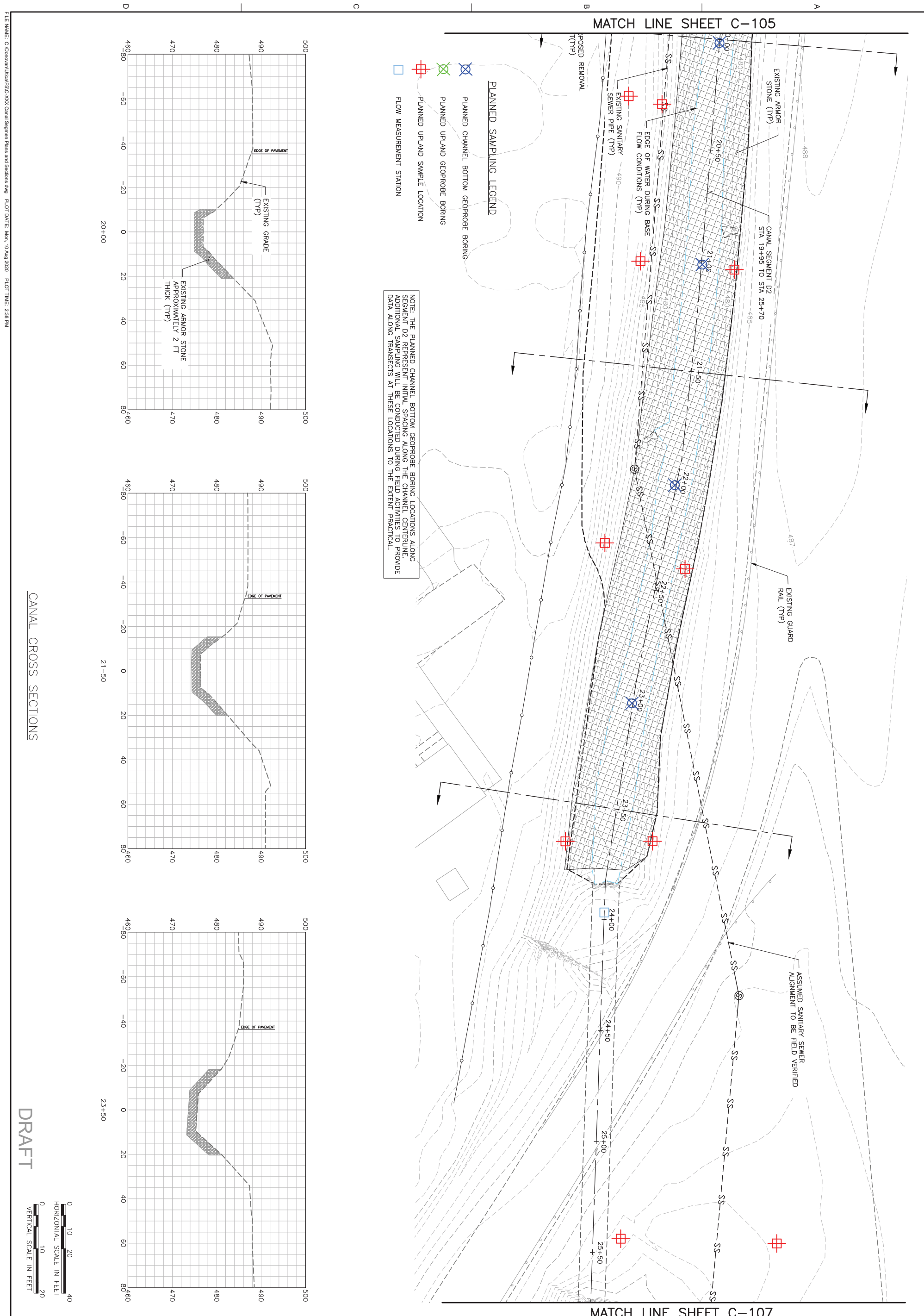
115 TABOR RD., MORRIS PLAINS, NJ 07950

2020 SUPPLEMENTAL INVESTIGATION
OLD CHENANGO CANAL SITE
NYSDEC SITE ID 633051
UTICA, NEW YORK

NO.	DATE	REVISION	BY	APVD

DSGN	DR	CHK	APVD
TDD	TDD	ECS	SCP

NY PROFESSIONAL ENGINEER LICENSE NUMBER



DRAWING STATUS	2020 SUPPLEMENTAL INVESTIGATION
CIVIL	
	CANAL SEGMENT D2 PLAN AND CROSS SECTIONS

Honeywell
115 TABOR RD., MORRIS PLAINS, NJ 07950

2020 SUPPLEMENTAL INVESTIGATION
OLD CHENANGO CANAL SITE
NYSDEC SITE ID 633051
UTICA, NEW YORK

wood.
Environment & Infrastructure, Inc.
511 Congress Street, Suite 200
Portland, ME, 04112
(207) 775 - 5401

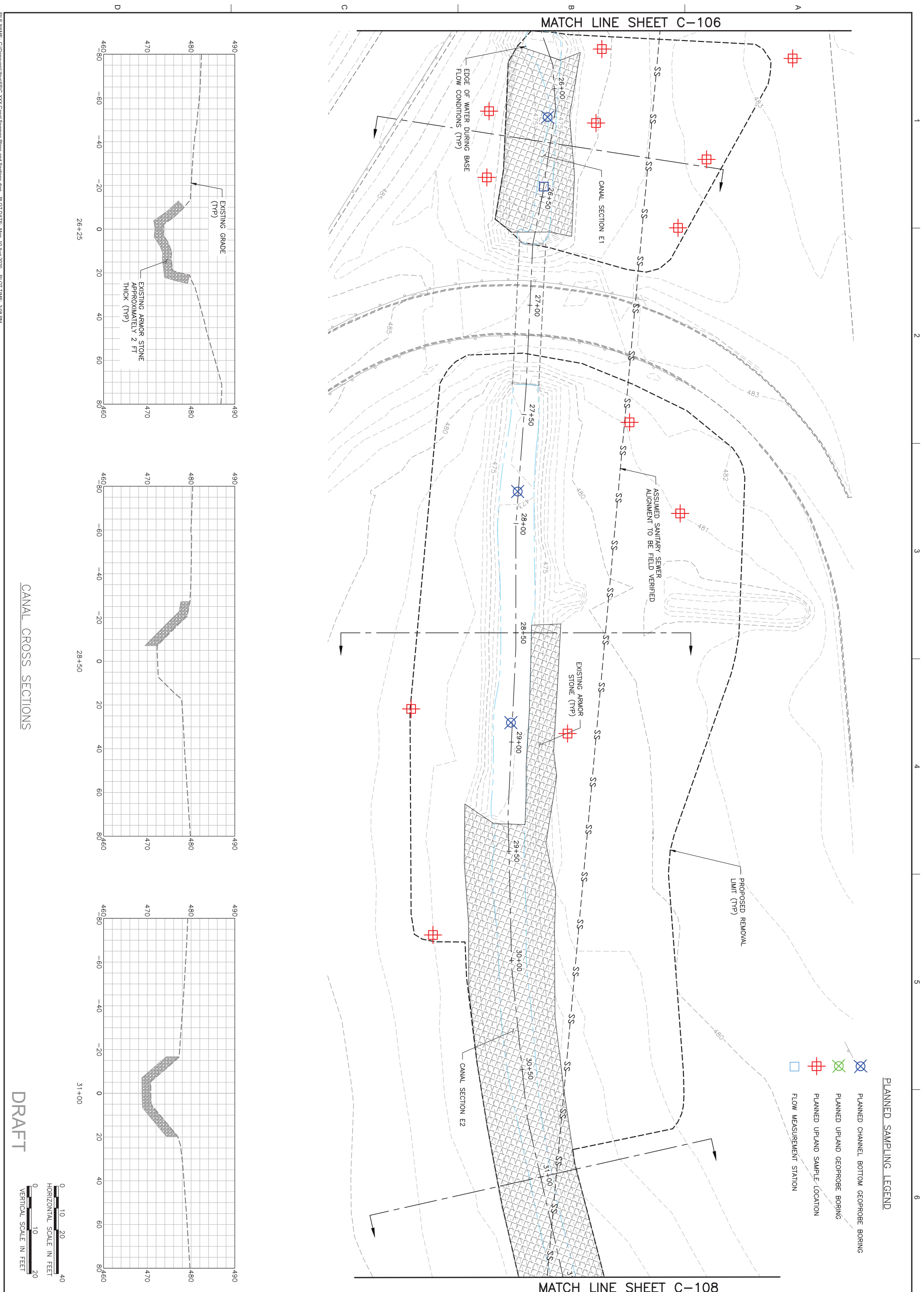
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING

DATE	8/5/20
PROJ	3616-18-6069
DWG	C-106
SHEET	7 of 9

NO.	DATE	REVISION	BY	APVD

DSGN	DR	CHK	APVD
TDD	TDD	ECS	SCP

NY PROFESSIONAL ENGINEER LICENSE NUMBER



DRAWING STATUS
2020 SUPPLEMENTAL INVESTIGATION

CIVIL

CANAL SEGMENT E1 AND E2
PLAN AND CROSS
SECTIONS

Honeywell
115 TABOR RD., MORRIS PLAINS, NJ 07950

2020 SUPPLEMENTAL INVESTIGATION
OLD CHENANGO CANAL SITE
NYSDEC SITE ID 633051
UTICA, NEW YORK

wood.
Environment & Infrastructure, Inc.
511 Congress Street, Suite 200
Portland, ME, 04112
(207) 775 - 5401

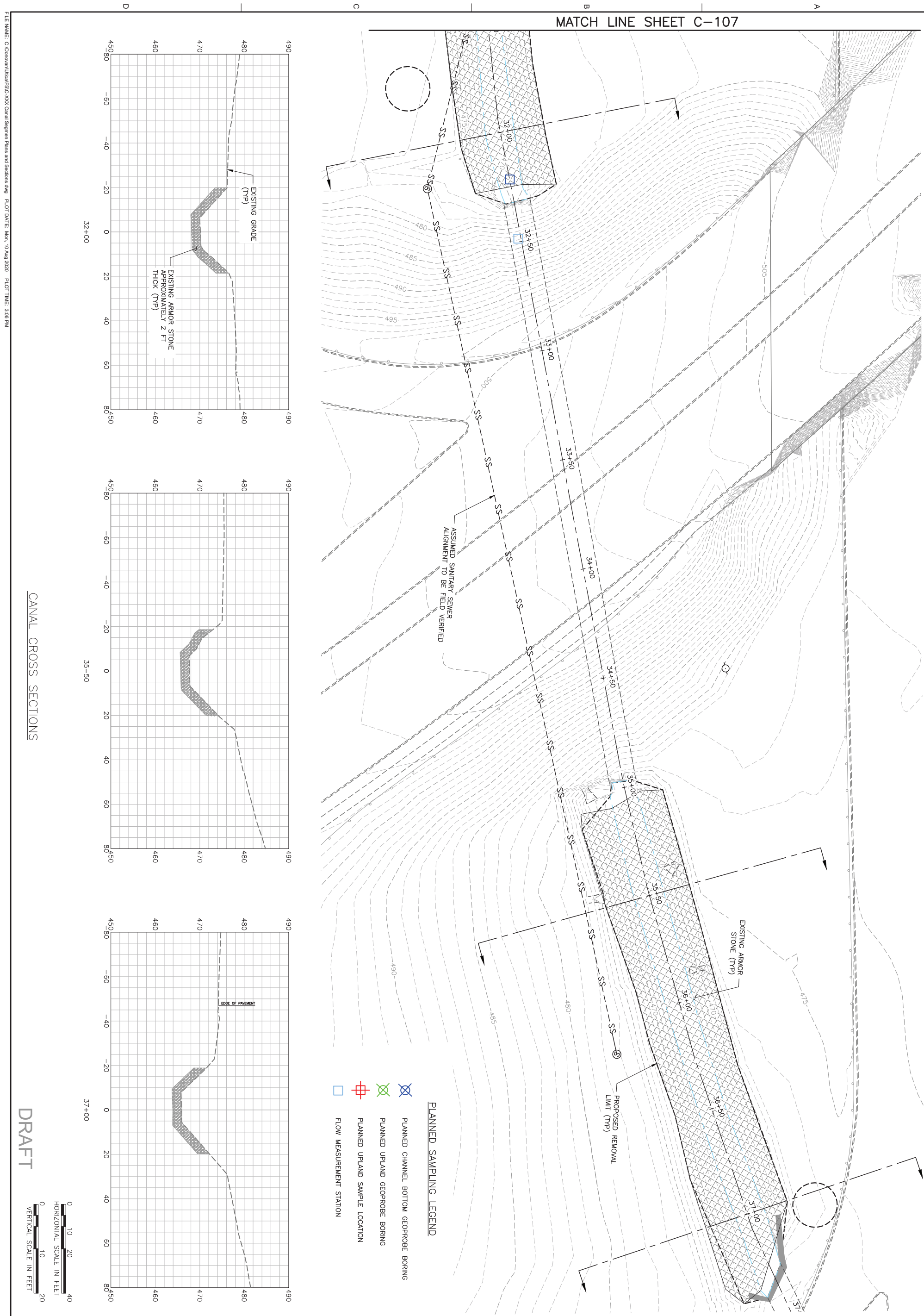
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"

DATE	8/5/20
PROJ	3616-18-6069
DWG	C-107
SHEET	8 OF 9

NO.	DATE	REVISION	BY	APVD
DSGN TDD	DR TDD	CHK ECS	APVD SCP	

NY PROFESSIONAL ENGINEER
LICENSE NUMBER

MATCH LINE SHEET C-107



VERIFY SCALE: BAR IS ONE INCH ON ORIGINAL DRAWING	**wood.** Environment & Infrastructure, Inc. 511 Congress Street, Suite 200 Portland, ME, 04112 (207) 775 - 5401	DRAWING STATUS: 2020 SUPPLEMENTAL INVESTIGATION CIVIL CANAL SEGMENT E2 AND E3 PLAN AND CROSS SECTIONS	**Honeywell** 115 TABOR RD., MORRIS PLAINS, NJ 07950 2020 SUPPLEMENTAL INVESTIGATION OLD CHENANGO CANAL SITE NYSDEC SITE ID 633051 UTICA, NEW YORK

DATE	8/5/20
PROJ	3616-18-6069
DWG	C-108
SHEET	9 OF 9

NO.	DATE	REVISION	BY	APVD

DSGN	DR	CHK	APVD	NY PROFESSIONAL ENGINEER LICENSE NUMBER
TDD	TDD	ECS	SCP	