Honeywell

Phase 2 Culvert Investigative/Removal Action Work Plan

Former Oak Materials Fluorglas Division–John Street
NYSDEC Site No. 442049
Village of Hoosick Falls, Rensselaer County, New York

16 January 2020

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1. INTRODUCTION AND PURPOSE

This Investigative/Removal Action Work Plan (I/RAWP) sets forth the means and methods for further investigation and removal/cleaning of solids impacted by volatile organic compounds (VOCs) and semi-VOCs (SVOCs) from within an abandoned concrete box culvert beneath John Street through which Woods Brook formerly flowed.

1.1 Background

Honeywell International Inc. (Honeywell) entered into an Order on Consent and Administrative Settlement with the New York State Department of Environmental Conservation (NYSDEC) dated 3 June 2016 (the Order; Index Number CO 4-20160415-79). The Order required the performance of investigation activities at the Former Oak Materials Fluorglas Division - John Street (the Site). The location of this 0.6-acre Site is shown on Figures 1 and 2. In July 2017, the Site was added to the Registry of Inactive Hazardous Waste Disposal Sites (the Registry) as a Class 2 site (Site No. 442049). Honeywell is currently implementing a remedial investigation/feasibility study (RI/FS).

During 2019, the Village of Hoosick Falls (VHF) had been implementing a sanitary sewer upgrade project in the vicinity of the Site when the sewer project contractor encountered and opened up an old concrete box culvert abandoned during the 1950-1952 US Army Corps of Engineers (USACE) Flood Control project when Woods Brook was moved and channelized to its current location on the east side of the John Street property. Solids within the abandoned culvert was sampled on 14 November 2019 and found to contain VOCs (primarily trichloroethene [TCE] and 1,1,1-trichloroethane [1,1,1-TCA]) and SVOCs (primarily naphthalene). A spill report was opened by NYSDEC on 14 November 2019 (subsequently closed on 27 November 2019).

On behalf of Honeywell, ERM subsequently oversaw the temporary backfilling of the box culvert on 26 November. Prior to backfilling, ERM and NYSDEC personnel observed the inside of the box culvert structure. Observation was only possible from the open portion of the excavation and where a section of the box culvert ceiling had been demolished. Visibility was limited due to the demolition rubble pile located on the floor of the structure. Solids was observed in both the northern and southern directions and appeared moist/mucky and consistent in thickness. Thickness of the solids was probed in the location of the ceiling opening and was measured to be 26-inches thick. This measurement is likely to be greater than the thickness in the undisturbed portion of the culvert due to the displacement that is likely to have occurred by the falling ceiling rubble. The general internal dimensions of the structure is 6.5 feet high and 14 feet wide. These dimensions are generally similar to the dimensions of the current Woods Brook Culvert. The observable length of the structure extends approximately 7 feet beyond the edge of road in the northern direction and approximately 17 feet in the southern direction, coinciding approximately with known buried utilities. The overall length that could be observed is approximately 35 to 40 feet. Both the northern and southern observable extents terminate with a sloped pile of fill-like material (soil, rock, and construction debris).

Figure 3 presents a plan view of the John Street area, the location of the box culvert, backfilled excavation, existing known subsurface and overhead utilities. The photo log in Appendix A illustrates the observations discussed above.

On 5 December 2019, NYSDEC was notified that Honeywell would undertake further investigations and remedial actions related to the VOC impacts identified in the culvert.

1.2 Purpose

Actions in this work plan are intended to meet the following objectives:

- Investigate soil quality beneath the culvert to determine if VOC/SVOC-impacted soils are present;
- Identify the former stream channel to the north of the culvert (backfilled during the USACE Flood Control project), and investigate soil quality within the alignment to determine if VOC/SVOC-impacted soils are present;

- Access and remove the solids from within the intact box culvert structure for disposal at a properly permitted facility; and
- Clean the structure and apply a carbon-based absorptive amendment to the bottom concrete surface to reduce the potential for migration of any residual VOCs.

Meeting these objectives will allow the village to complete its contracted sewer improvements in the vicinity of the box culvert.

2. MOBILIZATION

2.1 Supporting Project Documents

The activities described in this work plan will be supported by relevant parts of the following NYSDEC-approved August 2019 John Street Remedial Investigation (RI) documents:

- ***The Community Air Monitoring Plan (CAMP)*** for the John Street RI is presented in Appendix A of the RI Work Plan. The CAMP is consistent with the requirements of DER-10 Appendix 1A (NYSDEC, 2010a) and describes monitoring requirements and response action levels associated with monitoring of VOCs and particulates (i.e., dust) downwind of intrusive activities. The CAMP contains action levels for additional monitoring, corrective actions to abate emissions, and/or work stoppage if necessary.
- ***RI Field Sampling and Analysis Plan (FSAP)*** is presented in Appendix B of the RI Work Plan. The FSAP is consistent with the requirements of DER-10 Section 2.4 and will be used to support field operations protocols, and sampling and analysis procedures for implementation of the investigative work.
- ***RI Quality Assurance Project Plan (QAPP)*** is presented in Appendix C of the RI Work Plan. The QAPP is consistent with the requirements of DER-10 Section 2.4 and describes sampling and analysis procedures for implementation of the RI along with QA/QC criteria. The QAPP will facilitate generation of data with acceptable precision, accuracy, representativeness, completeness, and comparability (PARCC).

2.2 Work Sequence Planning

Available relevant documentation will be used to plan the sequencing and schedule of the investigative/removal work for efficient use of resources/subcontractors. ERM will procure and contract the necessary subcontractors and/or coordinate the resources, equipment to implement the Scope of Work described herein.

2.3 Traffic Control Coordination

This work will require the complete closure of a portion of John Street to through-traffic and pedestrians for the duration of any open excavation and waste handling activities. Honeywell will coordinate with the Village, Village's Superintendent of Highways, and local businesses to provide adequate road closure notice, signage and physical protection, and detour as needed, including school bus rerouting.

3. INVESTIGATION

Investigative activities will include geophysical surveys and soil borings/sampling to:

- Investigate soil quality beneath the culvert to determine if VOC/SVOC-impacted soils are present; and
- Identify the former stream channel immediately on the property to the north of the culvert, and investigate soil quality within that alignment to determine if there VOC/SVOC-impacted soils present.

Approximate geophysical survey areas and soil boring locations are shown in Figure 4.

3.1 Utility Location/Clearance

Prior to the start of any intrusive activities, the selected drilling and environmental contractors will contact Dig-Safe as required by law (16 NYCRR Part 753) for subsurface utility mark outs.

Dig Safely New York (DSNY) will be notified prior to the initiation of intrusive activities at the properties and requested to identify, locate, and mark member-company utilities in areas proposed for subsurface intrusive investigation.

A private utility location/geophysical subcontractor will be retained to evaluate proposed drilling locations using ground penetrating radar (GPR), magnetometry/metal detection, inductive cable/pipe location, or other appropriate techniques. A minimum 10-foot diameter around each planned drilling location will be scanned for subsurface utilities prior to the initiation of the work. Soil borings will be adjusted based on the findings of these surveys to avoid drilling in close proximity to any identified utilities or unknown targets.

3.2 Decontamination

Temporary decontamination pads will be constructed with two layers of polyethylene sheeting that will be bermed at the sides. Re-usable drilling and sampling equipment and tools will be cleaned with Alconox® and potable water solution followed by PFAS-free bottled water or distilled water rinse between uses. Decontamination water from the pad will be transferred into pre-labeled waste containers.

3.3 Geophysical Survey

A GPR survey will be performed to the north of John Street to identify the former Woods Brook stream channel immediately north of, and associated with the former culvert. The results of the survey will be used to select the actual soil boring locations to investigate soil quality within that alignment and determine if VOC/SVOC-impacted soils are present. The alignment of the former stream channel will be surveyed in accordance with Section 4.9 – Site Survey.

3.4 Soil Borings

Up to three soil borings will be installed to obtain soil samples from beneath the former culvert. These soil borings will be performed on an inclined angle between 30 – 45 degrees from vertical (angle borings) to access soils beneath the structure. A greater angle of inclination is preferred (e.g., 45 degrees) but the selected angle of inclination will depend on available set back space based on subsurface clearance findings at each location (i.e., a greater angle requires a larger set back).

Up to five soil borings will be installed to collect soil samples from the within alignment representing the former stream channel to the north of John Street. Soil borings will be positioned along the centerline of the former channel alignment but at locations to avoid drilling in close proximity to any identified utilities or unknown targets. Each boring will extend two feet in to the top of the clay layer which is anticipated to occur at approximately 15 – 20 feet below ground surface (bgs) or if the clay layer is not encountered, the top of till and/or bedrock anticipated to occur at 25 – 30 feet bgs.

Soil borings will be advanced to the scheduled completion depths using the direct-push drilling/sampling method. Each borehole will be sampled continuously using dedicated sample liners and dual tube or equivalent discrete interval sampling methods. Reusable sampling equipment will be cleaned between each borehole location by washing in an Alconox® and potable water solution followed by rinsing with Poland Spring water or laboratory-supplied distilled water.

Subsurface soil will be examined and screened continuously from the ground surface to each soil boring's completion depth. A volume of soil from each two-foot increment of each soil core sampling interval will be placed directly into sealable HDPE bags that will be labeled with the depth interval on the outside. The soil will be allowed to equilibrate within the bag for approximately five minutes to facilitate VOC headspace screening using a calibrated PID equipped with an 11.7 eV lamp. Soil samples will be visually examined for physical properties including color, texture, composition, moisture content, odor, and visual evidence of staining, discoloration, or product/sheen. Soil descriptions and other field data/observations will be documented on soil boring logs.

Two soil samples will be collected from each soil boring beneath the culvert for laboratory analyses. PID screening and physical properties will be considered in selection of soil samples for laboratory analyses, but the planned intervals are from the two-foot intervals immediately beneath the base of former culvert and above the water table.

Up to four soil samples will be collected from each of the borings to the north of John Street for laboratory analyses. PID screening and physical properties will be considered in selection of soil samples for laboratory analyses, but the planned intervals are from the two-foot intervals immediately beneath fill/native soil interface (former stream bed), above the water table, and above the clay, or if the clay is not encountered, above the till/bedrock surface.

Additional soil samples for laboratory analysis may be collected based on:

- Field screening results;
- Visual examination for discoloration, mottling, or other observations suggestive of possible organic-rich zones; and
- Consultation with NYSDEC's field representative.

Soil samples for laboratory analyses will be collected into laboratory-provided sampling containers, which will be labeled and stored in a clean pre-chilled cooler.

All soil samples will be analyzed for Target Compound List (TCL) VOCs and TCL SVOCs analysis using United States Environmental Protection Agency (USEPA) Methods 8260C and 8270D. Soil samples for TCL VOC analyses will be collected using USEPA Method 5035 where five grams of soil will be weighed in the field and added to 40-milliliter vials containing methanol or sodium bisulfate preservative. The remaining sample containers will be unpreserved from each sampling interval. Samples will be transported under chain of custody to a New York State Department of Health (NYSDOH)-approved environmental laboratory for analysis.

Boring locations will be surveyed in accordance with Section 4.9 – Site Survey.

4. SOLIDS REMOVAL AND CLEANING

Two alternative methods for solids removal are under consideration. These methods are:

- The structure remains intact and clean out occurs as a confined space entry and relies largely on hand digging; or
- Removal of the structure ceiling/roof allowing for cleanout from above utilizing heavy machinery.

These alternatives will be evaluated during contractor selection and final planning. Both alternatives are contemplated in the Work Plan.

4.1 Planning and Mobilization

The duration of the box culvert remedial activities is estimated to take 12 to 15 days of on-Site field work. This time is separate and in addition to the mobilization and investigation work described above. During this time, full closure of John Street will be required from the intersection with Church Street to the intersection with Lyman Street. The intersection of Lyman and John Streets will remain open except limited closures associated with equipment and material movement between the work area and the John Street Site. Local properties on John Street will remain accessible from the East (Church Street). School Bus Routes will be detoured during the road closure. ERM will coordinate with the VHF, VHF's Superintendent of Highways, School District, and local businesses to provide adequate road closure notice, signage and physical protection, and detour as needed and at the direction of the VHF.

4.2 Re-Open Box Culvert (Remove Stone Fill)

The box culvert structure excavation in the location of the VHF sewer project was temporarily closed by backfill with crusher-run stone. This backfill material was segregated from the solids with a demarcation barrier of low-density polyethylene sheeting (a.k.a. poly sheeting). Backfill above the poly sheeting will be removed and staged as clean fill for reuse. Backfill and debris will be removed by mechanical and hand digging. Wooden timbers placed in the upper portion of the culvert to support fill will be removed. Timbers are presumed to be free of impact from contaminated media and along with other material recovered from the excavation that is not reusable as backfill will be handled as general construction debris.

4.3 Concrete Rubble Removal

Large concrete rubble, steel rebar, and fill stone placed under the demarcation barrier will be removed to access the impacted solids materials on the culvert floor. To the extent practical, this material will be removed from the culvert using a mechanical excavator with bucket and/or grapple. Large concrete rubble and rebar will be assessed for level of cross contamination (visible due to the contrast of dark solids and lightly colored concrete) and staged accordingly. Concrete rubble assessed to be largely free of solids will be stockpiled on poly sheeting. Stone and smaller concrete material toward the bottom of the culvert that is more likely to be contaminated will be loaded into a lined roll-off container for disposal with solids. Mechanical and hand digging will continue in the open portion of the culvert to remove material to extent practical and to allow worker entry into the culvert. Solids will be placed into liner roll-containers for subsequent disposal.

4.4 Solids Removal

4.4.1 Northern Reach

The northern reach is a short segment of intact culvert structure about 7 feet long beginning at the sidewalk's edge on the northern side of John Street. In an effort to limit impacts to the sidewalk and neighboring commercial property fence and grounds, this section of the culvert will remain intact. Removal of the solids under the sidewalk portion of the culvert will be completed by small equipment or hand digging. Removal will advance within the culvert horizontally to the north until no visibly/grossly contaminated material is

encountered, material is reached defining the separation of solids and the existing fill material previously described. A minimal quantity of the fill material will be taken as part of the removal to assure adequate removal of the impacted solids. A record sample will be collected from the terminus of the excavation for VOC and SVOC analyses to determine soil quality at the end of the northern excavation/removal. It is anticipated that this work will be completed as a confined space entry activity.

4.4.2 Solids Removal – Southern Reach

4.4.2.1 Alternative 1 - Culvert Intact

This alternative approach will leave the culvert structure largely intact. Entry into the culvert will require confined space entry and rely largely on hand digging to remove solids material. To address lighting, ventilation, and extent of solids impacts in the area of the existing utilities, a small excavation in the area of the existing utilities would be completed (depicted on Figure 3). The ceiling of the culvert likely has been removed in the area of the existing utilities based on the presumptive depth of the utilities and observations of road surface material (brick) within the culvert. Additional culvert ceiling removal may be warranted in this area to allow for adequate light and ventilation and/or access to the culvert/utilities as needed.

Once access to the culvert is established, workers will enter the structure and remove solids using hand tools and limited mechanical digging, if possible. Solids will be transferred to a lined roll-off container. Four 1-liter jars of the solids will be collected and retained as reference samples should any future additional testing be desired.

Although not currently suspected, any free liquid will be separately removed via pumping into drums and staged in the hazardous waste accumulation area. Residual free liquids will be solidified and removed using a carbon-based granular or pelletized sorbent spill containment product such as Pig Solvent Solidifying Absorbent Powder (PLP505) https://www.newpig.com/pig-solvent-solidifying-absorbent-powder/p/PLP505#desc-spec) or Sedimite pellets http://www.sedimite.com/info. Sorbents will be removed and placed with solids. Bulk solids removal will be complete after the entire structure floor has been flat shovel scraped/squeegeed and uniform concrete surface is exposed. Residual solids management is described in Section 4.5.

The southern extent of the structure is currently unknown. Known existing utilities are present and likely shallow (3 to 4 feet below grade) in the area of the observed southern extent. Removal of solids and existing fill material in contact with the solids will be removed to the extent practical. Hand digging will be used in the area of southern extent fill due to the presence of buried utilities. If the utilities are physically located, digging and removal will cease. A reasonable effort will be made to explore the southern extent of the structure in the area north of the utilities.

A record sample will be collected at the terminus of the excavation for VOC and SVOC analyses to determine soil quality at the end of the southern excavation/removal.

4.4.2.2 Alternative 2 - Remove Culvert Ceiling

This alternative approach will remove the structure roof/ceiling as a means to access the solids. The structure will be exposed by removal of the overlying roadway surface and subbase (observed to be several layers of brick). Overlaying material removal will extend to approximately 3 feet on both sides of the structure. The concrete roof will be saw cut and removed in several sections using an excavator bucket lift. The extent of the roof removal will include an approximately 17-foot long section extending from the VHF sewer project excavation area to the known utilities located in the eastbound lane. Unstained, uncontaminated roof sections will be staged locally for reuse as structural fill. Any large concrete rubble that inadvertently makes contact with solids will be staged on the decontamination pad and washed. Once the roof has been removed, the walls will be shored or braced to maintain the strength of the walls and allow for worker entry. The bulk of the

solids within the structure will be removed using mechanical means to the extent practical. Workers will enter the structure and continue solids removal as described in the section above.

4.5 Residual Solids Management/Solidification

A small quantity of residual solids may remain after removal by mechanical means. The residual solids will be managed by the application of approximately 6 inches flowable fill sprayed onto the floor and walls of the culvert.

The goal is to reduce mobility of VOCs/SVOCs present within residual solids left in the structure. The media would remain permanently within the structure.

4.6 Backfill

The structure will be left intact to the extent practical. If solids removal alternative 1 is used (culvert roof intact), then the ends will be closed and supported prior to backfill. The support will consist of a structural support such as block and mortar wall. If solids removal alternative 2 (remove culvert ceiling) is used, clean concrete slabs/rubble will be placed into the culvert bottom prior to placement of fill. The culvert/excavations will be backfilled with structural fill. Structural fill will be designed to meet NYSDOT Standard Specifications (USC) for roadway. The fill will be competed flush with existing grade per USC specifications for roadway subbase.

4.7 Roadway Surface Restoration

Honeywell will coordinate with the VHF to determine if pavement restoration is required at this stage given the on-going status of the VHF sanitary sewer upgrade project and associated restoration activities. If possible to coordinate, the section of the excavation where the VHF contractor needs to complete the sewer installation work could be left open for immediate access to complete that work. However, at this time, Honeywell assumes leaving all excavated areas backfilled and compacted to allow the VHF sewer contractor to complete sewer pipe installation when available, and the VHF to complete final paving throughout the area.

4.8 Wastes, Management & Disposal

Wastes requiring disposal would include: the removed solids, concrete rubble and steel rebar, poly-liner materials, wood, wash down water, personal protective equipment/clothing, and decontamination water. It is assumed that these materials and other visually impacted solids/waste materials generated from the work will be managed and disposed of as hazardous waste.

Materials/waste will be managed within the secured, fenced limits of the John Street Site. Wasted generated from the investigative and removal actions will be placed in new Department of Transportation (DOT) approved 55-gallon steel drums or other appropriate containers such as secured, lined, covered roll-offs for as-required waste characterization sampling in advance of disposal. Drummed wastes will be staged in the existing designated hazardous waste accumulation area (secured intermodal container [Conex]). All containers containing wastes will be properly labeled per NYSDEC, USEPA and/or United States Department of Transportation (USDOT) requirements. The waste containers will remain staged at the John Street Site prior to manifesting and shipment for offsite disposal.

Additionally, this work will require the construction of a contaminated materials/equipment staging and wash down area on the John Street Site. The area will be approximately 300 square foot high-density polyethylene portable containment pad (E-Contain Spill Guard, or similar). Temporary staging and decontamination of machinery, tools, and minimally impacted large concrete rubble will be conducted within the pad. Impacted solids and water will be managed with consistent with other project wastes.

4.9 Site Survey

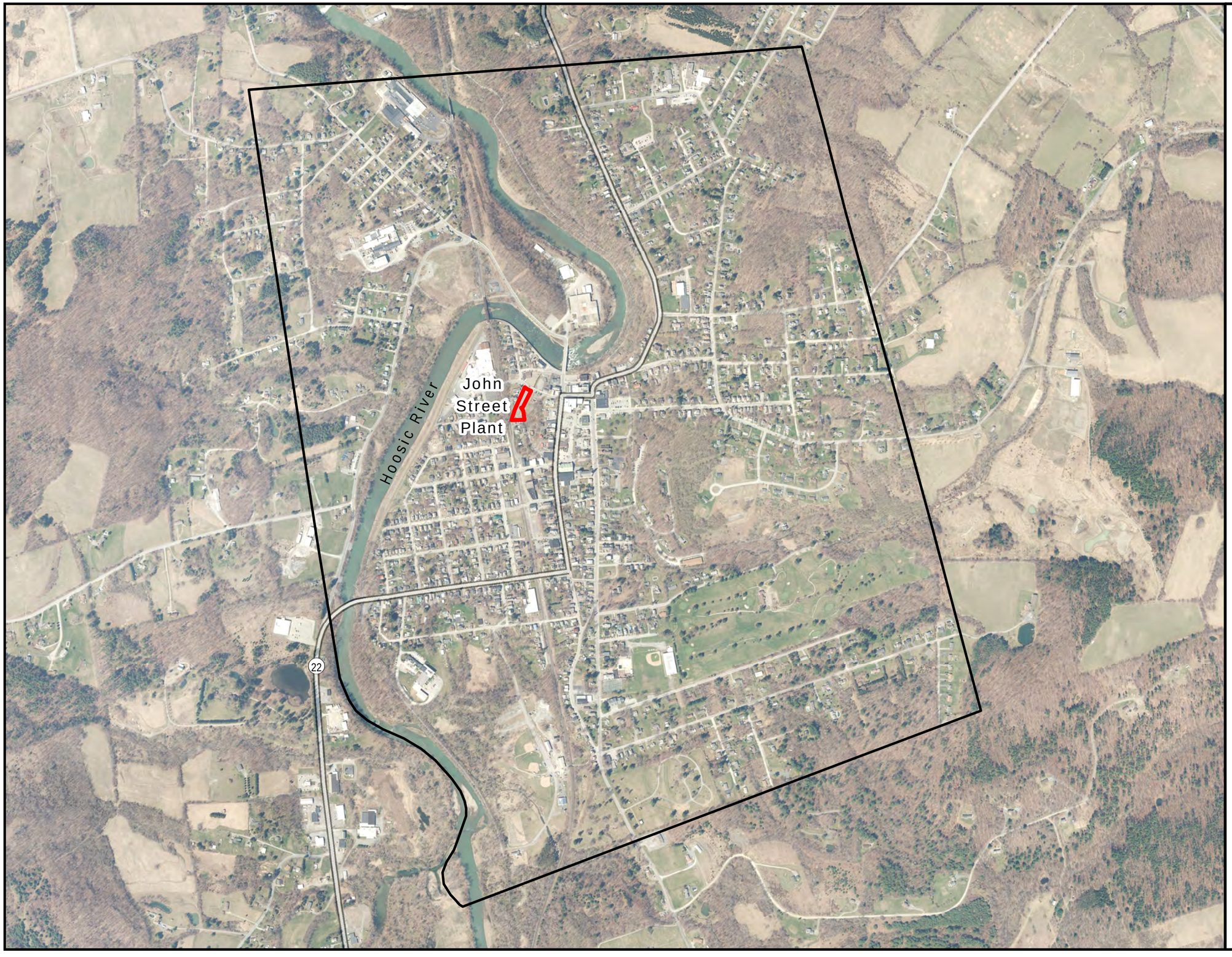
All boring locations and the alignment of the former stream channel north of the culvert will be surveyed initially in the field using GPS equipment and then surveyed by a New York-licensed surveyor.

5. REPORTING

A technical memorandum will be prepared and submitted to NYSDEC/NYSDOH that presents the:

- Summary of all investigative/removal activities;
- Soil sample analytical results compared to the NYS Part 375 Soil Cleanup Objectives (SCOs);
- Conclusions and recommendations; and
- Tabular summaries, figures/charts, laboratory reports, photographs and other supporting documentation will be included as part of the report.

FIGURES



Legend

- Approximate Property Boundaries
- Village of Hoosick Falls Boundary
- State Route 22

N

0 0.05 0.1 0.2 0.3

Miles

Figure 1: **Property Location**
Former Oak Materials Fluorglas Division
John Street Site
Village of Hoosick Falls, New York

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Legend

- Approximate Site Boundary
- Village of Hoosick Falls Boundary
- Waterbody
- Hoosick Town Boundary
- Elevation Contours (10 foot)
- Elevation Contours (2 foot)

N

0 25 50 100 150 200

Feet

Figure 2: Site Layout
Former Oak Materials Fluorglas Division
John Street Site
Village of Hoosick Falls, New York

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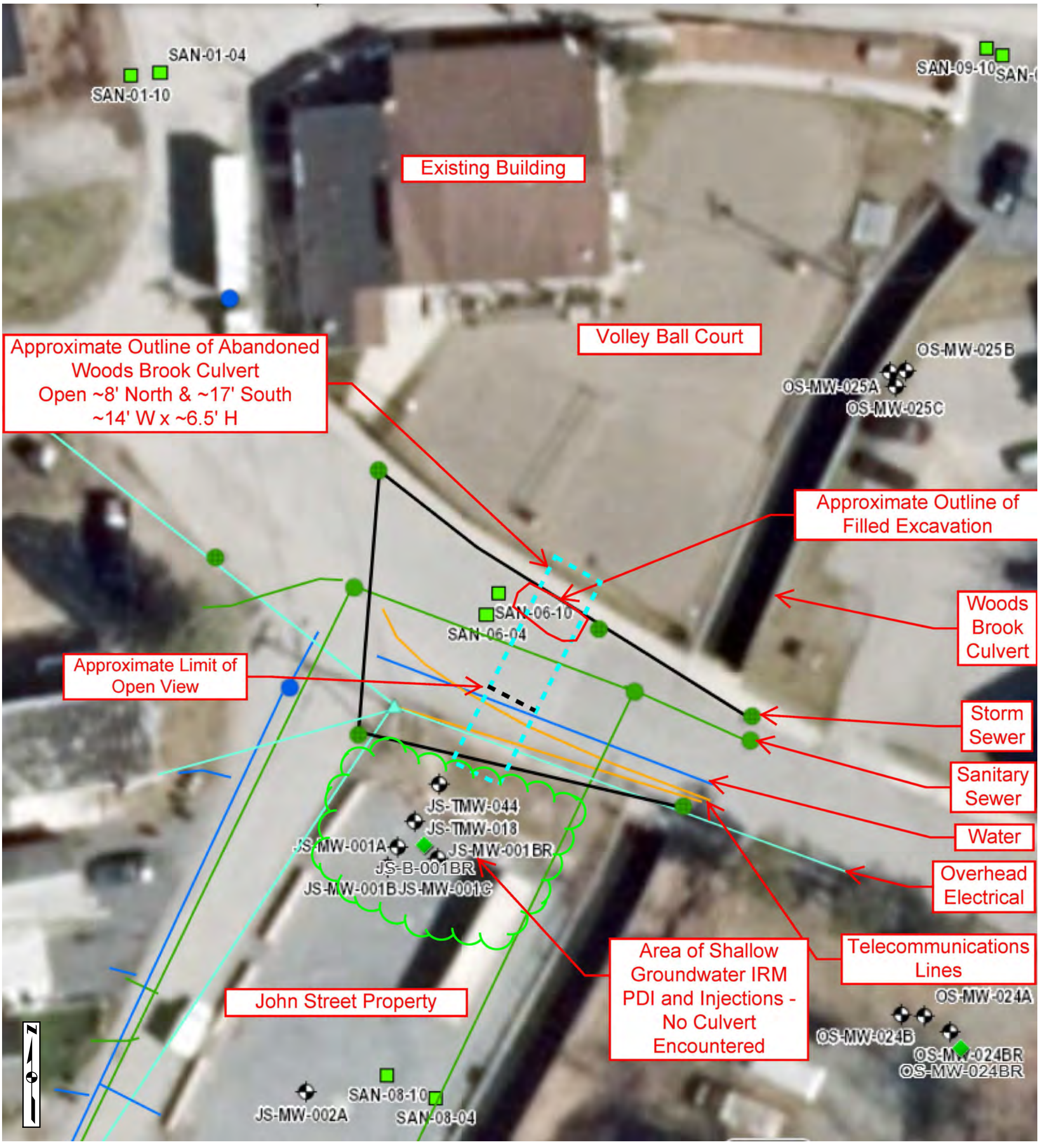

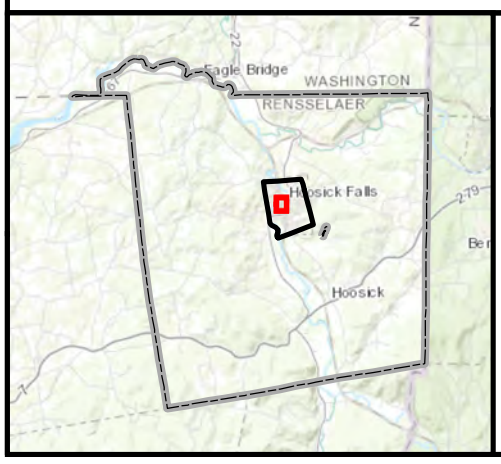

Existing Locations:

- Approximate Manholes
- Sanitary Sewer Soil Boring Location
- Monitoring Well Location
- Bedrock Well Location

Figure 3: Former Box Culvert Layout
Former Oak Materials Fluorglas Division
John Street Site
Village of Hoosick Falls, New York

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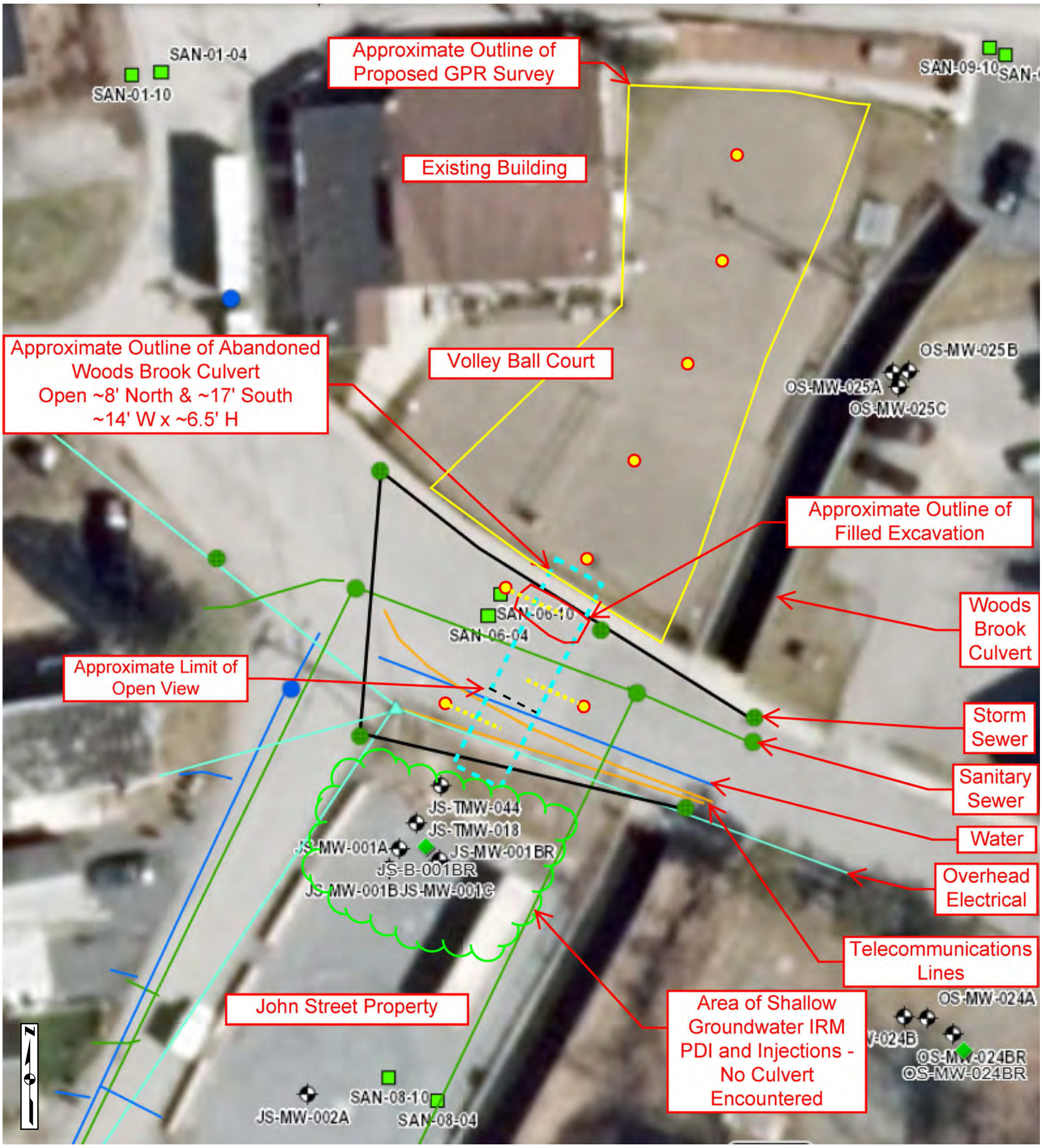

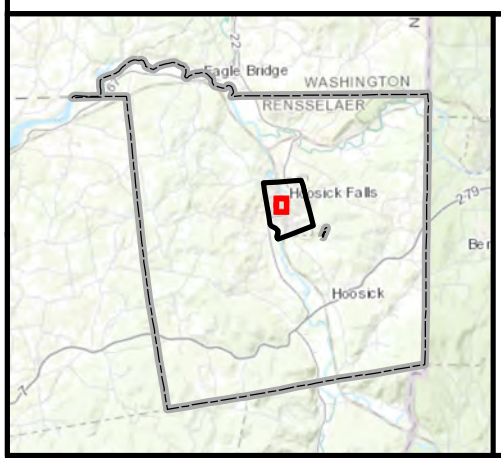

Existing Locations:

- Approximate Manholes
- Sanitary Sewer Soil Boring Location
- Monitoring Well Location
- Bedrock Well Location
- Proposed Soil Boring Location (Approximate)
- Trace of Proposed Angle Soil Boring Location
- Approximate Outline of Proposed GPR Survey

Figure 4: Proposed Investigative Locations
Former Oak Materials Fluorglas Division
John Street Site
Village of Hoosick Falls, New York

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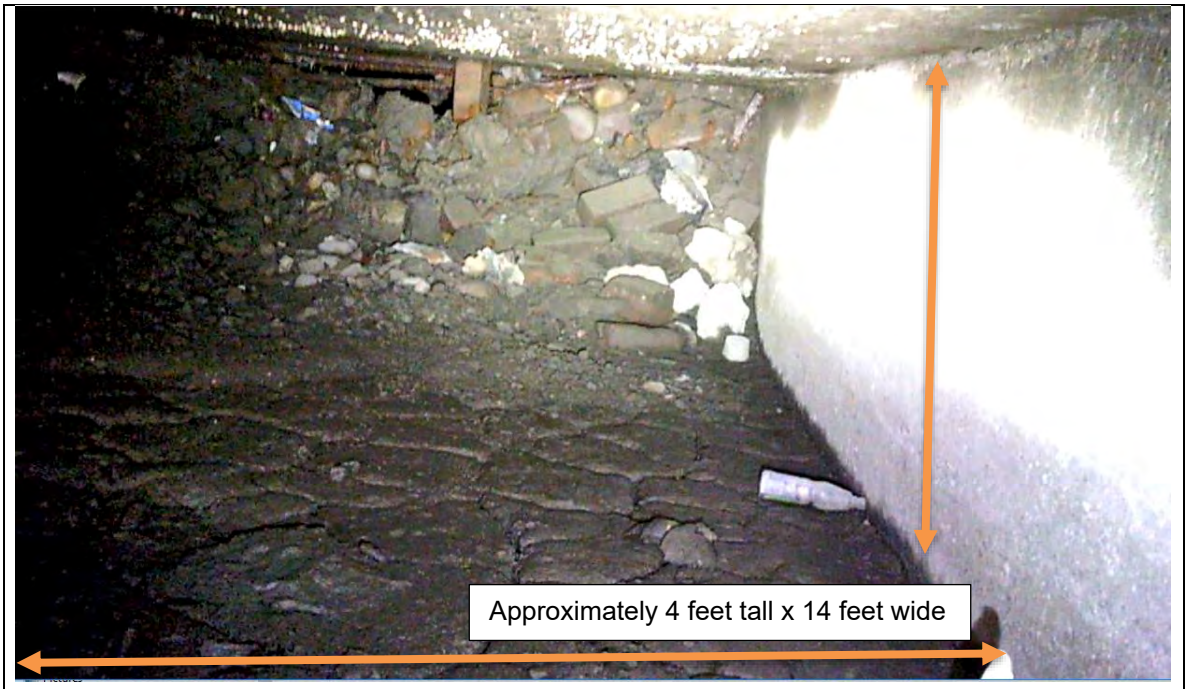
APPENDIX A SITE PHOTOGRAPHS



Photograph: 1	Box Culvert Interior – Photo taken from open excavation looking south (towards John St Site) into southwest corner of structure.

Photograph: 2	Box Culvert Interior – Photo taken from open excavation looking south (towards John St Site) into southeast corner of structure.

Photograph: 3	Box Culvert Interior – Photo taken from open excavation looking north (towards Sand Bar) into northwest upper corner of structure.

Photograph: 4	Box Culvert Interior – Photo taken from open excavation looking north (towards Sand Bar) into northeast upper corner of structure.

Photograph: 5	Box Culvert Interior – Photo taken from open excavation looking north (towards Sand Bar) into northwest lower corner of structure.

Photograph: 6	Box Culvert – View facing east prior to start of work

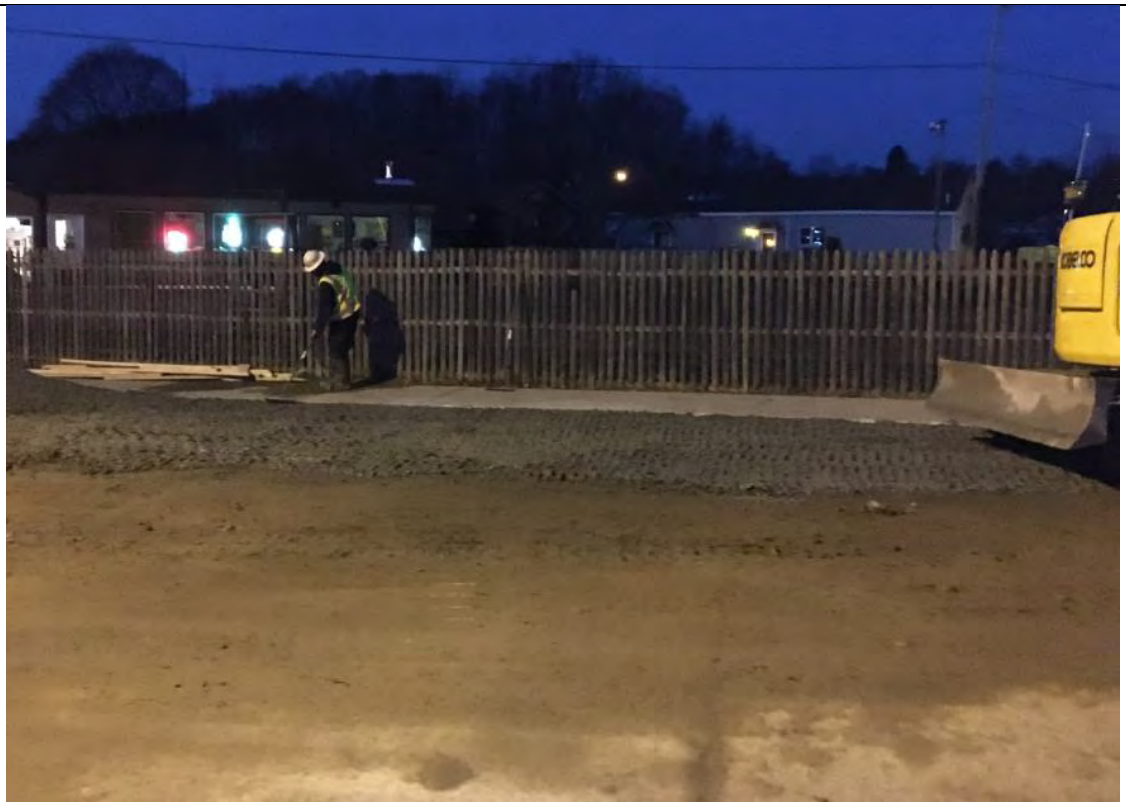
Photograph: 7	Box Culvert – View facing east depicting leveled rubble

Photograph: 8	Box Culvert – View facing west after addition of crusher run filling rubble voids

Photograph: 9	Box Culvert – View facing southwest depicting timber supports

Photograph: 10	Box Culvert – View facing southwest depicting demarcation liner and plywood

Photograph: 11	Box Culvert – View facing northwest depicting infiltration liner fill compaction



Photograph: 12	Box Culvert – View facing north depicting completed culvert fill

Photograph: 13	Box Culvert – View facing northwest depicting traffic cone protection, completed culvert fill area, and surplus crusher run stockpile.

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