ED/Troy Hill

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September 10, 2003

Mr. Kristofer L. Singleton, P.E.
Environmental Manager
Department of Public Works
Bureau of Environmental Services
6751 Gateway Drive, Suite 514
Columbia, MD 21046-2167

SUBJECT: Geophysical Survey Results
Task 02 – Troy Hill Site Phase II

Dear Mr. Singleton,

Weston Solutions, Inc. (WESTON) performed a geophysical investigation on December 2 through 4, 2002 at sites found within the Troy Hill Parcels 371/345/186(a & b) and 561 located in Howard County, Maryland as part of the Phase II activities proposed in Amendment 2, Revision 1 approved by HCBES on November 15, 2002. The survey included six areas of concern (AOC) previously identified and marked by Phase I activities. During the survey, electromagnetic (EM) and ground penetrating radar (GPR) methods were used to locate features not representative of the native subsurface. This letter summarizes the geophysical instrumentation, methodologies, results and conclusions of the December 2002 investigation.

OBJECTIVES

The primary objective of this survey was to geophysically scan the subsurface environment to delineate and map anomalies indicative of buried subsurface cultural features in previously identified AOCs as defined in Table 1.

Table 1: Geophysical Survey Locations

Geophysical Location (KCI A#/WESTON W#)	Issue
A5 – Concrete and asphalt pad; fill pipe, and rusted steel feature 4" bgs behind foundation. Conduct EM-31 survey over 125 X 125-foot area up to fence as flagged. Use 10 foot line spacing. Conduct GPR over anomalies and steel features as access allows. EM-61 profile along fence.	**Accessibility needs to be improved** = Area is generally clear however *waist high grass along the fence line requires clearing (brush-hogging) between yellow flags*. Vehicular access possibly on south side of fence with coordination with State.

Geophysical Location (KCI A#/WESTON W#)	Issue
W4 – a.k.a. "Structure 5" from SHA plat: open area on Parcel 186 approximately 100-feet north of A-5. Conduct EM-31 survey over 125 X 125-foot area as flagged, from top of slope to point 50-ft west of power pole stump. Use 10 foot line spacing.	**Area open and accessible** = *No clearing required*
A8 – Concrete foundation in L-shape by stream. Conduct 4 to 6 EM-31 profiles through depression. Transects approx. 75 to 100-feet long extending past edges.	**Rectangular depression** = Small concrete foundation on southeast corner. Area open and accessible. *No clearing required.*
A12 – Foundation and collapsed shed, iron drain pipe and construction debris (this location described similar to #11 in KCI report). Conduct EM-31 survey over 125 X 125-foot area up to fence as flagged. Use 10 foot line spacing.	**Location not certain, poor accessibility** = Area heavily overgrown, many thickets and small diameter trees in area. *Requires extensive clearing (brush-hogging) of entire survey area between yellow flags.*
W1 - Parcel 561 - Area of suspect fill. Conduct EM-31 survey over 200 X 150-foot area up to stream as flagged. Use 10 foot line spacing. Conduct GPR as access allows. Will support future Geoprobe activities.	**Poor accessibility** = Area is bordered by stream to south, a fence to the west, and heavy woods to north and east. Requires *clearing (brush-hogging) thickets and briers on north side.*
W2 - Small 5 to 7-ft diameter depression. Conduct 1 EM-31 profile across depression.	**New Area identified during recon** = Area accessible. *No clearing required.*
W3 - "24 July 02 Berm" – Conduct 4 to 6 EM-31 profiles perpendicular to berm. Transects approx. 75 to 100-feet long extending as much as possible off berm.	**New Area identified during recon.** = Area slightly overgrown, but accessible with EM-31. *No clearing required.* Portion of berm intersects fence restricting access to entire area of concern.
A20-21 – Berm parallel to creek. Conduct 4 to 6 EM-31 profiles parallel to and on top of berm. One profile along creek as access allows. Transects approx. 75 to 100-feet long extending as much as possible past terminus.	**Accessibility could be improved** = Area has heavy vegetation (brush and small diameter trees). *Requires clearing 4 to 5 lines (2-ft wide by 100 ft long) parallel to berm.*

Figure 1 shows these locations as sites A5 (A5 and W4), A8, A12, A21 (A20-21), Parcel 561 (W-1), and Parcel 345 (W2 and W3). The clearing discussed in the issues column that would allow for access to perform the survey was conducted by Howard County on November 13 through 15, 2002.

TECHNICAL OVERVIEW

Survey Implementation

Prior to conducting the survey, WESTON personnel performed a site reconnaissance walk through to determine AOC locations and establish survey boundaries. Each area was digitally mapped using a Differential Global Positioning System (DGPS) to reference surface features such as buildings, roads, fences, etc. These features were used to generate surficial map overlays for the geophysical contour plots.

Geophysical data and DGPS coordinate information were acquired during each survey. This approach allowed for rapid data collection while achieving sub-meter accuracy. These coordinates were then projected to North American Datum (NAD) 83/Maryland CS83, in US Survey Feet units.

Electromagnetic (EM-31) Methodology

A Geonics, Ltd. EM-31 terrain conductivity meter was used to measure apparent conductivity in the subsurface. The unit is battery-powered and operates at a frequency of 9.8 kilohertz (kHz). The EM-31 consists of a transmitting coil, receiving coil, phase sensing circuits, and an amplifier in a fixed 3.7 meter (m) boom. The instrument utilizes the coiled loop transmitter in dipole mode, to produce a fixed primary magnetic field inducing a current proportional to the conductive nature of the subsurface environment. The voltage circulating within the conductive material, in turn, generates a secondary eddy current. The EM-31 receiver then measures this secondary field and calculates apparent conductivity in units of milli-siemens per meter (mS/m) by determining the ratio between the induced and secondary fields.

The EM-31 collects both the in-phase and quadrature components of the conductivity. The quadrature component is sensitive to conductors with low conductivity such as natural materials. The in-phase component has greater sensitivity towards highly conductive objects such as buried metallic materials. Both components were individually analyzed and subsequently compared for interpretation. For the investigation conducted at Troy Hill, the field crew utilized the vertical dipole mode to maximize the penetration depth of the signal. The effective depth of exploration associated with this mode of operation is approximately 3m as measured from the center point of the transmitter/receiver coils (McNeil, 1980).

Prior to conducting the survey, the EM-31 was calibrated and nulled in accordance with the instruments operating manual at an established base station. Both Quadrature and Inphase components were recorded individually to determine common background levels at this station. Survey data were collected at 1.5 ft intervals and digitally recorded to memory by an Omni Data Logger. The data logger and DGPS interface were initially time synchronized and monitored periodically to detect any temporal change over the survey period.

Metal Detection (EM-61 MK2) Methodology

Metal detection surveys were conducted using a Geonics, Ltd. EM-61 MK 2™ high sensitivity metal detector. The EM-61 MK 2 is battery-powered and operates at a maximum output of 10,000 millivolts (mV). This system consists of two 1 x 0.5 meter (m) air-cored coils with the top coil 28 cm above the bottom coil. The transmitter generates a pulsed magnetic field that induces eddy currents in conductive objects within the subsurface. These currents are proportional to the conductive nature of the material below the instrument. When conductive objects are present below the instrument, the amplitude and decay time of the induced eddy currents vary in response to depth, size, mass and orientation of the objects. The bottom receiver coil measures the amplitude of these eddy currents at 216, 366, and 660 micro-second (μsec) intervals (time gates) during the decay period. The top coil measures the response at the same 660 μsec time gate as the bottom coil. Using the amplitude and duration of response of an anomaly with respect to these different time gates, estimates of the relative size and depth of the anomaly can be determined. The effective detection depth for the EM-61 MK 2 is a function of target characteristic (i.e. composition, mass, depth, and orientation) and local terrain noise. The EM-61 MK 2 can detect larger masses (i.e., 55-gallon drums) at depths of greater than 10 feet (www.geonics.com/em61.html).

Prior to conducting the survey, the EM-61 MK2 was calibrated and nulled in accordance with the instruments operating manual at an established base station. The Allegro Pro field computer was time synchronized with the DGPS to coordinate EM response to real time position. At the end of each survey, both data loggers were checked for temporal lags between clocks.

Each EM-61 MK2 survey was designed to provide high-resolution "dense" data collection to provide maximum coverage over the area of investigation. Parallel survey lines were run where possible at spacing raging from 5 to 10 feet based on stipulations set forth within the scope of work (SOW). The electromagnetic response produced by conductive subsurface objects was digitally recorded at ~0.6 ft intervals by each of the 4 time gates as the operator traversed each line.

Data Management

Upon completion of the mapping activities, data stored in the EM-61 MK2 data logger were downloaded and backed up on a field computer. Data were reviewed for completeness and accuracy. The EM-61 MK2 data were reviewed for comprehensive surficial coverage and data quality. The raw data were processed using DAT31 and DAT61MK2 software. Contour plots were then output by OASIS Montaj plotting software developed by Geosoft.

Anomaly Identification and Reacquisition

In accordance with the SOP, positions of anomalies identified in the EM contour plots of A5 and Parcel 561 were uploaded into the DGPS as waypoints to reacquire and flag these features in the field. These anomalies were prioritized for further investigation with GPR where open and accessible to the antenna. Twelve transects varying from 30 to 60 feet long, were collected over these anomalous areas. Four additional GPR transects were run over anomalies located within site A12 for further analysis. Upon completion of the survey, locations of these transects were recorded by the DGPS and geographically referenced onto the site maps.

Ground Penetrating Radar (GPR) Methodology

GPR surveys were conducted using Geophysical Survey Systems, Inc. Sir System 10A+ Ground Penetrating Radar. The GPR system consists of a control/display unit, mainframe/data storage unit, microcomputer, and 500-megahertz (MHz) antenna. Subsurface conditions are imaged by recording reflected high frequency electromagnetic waves transmitted and received by the antenna. Objects with varying electrical characteristics determine the amplitude and velocity of these reflections. Radar anomalies are typically in the form of hyperbolic diffraction patterns, high amplitude horizontal, and chaotic reflectors. Hyperbolic waveforms are indicative of point source objects such as pipes, utility conduit, drums, boulders, USTs, and discrete metal objects. High amplitude horizontal reflectors are indicative of subsurface layers such as buried structure, fill material, and/or soil layers of high moisture content. Chaotic reflectors are typically associated with heterogeneous or mixed fill material. This system is capable of producing real time continuous 2-D images during data acquisition. Data was collected using a range of 50-nanoseconds (ns) on the radar profile at a rate of 512 samples/scan. Following the survey, data was then processed and viewed using FIELDVEW and RADVIEW software.

RESULTS

A total of 11 anomalies were detected throughout all six AOCs geophysically investigated at Troy Hill as summarized in Table 2. These anomalies have been prioritized by their electromagnetic characteristics and/or GPR response. Coordinates marking the locations of the 11 anomalies are provided in Table 2. The In-phase conductivity component plots are provided for all AOCs scanned via the EM-31 method. The Quadrature conductivity component plots are included for those areas that have suspected varying soil or material conductivities. AOCs surveyed via the EM-61 MK2 method were individually analyzed based on individual profiles. The following describes the results for each AOC.

Site A5

The EM-31 In-phase contour plot of Site A5 is provided in Figure 2. Four anomalies have been identified in the flagged and accessible area. A steel object lies between A5-1 through A5-3. Areas with additional visible metal debris that may mask responses from features below ground surface were noted on the figures. Anomalies A5-1 through A5-4 appear to originate from subsurface materials. These anomalies vary from 15 feet to 8 feet in diameter and most likely represent relatively smaller conductive items.

Four GPR transects were run to further image and characterize these anomalies. Anomalies A5-1 through A5-3 correspond to high amplitude reflectors visible in GPR profiles. GPR transect 2 illustrated in Figure 3 images anomaly A5-3 as a high amplitude hyperbolic signature approximately 3 feet (ft) below ground surface. These signatures are often associated with isolated metallic material or materials exhibiting differing characteristics than surrounding soils. GPR transect 4 does not image anomaly A5-4 as displayed in the EM-31 contour plot. Such an anomaly is considered lower priority and may possibly be a near surface object rather than a large drum or tank.

Site A12

Two primary anomalies (A12-1 and A12-2) are displayed in the Site A12 EM-31 In-phase contour plot depicted in Figure 4. Four GPR transects were run to further delineate and characterize these anomalies. GPR Transect 2 illustrated in Figure 5, displays horizontal-high amplitude reflections, which corresponds to Anomaly A12-1. This feature appears to be approximately 2.5-3 feet (ft) in depth and extends greater than 3 ft horizontally. The in-phase expression is substantially larger at approximately 22 feet in diameter. Such a response often indicates a large single conductive item. Anomaly A12-2 outlines the approximate extent of a suspected foundation delineated by GPR transects 3 and 4. A12-3 is considered lower priority anomaly due to its size and electromagnetic response. This anomaly was not accessible to the GPR survey.

Parcel 561

The EM-31 In-phase and Quadrature component contour plot of Parcel 561 are provided in Figures 6 and 7 respectively. Anomalies P561-1 and P561-2 are visible in both In-phase and Quadrature plots. These anomalies indicate areas containing highly conductive materials. Figure 8 illustrates GPR transect 2 which shows a highly reflective stratified layer associated with Anomaly P561-1. This reflective layer appears to dip slightly to the north starting at approximately 3-feet bgs. and continuing beyond the 8-foot profile depth. The high amplitude, horizontal characteristics of the radar signature are typical of

Table 2
Anomaly Summary Table

Anomaly I.D.	Northing	Easting	Priority	Anomaly Length (ft)	Depth bgs. (ft)	Description
A5-1	555073.79	1381709.76	High	15	1-3	Potential isolated metallic feature.
A5-2	555055.37	1381703.78	High	10	0-2	Anomaly adjacent to steel object visible on the surface. Potentially an effect from a larger metallic object.
A5-3	555054.66	1381684.65	High	8	3	Isolated metallic feature visible in electromagnetic and GPR data.
A5-4	555008.99	1381660.74	Low	8	0-1	Potential conductive surface debris not imaged by GPR.
A12-1	555000.69	1381426.01	High	16	2.5-3	Large circular anomaly from a suspect metallic object. Extensive expression indicates a larger feature.
A12-2	554957.98	1381427.28	High	37	0-2	Approximate perimeter of a suspect foundation.
A12-3	554986.739	1381494.94	Low	5	~0-3	Potential metallic object inaccessible to GPR profiling.
P561-1	556137.41	1380016.02	High	120	3+	Large conductive horizons observed primarily on the crest of hill. Conductive areas can be distinguished from adjacent soils.
P561-2	556086.2	1380027.47	High	25	~3+	Potential continuation of P561-1. Area was inaccessible to GPR profiling.
P561-3	556021.36	1380110.83	Low	50	0	Potential influence from scattered surface debris.
A21-1	555259.35	1380879.97	Low	46	0-1	Potentially conductive soil lying adjacent to the berm.
A8-1	555333.40 555304.96 555293.55 555265.02	1381297.72 1381311.85 1381213.34 1381224.77	Low	95X32	0	Coordinate positions mark the depression corners. Area most likely a former building foundation.

*All Coordinate Positions taken from center of Anomalies.
bgs. – Below grade surface

consolidated homogeneous materials such as denser soil or something foreign to the existing, native features. Anomaly P561-3 appears to be influence from sporadic metallic debris scattered on the surface. GPR transects 7 and 8 do not image any significant features at depth.

Site A21

EM-31 In-phase and Quadrature component contour plots of Site A21 are provided in Figures 9 and 10 respectively. A single anomaly (A21-1) was detected in this area, located just north of the berm. Anomaly A21-1 has a low positive response slightly above normal background levels as illustrated by the In-phase plot. A similar anomalous high is evident in the Quadrature component plot adjacent to the berm. Such anomalies are indicative of sporadic pockets of conductive soils or other minor physical changes in material properties. A similar anomalous high located in the southern most extent of Figure 10 is typical of varying soil properties and water saturation from the top of the berm to the bottom of the streambed.

Site A8

In-phase and Quadrature conductivity component plots for Site A8 are provided in Figures 11 and 12 respectively. Anomaly A8-1 outlines the rectangular depression not readily visible in either In-phase or Quadrature contour plots. In field observations suggests this depression marks the perimeter of a former foundation. Slight response variations indicate suspect small metallic items or debris. A slight conductivity increase toward the north of A8 is indicative of increasing water saturation.

Parcel 345

The EM-61 MK2 Metal Detection method was used to scan approximately 55 feet of an elongated berm observed at Parcel 345. The late gate response is displayed in Figure 13. A single anomaly was recognized and identified in the field as a buried signpost. Other slight variations in the EM response were observed near the chain link fence. The remainder of Parcel 345 appears to be devoid of large metallic debris.

Parcel 345A

A small surficial depression located within Parcel 345 was surveyed using the EM-31 method and the associated in-phase conductivity component plot is provided in Figure 14. Conductive debris within this depression is not apparent.

CONCLUSIONS

The geophysical survey conducted at the Troy Hill site in Howard County, Maryland provides evidence of 7 high priority anomalies indicative of potential anthropogenic materials or features remaining at the site. Table 2 includes each anomalies unique I.D., location (state plane coordinates), and ranking with anomaly size, depth below ground surface (bgs) and example object types.

Anomalies A5-1 through A5-3 appear to be distinct subsurface metallic features. A12-1 has a discrete well-defined boundary indicative of a single buried conductive object. A12-2 defines the lateral extent of a potential foundation. Anomalies P561-1 and P561-2 appear to correlate with a highly reflective dipping layer imaged by the GPR indicating conductive soils or other laterally extensive conductive materials unlike surrounding soil characteristics. Anomaly P561-3 can be related to conductive surface debris that may mask any buried objects. Anomaly A21-1 is indicative of pockets of varying soils and other fill material and does not appear to be associated with metallic objects.

Because the EM and GPR are non-intrusive methods, these data do not preclude the possibility that other types of waste materials may be present. Actual "ground truth" of the geophysical data can only be ascertained from physical characterization of the subsurface material using intrusive methods (e.g. geoprobe, test pits).

RECOMMENDATIONS

WESTON recommends that the County conduct focused intrusive investigations at the high priority targets identified above using shallow excavation test pits to physically confirm sources of anomalies.

Please do not hesitate to contact me at (301) 208-6844 or Jim Ruffing at (301) 208-6881 with any questions or comments regarding the geophysical survey results.

Very truly yours,

WESTON SOLUTIONS, INC.

Jeffrey Nelson
Project Manager

Attachments

REFERENCES

Geonics, Ltd., 1995. Operating Manual for EM31.

Geonics, Ltd., 2002. Operating Manual for EM61.

Ulrickson, C. P., 1982 Application of Impulse Radar to Civil Engineering, Lund University of Technology.

FIGURES
(1 through 14)

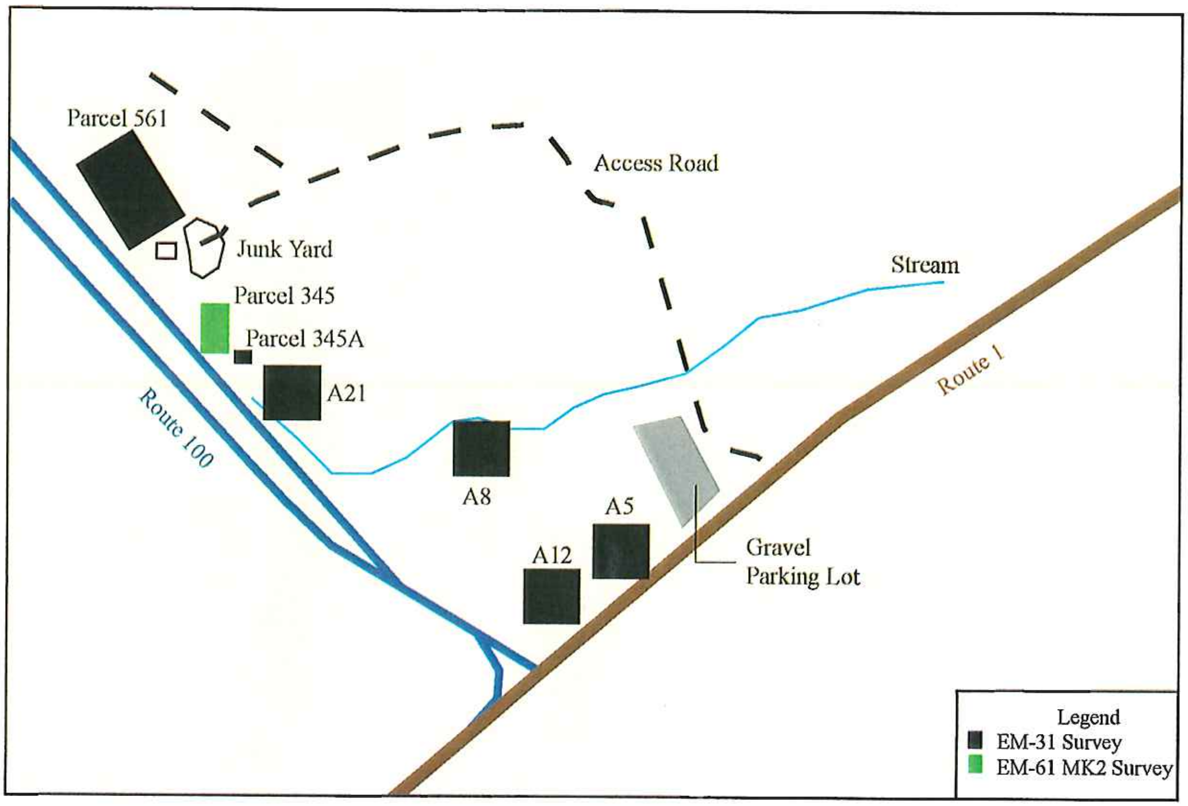
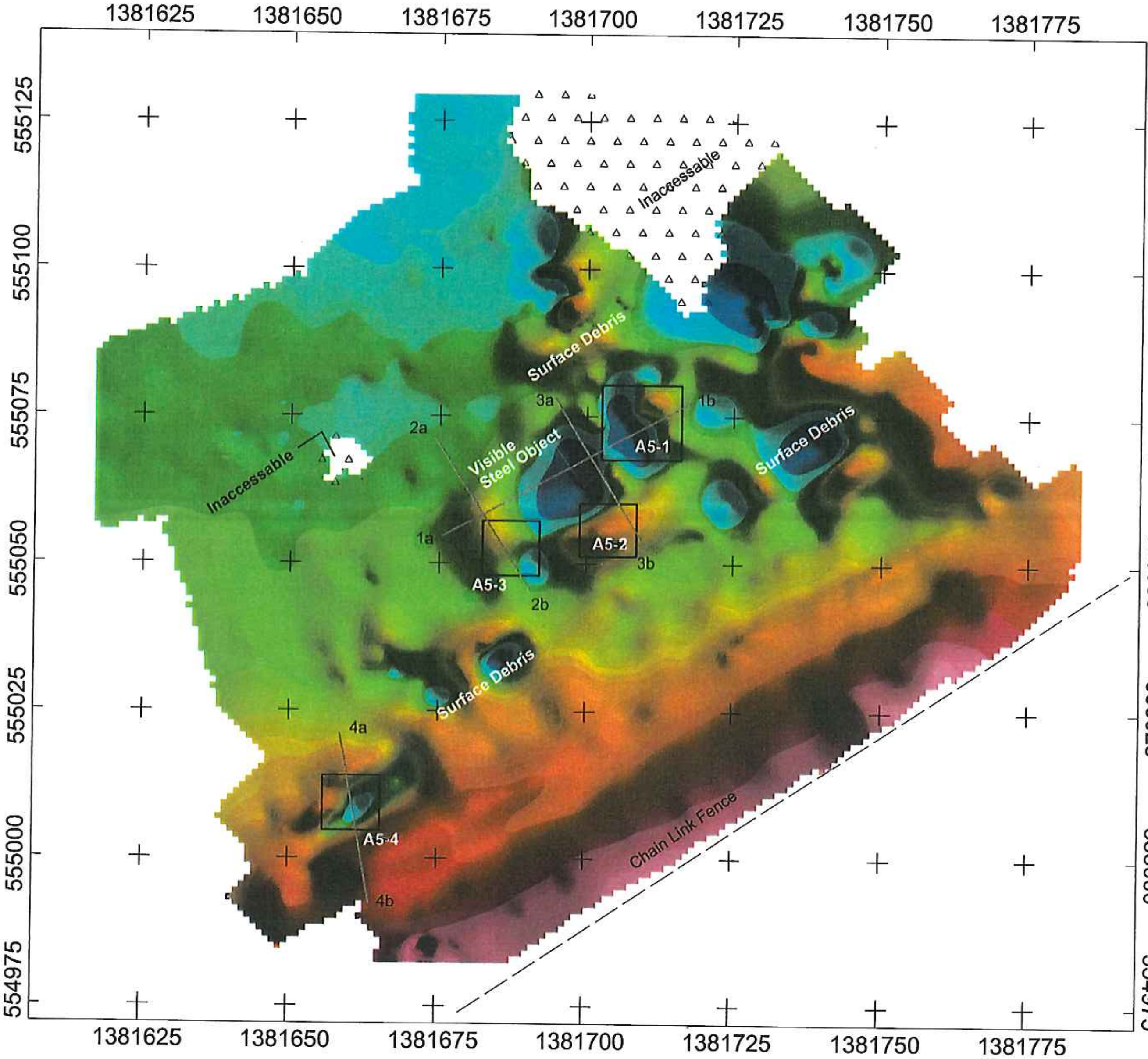


Figure 1: Troy Hill, Howard County, Maryland site map illustrating approximate geophysical survey locations.



Legend

Scale 1:342

25 0

Coordinates in NAD 83, Maryland CS83 projection.
Coordinates Units are U.S. Survey Feet

A5-# Anomalous Feature

GPR Transect

Figure 2

Inphase (ppt)

-2.4 -0.3 -0.1 -0.0 0.1 0.2 0.2 0.4 0.6 0.8 1.1 1.4 1.7 2.2 2.6 3.1 4.2 6.4 11.3

HOWARD COUNTY, MD

SITE A5
GEOPHYSICAL INVESTIGATION
EM-31 TERRAIN CONDUCTIVITY SURVEY

INPHASE COMPONENT

Weston Solutions, Inc.

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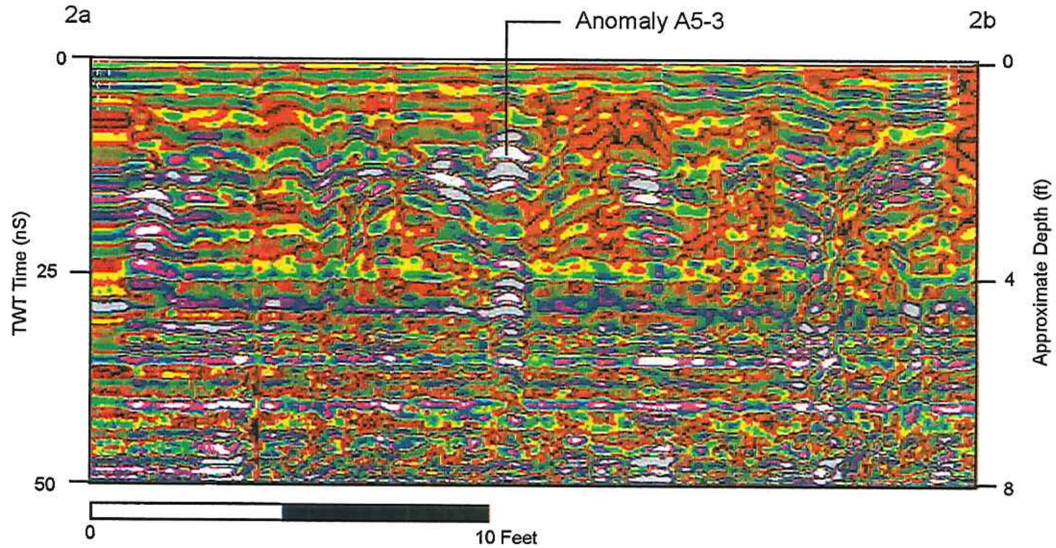
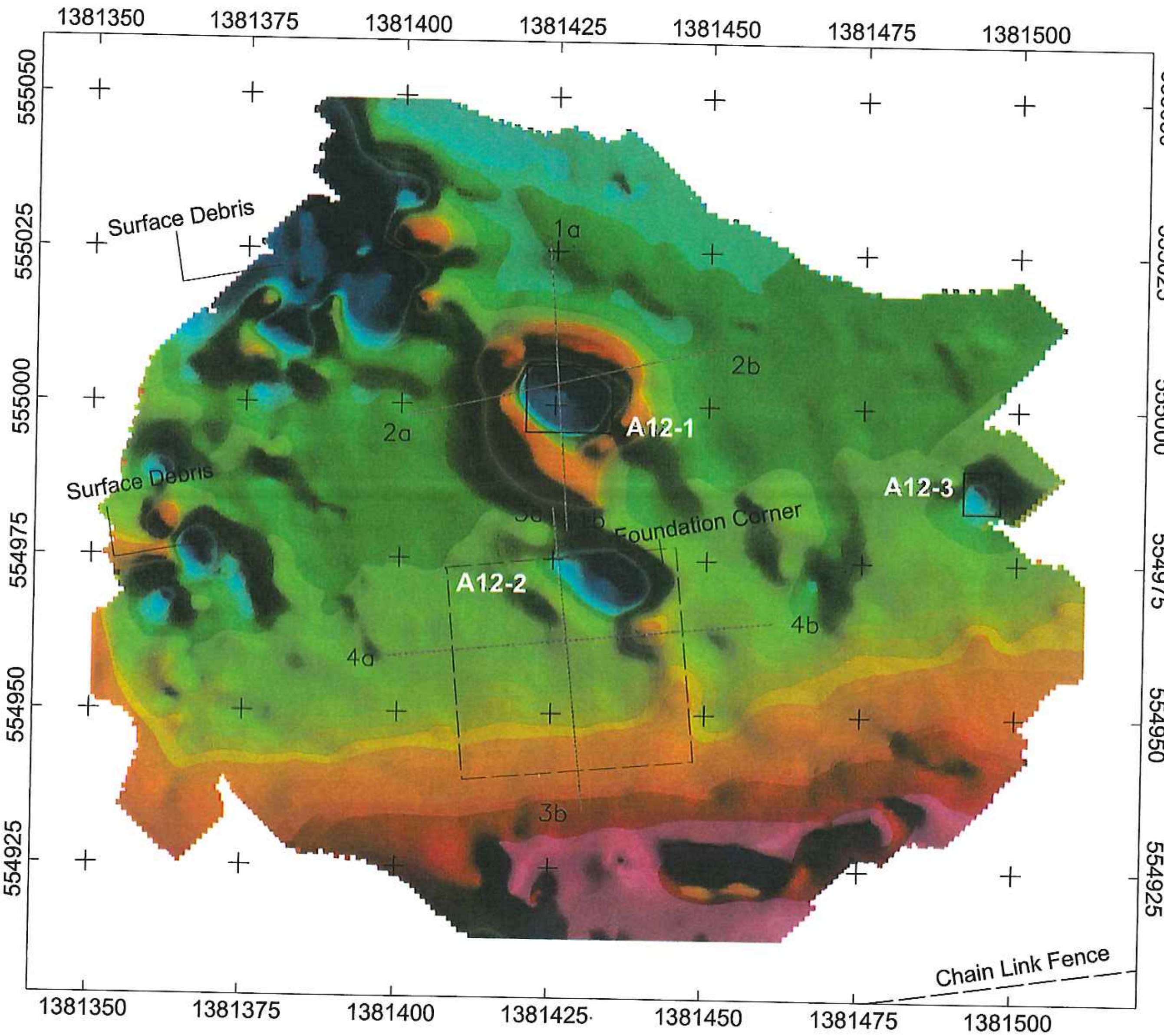


Figure 3

HOWARD COUNTY, MD
SITE A5 GEOPHYSICAL INVESTIGATION GROUND PENETRATING RADAR SURVEY
LINE 2
Weston Solutions, Inc.



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Scale 1:324

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Coordinates in NAD 83, Maryland CS83 projection.
Coordinate Units are U.S. Survey Feet

A12-#	Anomalous Feature
——	GPR Transect

Figure 4

Inphase (ppt)

-1.6 1.9 2.1 2.2 2.3 2.4 2.5 2.5 2.6 2.8 2.9 3.1 3.3 3.5 3.8 4.2 4.7 5.6 6.6

HOWARD COUNTY, MD

SITE A12
GEOPHYSICAL INVESTIGATION
EM-31 TERAIN CONDUCTIVITY SURVEY

INPHASE COMPONENT

Weston Solutions, Inc.

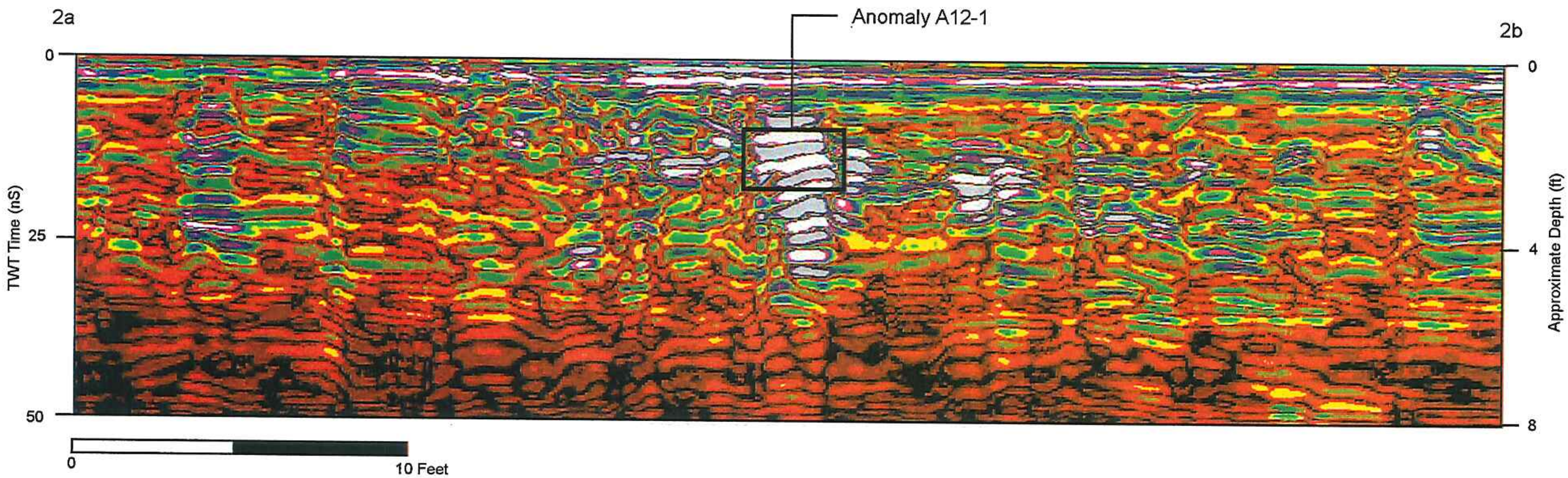
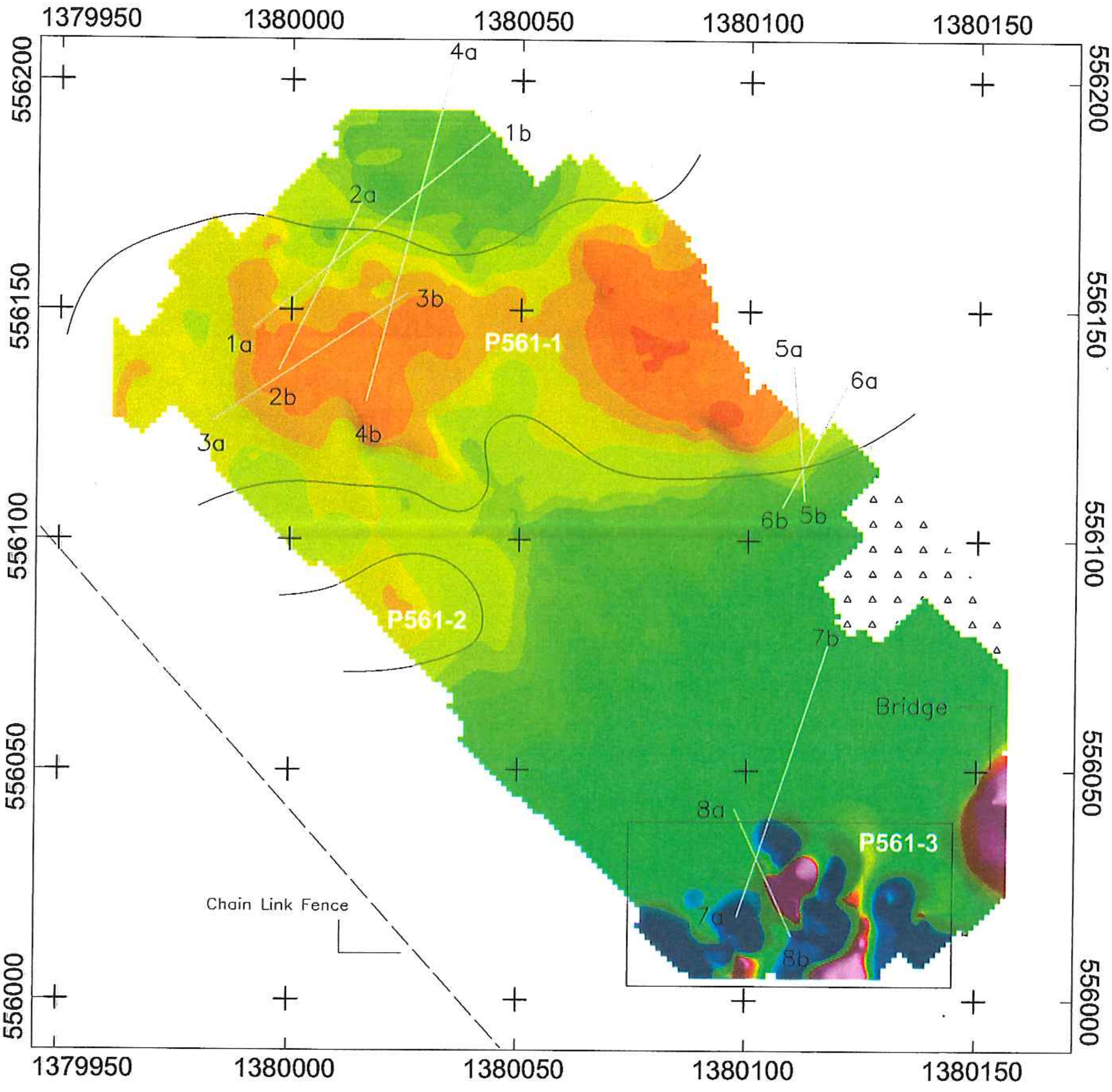


Figure 5

HOWARD COUNTY, MD
SITE A12 GEOPHYSICAL INVESTIGATION GROUND PENETRATING RADAR SURVEY
LINE 2
Weston Solutions, Inc.



Legend

Scale 1:500

25 0 25 50

Coordinates in NAD 83, Maryland CS83 projection.
Coordinate Units are U.S. Survey Feet

P561-# Anomalous Feature

GPR Transect

Figure 6

Inphase (ppt)

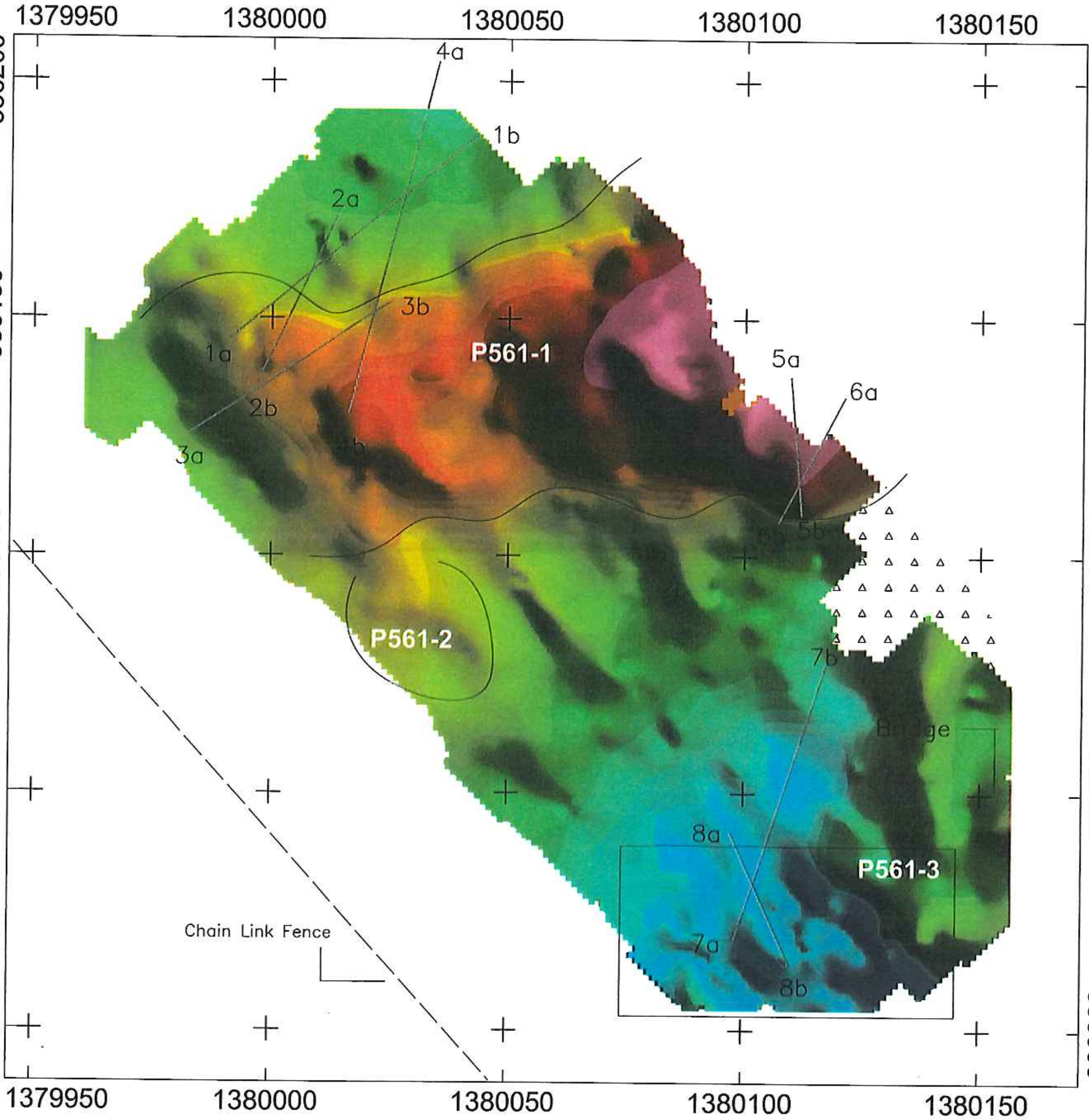
-0.9 -0.2 0.3 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.3 2.5 2.8 3.0 3.3 3.6 4.1

HOWARD COUNTY, MD

Parcel 561
GEOPHYSICAL INVESTIGATION
EM-31 TERRAIN CONDUCTIVITY SURVEY

INPHASE COMPONENT

Weston Solutions, Inc.



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Scale 1:500

25 0 25 50

Coordinates in NAD 83, Maryland CS83 projection.
Coordinate Units are U.S. Survey Feet

P561-# Anomalous Feature

GPR Transect

Figure 7

Quadrature (mS/m)

6.8 25.1 20.0 31.5 34.8 37.9 40.5 43.0 45.5 47.1 49.3 51.4 53.8 56.2 58.8 61.8 64.2 67.8 77.4

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Parcel 561
GEOPHYSICAL INVESTIGATION
EM-31 TERRAIN CONDUCTIVITY SURVEY

QUADRATURE COMPONENT

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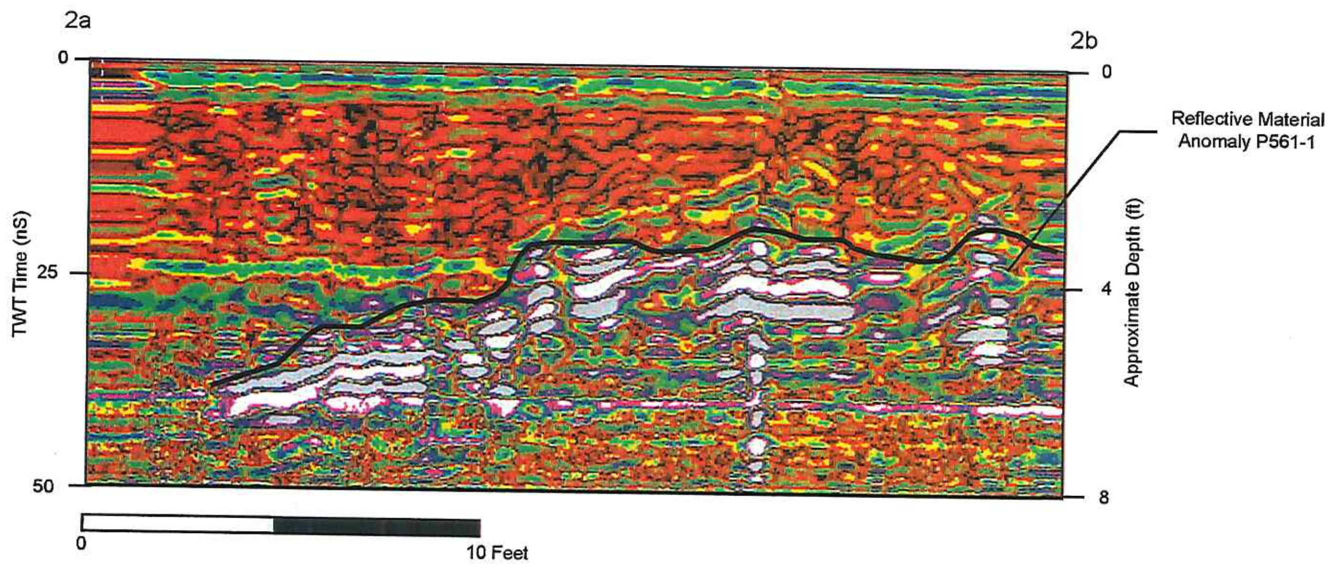
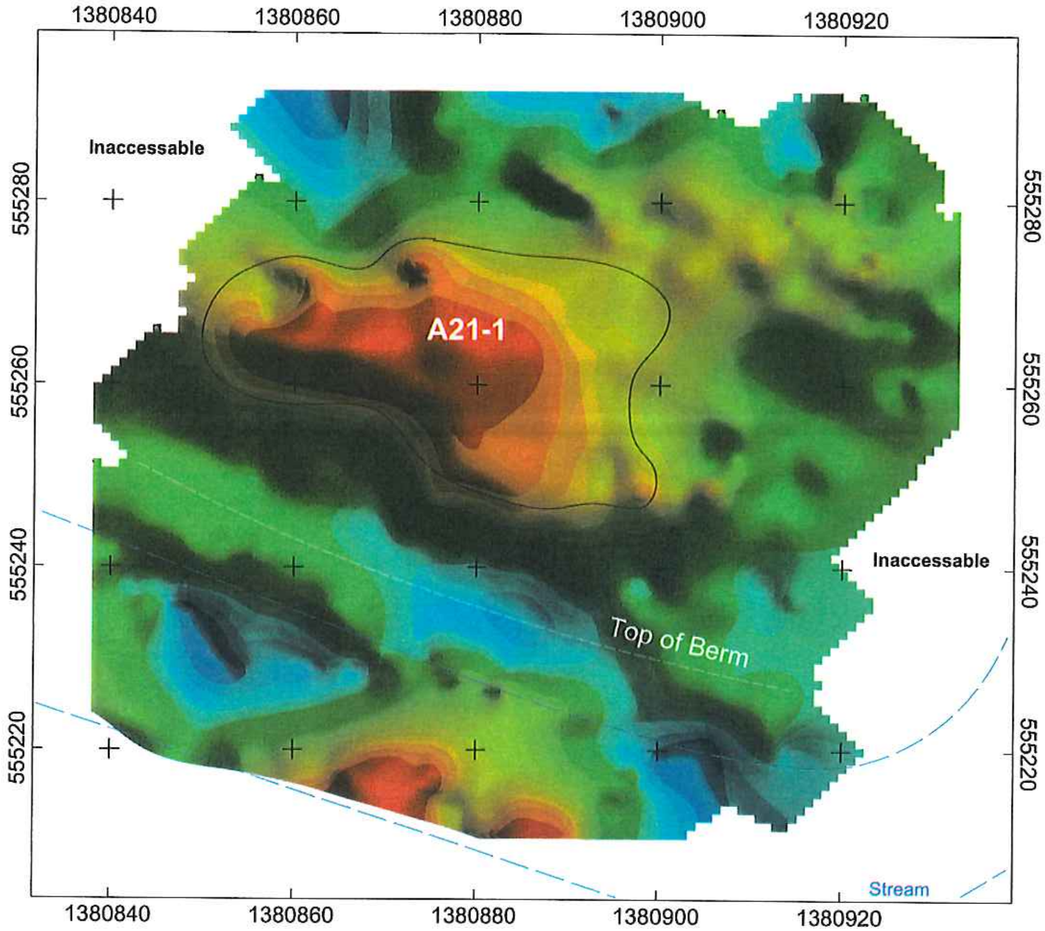


Figure 8

HOWARD COUNTY, MD
PARCEL 561 GEOPHYSICAL INVESTIGATION GROUND PENETRATING RADAR SURVEY
LINE 2
Weston Solutions, Inc.



Legend

Scale 1:212

10 0 10 20

Coordinates in NAD 83, Maryland CS83 projection.
Coordinate Units are U.S. Survey Feet

A21-# Anomalous Feature

Figure 9

Inphase (ppt)

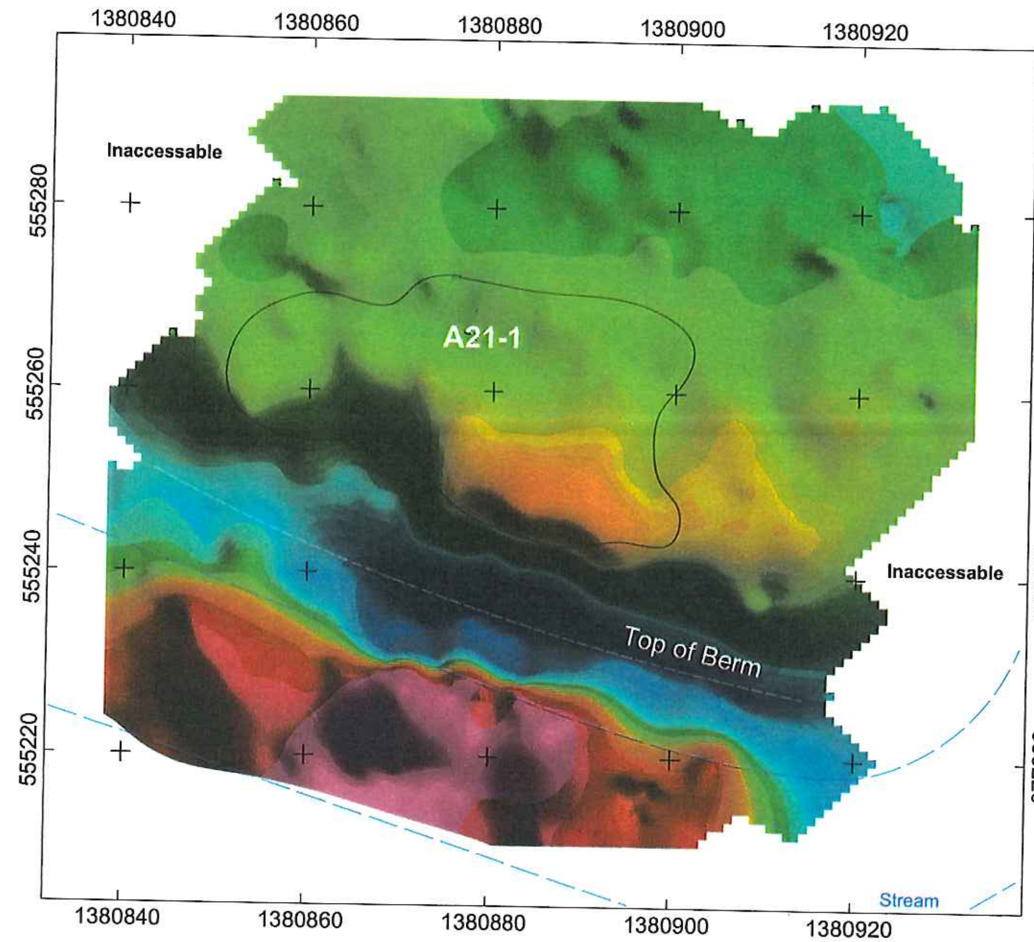
-1.5 -1.1 -0.9 -0.7 -0.6 -0.5 -0.4 -0.3 -0.2 -0.1 0.0 0.1 0.2 0.3 0.4 0.6 0.7 0.9 1.2

HOWARD COUNTY, MD

SITE A21
GEOPHYSICAL INVESTIGATION
EM-31 TERAIN CONDUCTIVITY SURVEY

INPHASE COMPONENT

Weston Solutions, Inc.



Legend

Scale 1:212

10 0 10 20

Coordinates in NAD 83, Maryland CS83 projection.
Coordinate Units are U.S. Survey Feet

A21-# Anomalous Feature

Figure 10

Quadrature (mS/m)

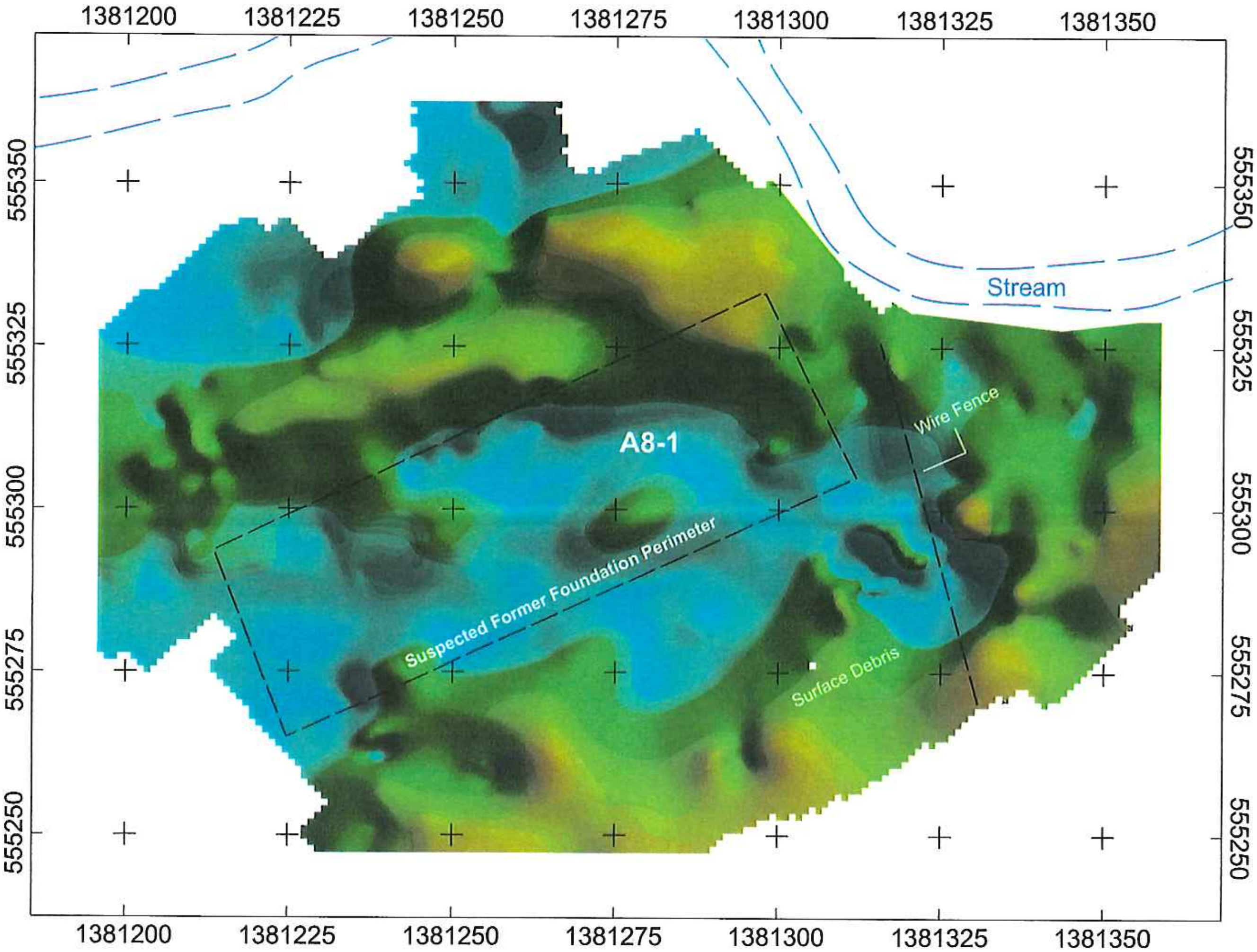
9.6 13.8 16.3 18.0 19.4 20.7 21.9 23.0 24.0 25.1 26.2 27.2 28.2 29.3 30.7 32.0 33.5 35.4 38.6

HOWARD COUNTY, MD

SITE A21
GEOPHYSICAL INVESTIGATION
EM-31 TERAIN CONDUCTIVITY SURVEY

QUADRATURE COMPONENT

Weston Solutions, Inc.



Legend

Scale 1:334

25 0

Coordinates in NAD 83, Maryland CS83 projection.
Coordinate Units are U.S. Survey Feet

A8-# Anomalous Feature

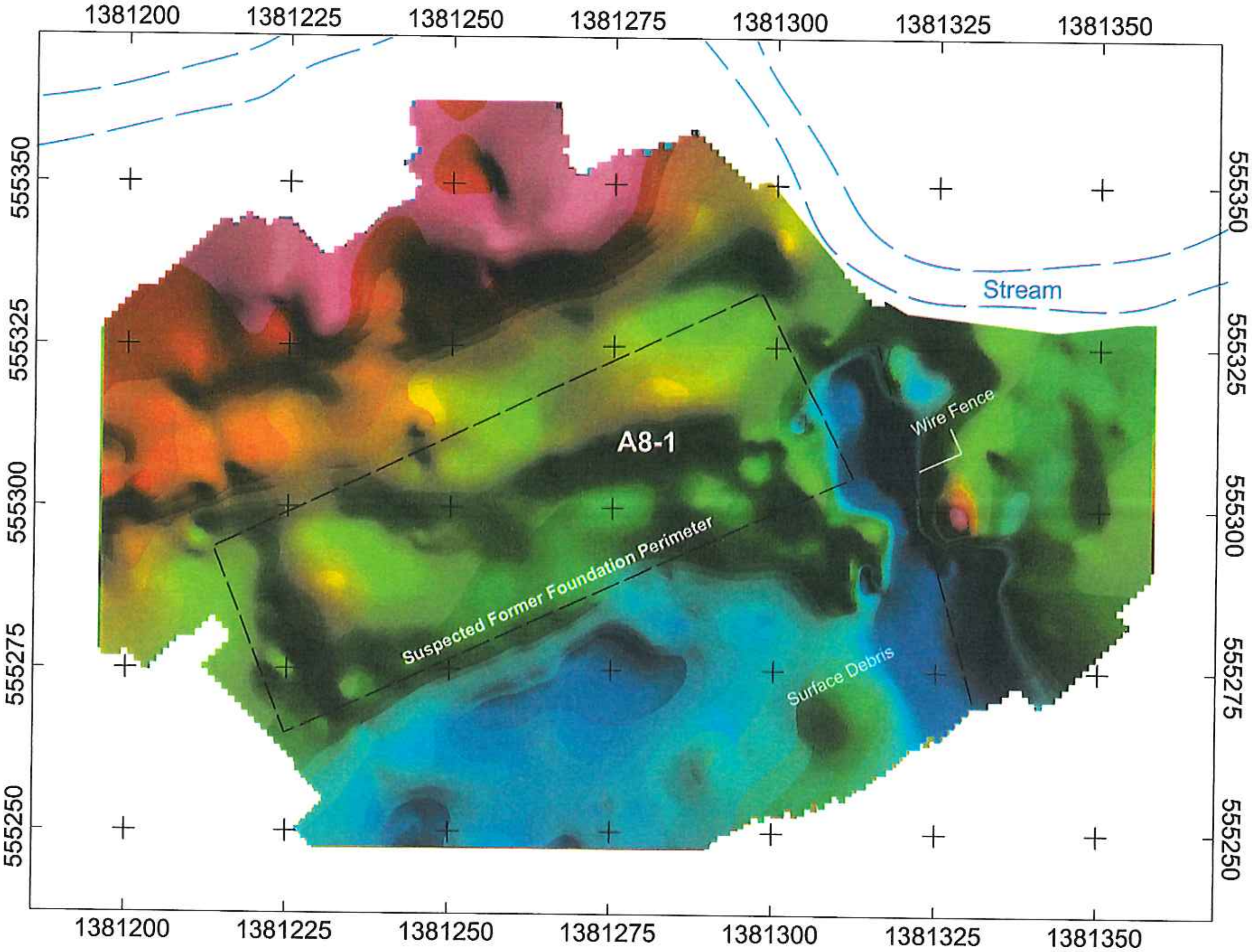
Figure 11

Inphase (ppt)

-3.4 -3.0 -2.7 -2.5 -2.4 -2.2 -2.1 -2.0 -1.9 -1.8 -1.6 -1.5 -1.4 -1.3 -1.1 -1.0 -0.8 -0.6 -0.3

HOWARD COUNTY, MD
SITE A8 GEOPHYSICAL INVESTIGATION EM-31 TERRAIN CONDUCTIVITY SURVEY
INPHASE COMPONENT
Weston Solutions, Inc.

WESTON SOLUTIONS



Legend

Scale 1:334

25 0

Coordinates in NAD 83, Maryland CS83 projection.
Coordinate Units are U.S. Survey Feet

A8-# Anomalous Feature

Figure 12

Quadrature (mS/m)

5.1 8.0 8.4 9.0 9.7 10.5 11.2 11.6 12.2 12.9 14.2 15.6 16.6 17.3 18.4 20.2 22.1 23.3 24.2

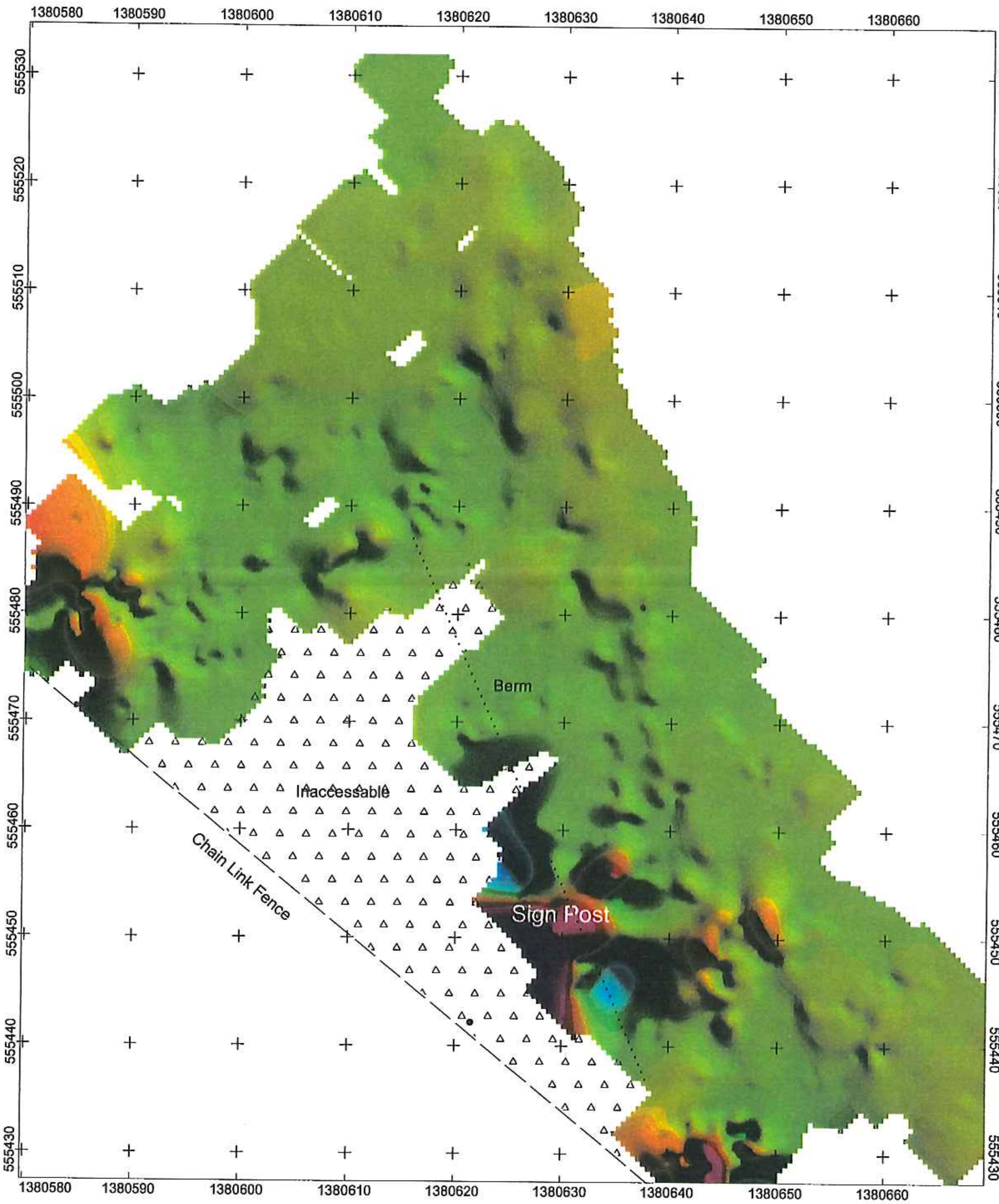
HOWARD COUNTY, MD

SITE A8
GEOPHYSICAL INVESTIGATION
EM-31 TERRAIN CONDUCTIVITY SURVEY

QUADRATURE COMPONENT

Weston Solutions, Inc.

WESTON SOLUTIONS



Legend

Scale 1:112

5 0 5 10 15

US survey foot

Coordinates in NAD 83, Maryland CS83 projection.
Coordinate Units are U.S. Survey Feet

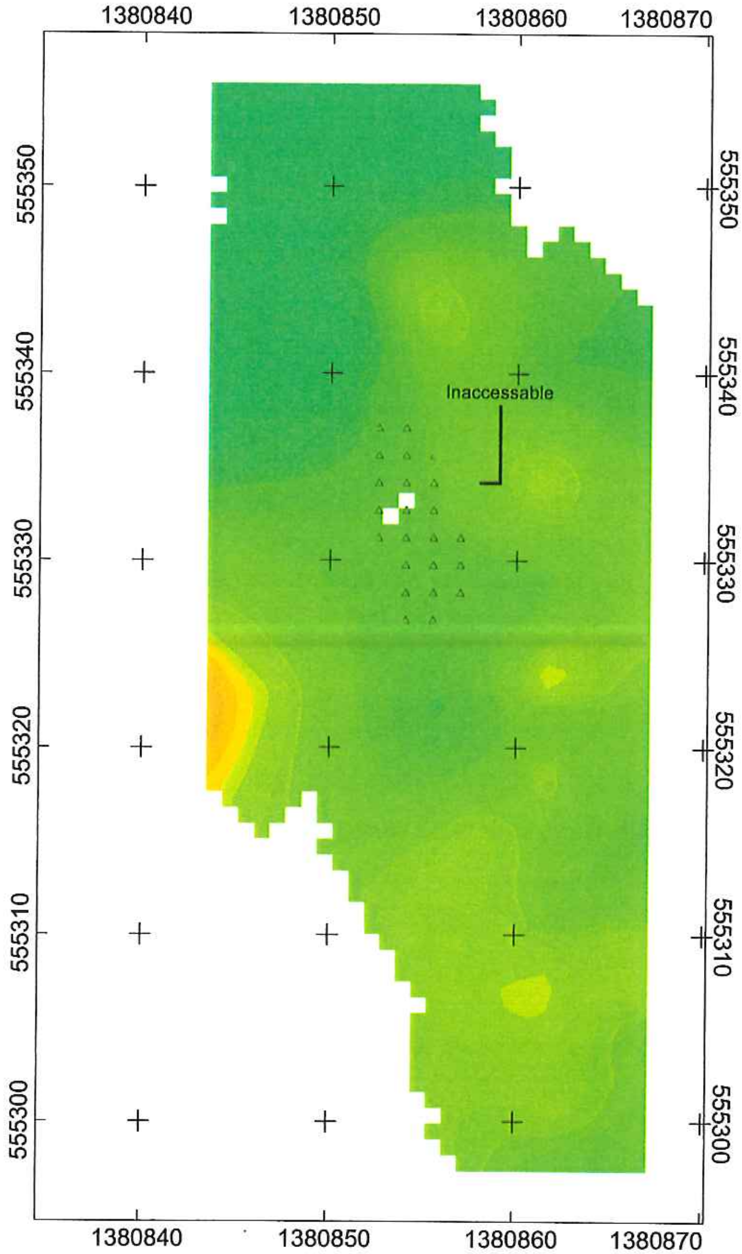
Figure 13

EM-61 MK2 Response (mV)

-12.2 -3.7 -1.5 0.4 2.1 3.5 5.0 6.6 8.0 9.5 11.0 12.7 14.4 16.3 18.2 20.5 24.1 29.4 43.4

HOWARD COUNTY, MD
Parcel 345 **GEOPHYSICAL INVESTIGATION** **EM-61 MK 2 METAL DETECTION SURVEY**
LATE GATE RESPONSE
Weston Solutions, Inc.

WESTON SOLUTIONS



Legend

Scale 1:112

5 0 5

Coordinates in NAD 83, Maryland CS83 projection.
Coordinate Units are U.S. Survey Feet

Figure 14

Inphase (ppt)

-3.5 -2.8 -2.5 -2.2 -2.0 -1.8 -1.6 -1.5 -1.3 -1.1 -1.0 -0.8 -0.7 -0.5 -0.3 -0.1 0.1 0.4 0.9

HOWARD COUNTY, MD

Parcel 345 A
GEOPHYSICAL INVESTIGATION
EM-31 TERAIN CONDUCTIVITY SURVEY

INPHASE COMPONENT

Weston Solutions, Inc.