

PCB Mass Loading Phase II
Former Dagsboro Substation
SIRS ID: DE-1287
Dagsboro, Delaware



Appendix 14

FORMER DAGSBORO SUBSTATION DAGSBORO, DELAWARE

SIRS ID: DE-1287

GENERAL SITE INFORMATION

Site Name: Former Dagsboro Substation

SIRS ID Number: DE-1287

Site Location and Description:

The former Dagsboro Substation is located on the eastern side of Kollock Street between Clayton Street and Pepper Creek Road in Dagsboro, Delaware (Figure 1). The site is approximately 4.1 acres in size and is comprised of one tax parcel (#23311131100) in Sussex County. Although the site is approximately 4.1 acres, the approximately 1 acre area containing the former substation is the focus of this report. The property is bounded to the north-northwest by Clayton Street, beyond which are mixed commercial and residential properties; to the east-northeast by Lingo Road, beyond which is vacant land and a few residential properties; to the south-southeast by vacant, open land and a few residential properties; and to the west by Kollock Street and a railroad right-of-way, beyond which is a commercial/light industrial facility and open land. The surrounding land is generally vacant, residential, and commercial/light industrial.

Overland flow is likely to flow to a tributary of Pepper Creek, located approximately 200 feet south of the southern site boundary. Pepper Creek ultimately discharges into the Indian River Bay.

The former Dagsboro Substation site is currently owned by the Dagsboro Volunteer Fire Company and is maintained as vacant land. The Dagsboro Volunteer Fire Company purchased the property from Delmarva Power and Light (formerly Conectiv). At present, the only structures on the property include a derelict control house, and a selection of concrete slabs and grade beams. The majority of the 4.1 acre site is vegetation, grassy, open land.

Previous Site Uses:

Based on site history, the presence of some of the concrete slabs and foundations on the property can be traced to the 1930's, when the site was reportedly utilized as a tomato cannery. Subsequent uses include a chicken feed mill (closed in 1956) and then as a magistrate's court (ending date unknown). Following initial development on the property, the site was developed incrementally over a twenty-year period and the remaining slabs, foundations, and structures were installed. An electrical substation was located on the southwest portion of the site within a fenced compound for an indeterminate length of time. After the initial site investigation in 1995, a single 500-gallon

underground storage tank (UST) was removed from the property (from the area beyond the boundary of the fenced former electrical substation). DNREC's Tank Management Branch (TMB) issued a No Further Action letter (NFA) for the UST removal in 1997.

Site Regulatory Status:

This section briefly summarizes previous investigations performed on the site through the SIRS program. A current SIRS regulatory status is also included.

Environmental Assessment Former Electrical Substation, Dagsboro, Delaware (EA Engineering, 1999)

The earliest known investigation performed at the former Dagsboro substation was a Phase II investigation performed by Tetra Tech in 1995. Although the Tetra Tech report is not available, Conectiv retained EA Engineering to summarize the Tetra Tech report in 1999. A synopsis of the Tetra Tech investigation is as follows:

In September 1995, Tetra Tech performed a Phase II Environmental Assessment of the former Dagsboro Substation property. The property owner, Conectiv, wanted to determine if PCBs and total petroleum hydrocarbons (TPH) were present on site, and if so, delineate their horizontal and vertical extent. Based on the results of field screening and laboratory analytical data, PCBs were detected in the vicinity of a former voltage regulator (northwest corner of the substation area) and along the northern fenced boundary of the substation area. TPH was also detected along the same area of fence line above DNREC's cleanup level of 100 ppm. Further investigation of the nature of the TPH contamination suggested that a non-PCB mineral oil utilized in electrical equipment was responsible for the elevated TPH detections onsite.

In late 1995, Tetra Tech also performed an investigation and removal of an UST located immediately outside the fenced area of the substation. Following the tank removal, subsurface soil and groundwater sampling was conducted to determine the extent, if any, of impacts on soil and water. Impacts were limited, and no additional remediation was required. DNREC issued an NFA for the removal in 1997.

Based on the findings of the summary report, EA Engineering estimated the approximate volume of soils containing PCBs above the Toxic Substances Control Act (TSCA) clean-up level (10 ppm) to be 29 cubic yards, with approximately a half cubic yard of material exceeding the 50 ppm TSCA threshold. Based on the target clean-up level of 10 ppm for PCBs, EA Engineering outlined several areas for remediation, including the depths to which they should be excavated. EA Engineering also indicated that the elevated presence of mineral oil did not pose a significant human or environmental health risk, and that areas where TPH detections exceeded 1,000 ppm would fall within the boundaries of PCB remedial areas.

Phase I Environmental Site Assessment Report of Conectiv- Former Substation, Clayton and Lingo Streets, Dagsboro, Delaware (Environmental Alliance, 2001)

In November 2001, Environmental Alliance (EA) prepared a Phase I Report for Conectiv summarizing site status and history. The report established the prior uses of the property as a cannery, then a feed fill, and finally as a magistrates' office. The period of operation of the electrical substation was not specified. At the time of the assessment, EA noted that the electrical substation was no longer in service, and no transformers remained on site. Portions of the site were being used as a lay-down area for electrical equipment and machinery. Based on the findings of the Phase I assessment, EA recommended further investigation of the property. EA did not indicate if the remedial actions suggested by previous reports had occurred.

Draft Remedial Investigation/Focused Feasibility Study (Environmental Alliance, 2005)

A total of 57 locations were examined through surface and subsurface soil, groundwater, and concrete chip sampling. Soil samples were screened by the DNREC Lab and then additional analyses were performed on selected samples. During the initial sampling event in April and May of 2004, 86 soil samples were collected and groundwater samples were taken from the five temporary monitoring wells. Based on the initial PCB soil sample results, additional shallow soil sampling was conducted in the northwest part of the property in August 2004 and three additional temporary monitoring wells were installed. Additionally, groundwater samples were collected to delineate the petroleum contamination. In December, eight more shallow soil samples were collected for PCB delineation and the original temporary monitoring wells (TMW-1 through TMW-5) were sampled for dissolved metals analyses. Overall, PCB concentrations in most of the soil samples were either very low or below laboratory detection limits. However, PCBs in sample B-48 (0-2 feet below ground surface) exceeded URS screening levels for Aroclor 1248, 1254, and 1260 at concentrations of 83,000 µg/kg, 14,000 µg/kg, and 6,100 µg/kg, respectively. Only the

groundwater samples from the initial sampling were analyzed for PCBs. For these samples, both dissolved and total PCBs were not detected above laboratory detection limits.

The two areas of concern identified in the RI were the northwest corner of the former substation compound (where the second sampling event occurred) for PCBs and the former UST area for SVOCs, SVOC TICs, and dissolved iron and manganese in the shallow groundwater. Additionally, Environmental Alliance concluded that the degradation of residual petroleum hydrocarbons present in the soil and groundwater were causing iron and manganese (which naturally occur in the soil) to act as a continuous source of dissolved metals in groundwater.

The RI and RA concluded that there was significant risks associated with PCBs in surface soil and dissolved metals in groundwater for some areas. The Report recommended remedial actions to remove the hydrocarbons and therefore allow dissolved metal concentrations in groundwater to be reduced. The proposed remedial action consisted of removal of PCB impacted soil (concentrations exceeding URS levels) and excavation of soil containing residual petroleum hydrocarbons.

Former DP&L Substation – Dagsboro, Soil Excavation Report (Environmental Alliance, 2006)

In April 2006, EA prepared a report detailing the excavation of PCB impacted soils at the former Dagsboro Substation site. The boundaries of the PCB excavation were initially determined using data from EA's 2005 RI/FS report, and were limited to an approximately 40 foot by 50 foot area in the northwest corner of the fenced former substation. During the first phase of the excavation, soils were excavated to a depth of 2 feet below ground surface (bgs) across the marked area. Follow-up sampling of the excavation sidewalls indicated that PCBs were still present above the 1 ppm clean-up level both laterally and vertically. Additional samples were collected from borings located outside of the original excavation and sampled but PCBs were not detected above 1 ppm. The excavation was expanded laterally to the areas delineated by the additional sampling. Follow-up sampling of the floor of the excavation was conducted by dividing the floor area into four quadrants (A, B, C, and D). Composite sampling in each quadrant showed PCB impacts above 1 ppm in all quadrants, with significant contamination (an order of magnitude greater relative to other quadrants) in quadrant A. With the exception of two small areas in quadrants C and D, the excavation was deepened to 4 feet bgs in quadrant A and 3 feet bgs in quadrants B, C, and D. Additional samples were collected and analyses indicated that PCBs were not present above the 1 ppm clean-up level. After the soil removal was successfully completed the excavation was backfilled with DNREC-approved clean fill and re-graded.

Soil was also excavated from the former UST area where there was petroleum hydrocarbon contamination. Upon completion, the excavation was backfilled with clean fill and the area was re-graded.

Following remediation, a groundwater monitoring plan was implemented in March 2006 followed by the implementation of a Groundwater Management Zone (GMZ) in April. In March 2008, an Environmental Covenant restricting the use of groundwater was established. In April 2008, DNREC issued a No Further Action Certification of Completion of Remedy (COCR).

Current Regulatory Status:

DNREC issued a COCR in 2008 and in May 2011 the GMZ was removed. Soil and groundwater contamination has remained below the DNREC unrestricted standards. In February 2013, DNREC-SIRS determined that the site does not pose an unacceptable human health or environment risk and therefore the site was closed. The owner, Dagsboro Fire Department, is currently building a new fire station on the property.

SUMMARY OF SITE PCB INFORMATION

Site Investigation PCB Findings:

For purposes of the PCB loading estimates, surface soil is defined as 0 to 2 feet below ground surface (bgs). Samples collected from soil depths spanning 2 feet bgs were included in both the surface and subsurface data sets.

PCBs were detected in 73 surface soil samples, with concentrations ranging from 0.0054 mg/kg to 140 mg/kg, and in an additional two samples that were screened, both with concentrations greater than 10 mg/kg. In the unsaturated subsurface soil, four samples had PCB concentrations above the detection level, ranging from 0.013 mg/kg to 44 mg/kg. PCBs were detected in two saturated subsurface soil samples, at concentrations of 0.45 mg/kg (PEC-COMP C from 3 to 4 feet below ground surface (bgs)) and 0.63 mg/kg (PEC-COMP A from 4 to 5 feet bgs).

The calculated 95% upper confidence limit (UCL) of the mean of the concentration of total PCBs observed in the surface soil (for overland flow calculations) is 1.0 mg/kg. There were no PCBs detected in groundwater.

Concentrations of PCBs on Site			
Sample Matrix	Corresponding Figure	Analytical Methods	Range of Total PCBs
Surface Soil	Figure 2	Method 8082 and Screening Data	Not detected to 140 mg/kg
Subsurface Soil (unsaturated)	Figure 3	Method 8082 and Screening Data	Not detected to 44 mg/kg
Subsurface Soil (saturated)	Figure 4	Method 8082 and Screening Data	Not detected to 0.63 mg/kg
Groundwater	Figure 5	Method 8082	Not Detected

A summary of all samples collected for PCB analyses are presented in Tables 1 through 3.

Acreage where PCBs detected:

The estimated surface soil area impacted by PCBs is 0.65 acres (Figure 2). The estimated subsurface unsaturated soil impacted by PCBs is 0.21 acres (Figure 3). The estimated subsurface saturated soil impacted by PCBs is 2.05 acres (Figure 4). Based on the data available and reviewed by BrightFields, the groundwater is not impacted by PCBs.

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PCB Remediation Status:

PCB remediation is not presently required for the Former Dagsboro Substation.

PCB MASS LOADING SUMMARY

The PCB mass loading rate to surface water via overland flow and groundwater transport was estimated for the Former Dagsboro Substation Property. A summary of the results is included below and the details of the calculations are included as attachments to this Appendix.

Overland Flow:

Overland flow has been determined on this site by using the Revised Universal Soil Loss Equation (RUSLE). The RUSLE predicts the long term average annual rate of erosion on an area based on rainfall patterns, soil type, topography, cover/canopy factors and support management practices. These specific factors are site specific and rely on local information of the site. A breakdown of the individual factors is presented below with a brief explanation of their choice.

Ground Cover and Canopy:

The surface cover and flow paths were assessed through aerial photography and available contour mapping (Delaware Data Mil, 2007). The cover/management factors (C) assigned to the erodible area and associated flow paths was 0.45, which corresponds to weed like vegetation with less than 20% coverage in pervious areas.

Site Sediment and Erosion Control Practices:

Based on the aerial photography evaluation and review of site documents it appears that the Site contains a retention pond in the southeastern portion of the Site, which prevents the migration of some sediment from departing the Site. In addition, during the site assessment, a silt fence was located around the perimeter of the Site for sediment and erosion control during construction. In an effort to be as conservative as possible, a support factor of 1, indicating no engineering controls, was utilized in the calculations to predict the maximum PCB mass loading that may leave the Site.

Input Factors and Results:

A breakdown of the individual factors is presented below with a brief explanation of their choice.

Former Dagsboro Substation

RUSLE Factors	Values Provided	Explanation of choice
R = rainfall-runoff erosivity index (10 ² ft-tonf-in/ac-hr-yr)	175	An appropriate value for R for the Site was determined using the Isoerodent Map of the Eastern U.S. from the Stormwater Phase II Final Rule Construction Rainfall Erosivity Waiver (USEPA, 2012).
K = soil erodibility (0.01 ton-ac-hr/ac-ft-tonf-in)	0.15	The soil erodibility factor was selected from the National Resource Conservation Soil Survey Geographic Database (SSURGO).
ls = topographic factor (dimensionless)	0.04	The topographic factor was derived based on the slope and flow accumulation grids created in ArcGIS. An output LS grid was created and the average value for the grid is provided.
C = cover/management factor (dimensionless)	0.45	The cover/management factors (C) assigned to the erodible area was 0.45, which corresponds to weed like vegetation with less than 20% coverage in pervious areas.
P = support practice factor (dimensionless)	1	A retention pond and silt fence are located on the Site, but a support practice factor of 1 was utilized to be conservative.
A = average annual soil loss estimate (ton/ac-yr)	0.49	The average soil loss estimate was generated by ArcGIS using the input factors listed above.
Erodible Area (acres)	0.63	The erodible area was calculated based on the pervious surfaces within the area of concern polygon for surface soil (Figure 6).

For factors that were not consistent across the site, rasters were used to characterize the variations. Due to the methodology utilized to derive the soil loss estimate, the numbers listed above cannot simply be multiplied.

The total estimated PCB loading via overland flow for the Former Dagsboro Substation would be **0.29 grams per year** if no engineering controls were in place; however, the actual load attributed to overland runoff from the Site is expected to be significantly lower due to the retention pond and silt fence onsite. Please see attached table for specific variables.

Uncertainty Analysis Associated with Overland Flow:

Specific Areas and Degree of Uncertainty for the Former Dagsboro Substation

	Samples Per Acre (site)	Chemical Data Quality*	Soil Type	Site Coverage	Map Quality	Average Distance to Discharge Point
Site Specific Information	43.7	Lab Data; Screening Data	Soil Database	Based on a thorough site assessment	Adequately Scaled Maps; Poorly Scaled Maps; Unscaled Map	Approximately 572 feet
Degree of Uncertainty	Low	Moderate to High	Low	Low	Moderate	Moderate

* Primary analysis used in the historical samples

Sources of uncertainty for the Former Dagsboro Substation site include: The data utilized for the overland flow analysis was primarily Aroclor data with some Immunoassay screening data. The site was accessible which allowed for a thorough site assessment to determine the cover/management factor. The spatial data for the samples was from adequately scaled maps, poorly scaled maps with approximate scales, and one unscaled map with estimated locations. If the retention pond and silt fence are 100 percent effective at retaining sediment from overland flow, then none of the sediment would be expected to reach the tributary of Pepper Creek. However, the silt fence is temporary during the construction of the fire station. Based on this evaluation the level of uncertainty associated with overland flow PCB mass loading from the Former Dagsboro Substation is **Low to Moderate**.

Groundwater Discharge Analysis:

Groundwater discharge is based on the hydraulic conductivity of the soil, the groundwater gradient, and the cross-sectional area of the aquifer. A breakdown of the individual factors used in the Darcy equation is presented below. A groundwater discharge map is included as Figure 7.

Because PCBs were detected in saturated soil, but not in groundwater, the calculated concentration of PCBs in pore water, based on partitioning, was used to calculate the mass loading.

The calculations are presented in Table B in the groundwater transport calculations attachment.

Input Factors:

A breakdown of the individual factors is presented below with a brief explanation of their choice.

Groundwater Transport Factors	Value Used		Justification/Derivation of Value Used
	min	max	
K = Hydraulic Conductivity (ft/day)	14.2	42.5	Based on the lithology borehole logs, the saturated zone is comprised of very fine to fine-grained sand. Fine sand has a hydraulic conductivity between 14.2 and 42.5 feet/ day (Cernica, 1995).
I = Horizontal Groundwater Gradient	0.0058	0.0084	Gradients calculated from EA's Groundwater Elevation Contour map indicates that the gradient is between 0.0058 and 0.0084 ft/ft.
Saturated Thickness (ft)	13	14	Borehole logs were drilled to a maximum depth of 16 feet bgs. The groundwater is at a depth of 2 to 3 feet bgs.
Lateral Discharge Distance (ft)	180	417	The lateral discharge distance was estimated to be equal to the width of the PCB impacted area measured perpendicular to the flow.
A= Cross-Sectional Area (ft ²)	2,340	5,840	Calculated from the saturated thickness and lateral discharge distance.
Groundwater PCB Concentration (µg/L)	0.099	0.69	The concentrations measured in the saturated subsurface soil (0.450 & 0.630 mg/kg) were used to assess the estimated concentration in groundwater.
Distance to Discharge point (ft)	Approximately 200 ft		Approximate distance from property boundary to closest surface water location (Pepper Creek).

Mass Loading Via Groundwater Transport Result:

Using the data from EA, the groundwater discharge is between 5,460 and 59,000 L/day (see attached Table A). The flow rate is based on medium-grained sand.

PCBs were detected in two saturated zone borings at concentrations of 0.63 mg/kg and 0.45 mg/kg. This calculation yielded a pore water PCB range of 0.099 to 0.69 µg/L (Table B).

The estimated minimum and maximum contaminant mass loading contributions, based on the highest predicted pore water concentration of 0.69 µg/L, shown in Table C assume that there are no contaminant losses due to degradation, dispersion, sorption, volatilization, etc.

The total PCB loading via groundwater discharge is estimated to be between **1.4 and 15 grams per year** (Table C).

Uncertainty Analysis Associated with Groundwater Transport:

Specific Areas and Degree of Uncertainty for the Former Dagsboro Substation

	Groundwater PCB Concentration	Sampling Density	Hydraulic Conductivity	Horizontal Groundwater Gradient	Saturated Thickness	Lateral Discharge Distance	Distance to Discharge Point
Site Specific Information	Partitioning based on maximum concentration observed in saturated soil	1.2; Possible data gaps	Based on an estimate of the hydraulic conductivity of medium-grained sand	Multiple points with two groundwater measurements	Saturated thickness is based on drilling depth and visual observation of groundwater	Groundwater gradient defined but extent of PCBs in the northwest portion of the site is not defined	Approximately 200 ft
Degree of Uncertainty	High	Moderate	Moderate	Moderate	Moderate	High	Moderate

Based on this evaluation the level of uncertainty associated with groundwater transport PCB mass loading from the Former Dagsboro Substation site is **Moderate to High**.

Site References:

Delaware Department of Natural Resources and Environmental Control (DNREC) to Former Dagsboro Substation Site (DE 1287) File, Site Closed and Archived, February 2013.

Delaware Geological Survey, 2013, Delaware Data Mil, <<http://datamil.delaware.gov/geonetwork/srv/en/main.home>>, May 2013.

EA Engineering, 1999, Environmental Assessment, Former Electrical Substation, March 1999.

Environmental Alliance, Inc., 2001, Phase I Environmental Site Assessment Report of Conectiv-Former Substation, November 2001.

Environmental Alliance, Inc., 2005, Draft Remedial Investigation/Focused Feasibility Report, Former Conectiv Substation, February 2005.

Environmental Alliance, Inc., 2006, Former DP&L Substation- Dagsboro, Soil Excavation Report, April 2006.

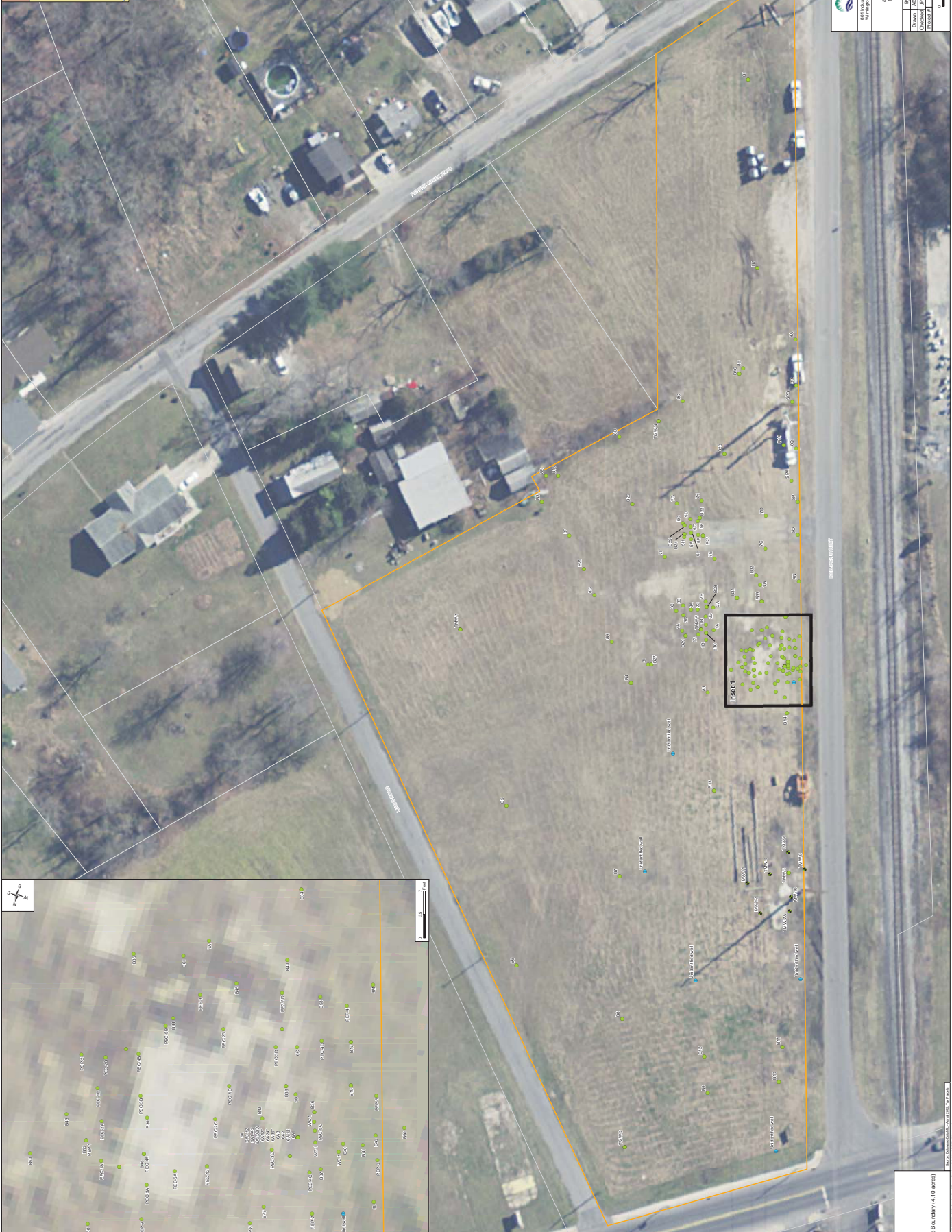
Environmental Alliance, Inc., 2006, Former DP&L Substation- Dagsboro, 1st Quarter Groundwater Monitoring Report, May 2006.

New Castle County, 2013, New Castle County Parcel Search, <<http://www3.nccde.org/parcel/search/>>, January 2013.

PCB Mass Loading Phase II
Former Dagsboro Substation
SIRS ID: DE-1287
Dagsboro, Delaware



Figures

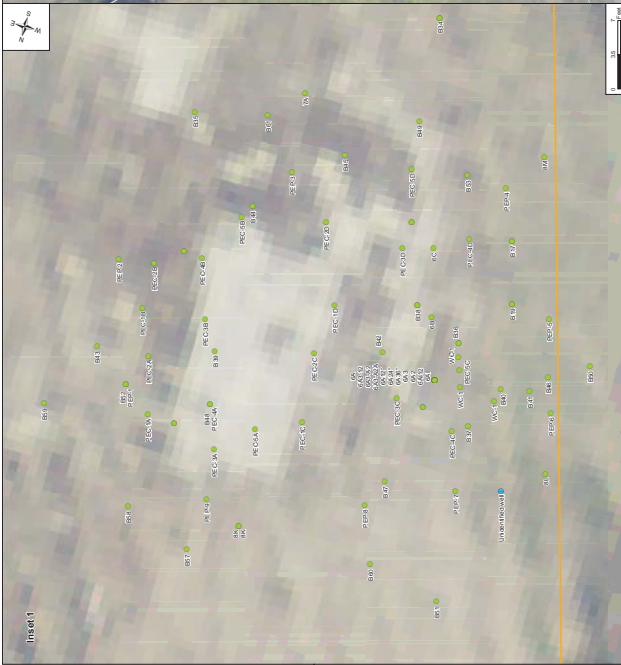


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 302-656-8900

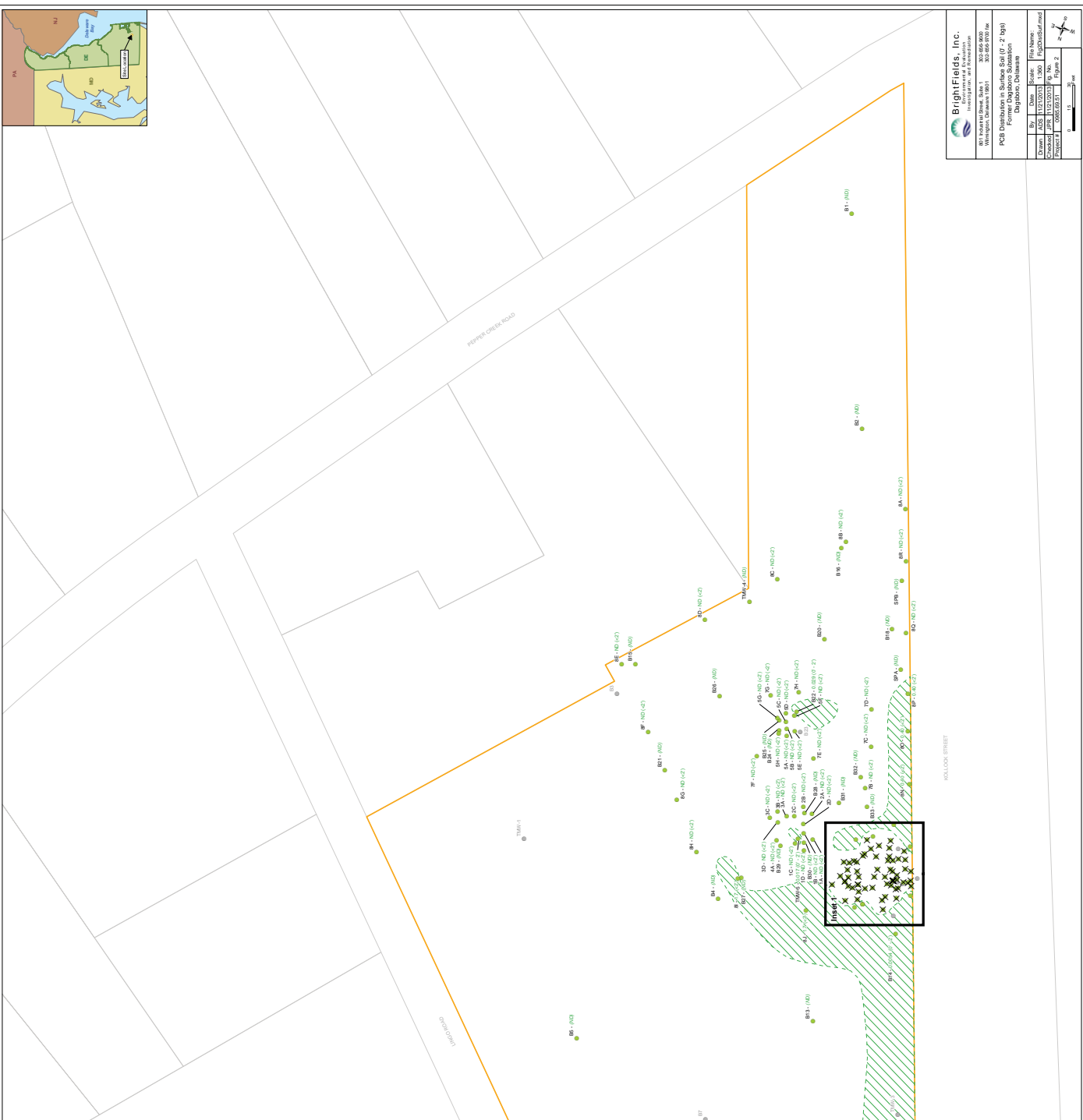
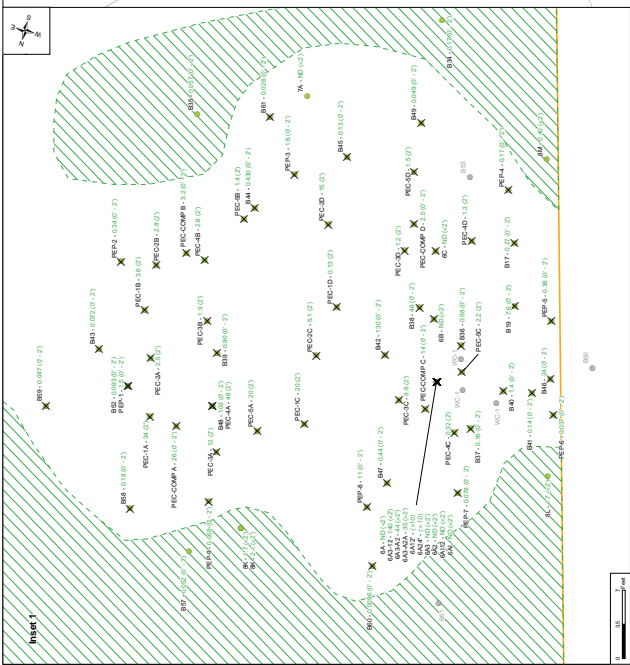
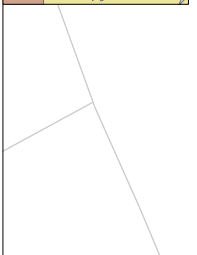
Historic Sample Locations
 Former Diapason Substation
 Former Diapason Substation
 Diapason, Delaware

By	Soil	Revised
Date	11/13/2014	11/13/2014
Checked	DR	11/13/2014
Project #	0086.00.01	7/2/14 1

Scale: 1" = 30'



- Soil Sample
- Groundwater Sample
- Surface Water Sample
- Former Diapason Substation Site Boundary (4.10 Acres)
- Twp Parcel



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10000 Old Columbia Road
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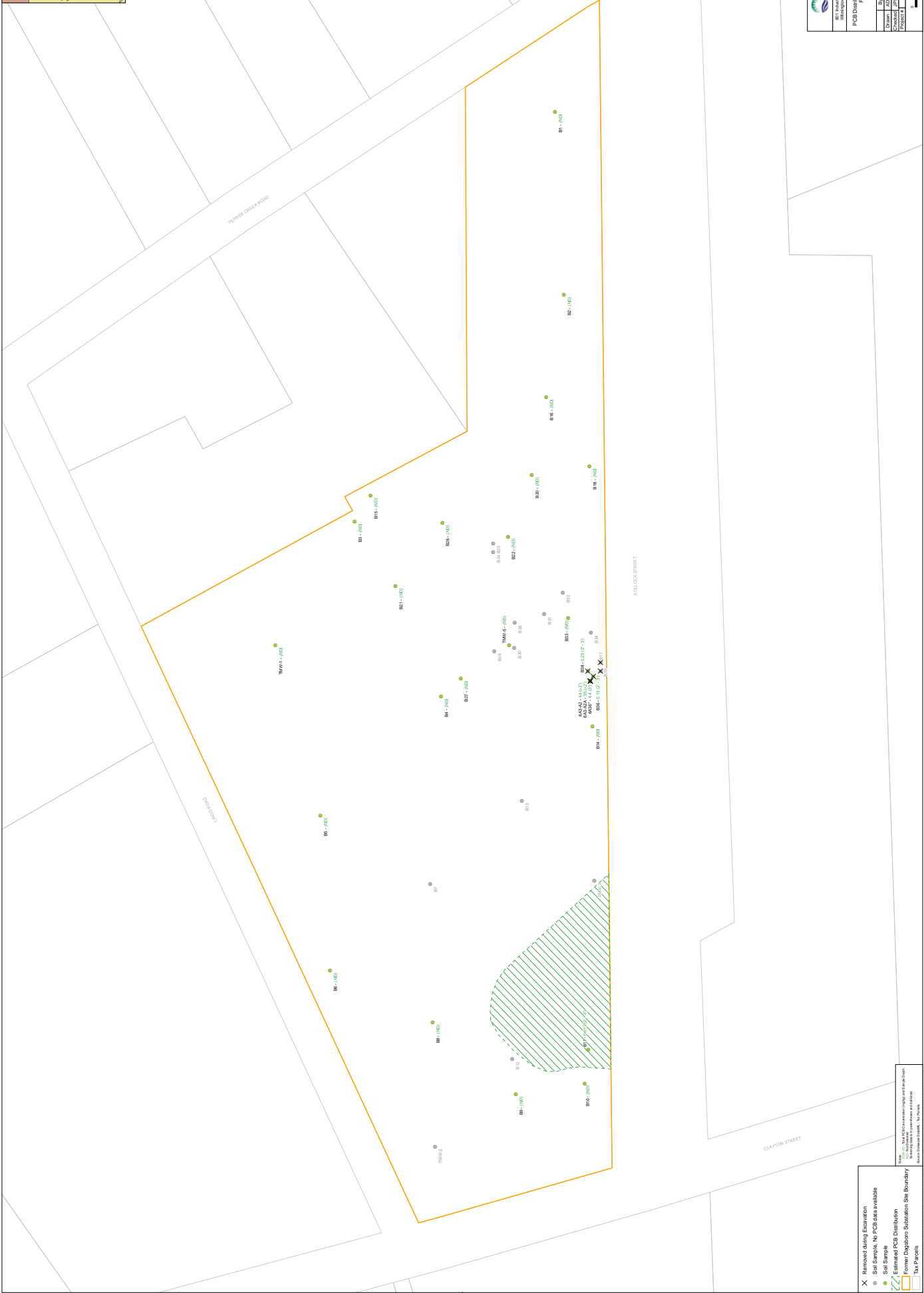
PCB Distribution in Sludge Soil (02-21-19)
Former Digastone Substation
Digastone, Delaware

By:	Date:	Revision:
Checked:	JLR 11/21/2013	0 No.
Project:	0082-09-01	Figure 2

Scale: 1" = 100'
North Arrow

- X Removed during Excavation
- Soil Sample, No PCB data available
- Soil Sample
- Estimated PCB Distribution
- Former Digastone Substation Site Boundary
- TNA Parcels

Notes:
1. This map was prepared using the most current data available.
2. Boundaries shown are approximate.



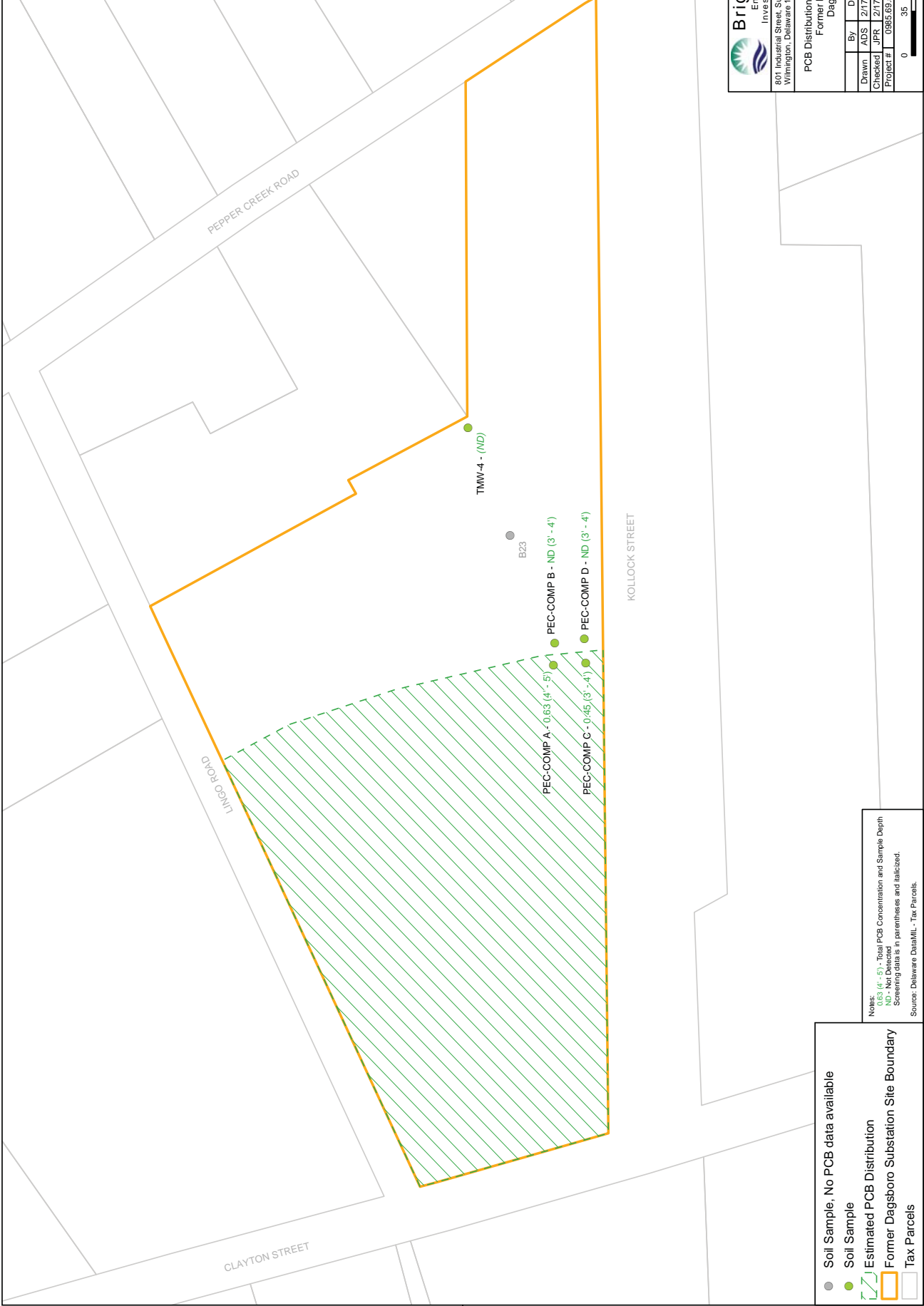
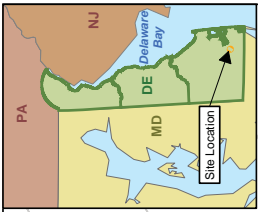
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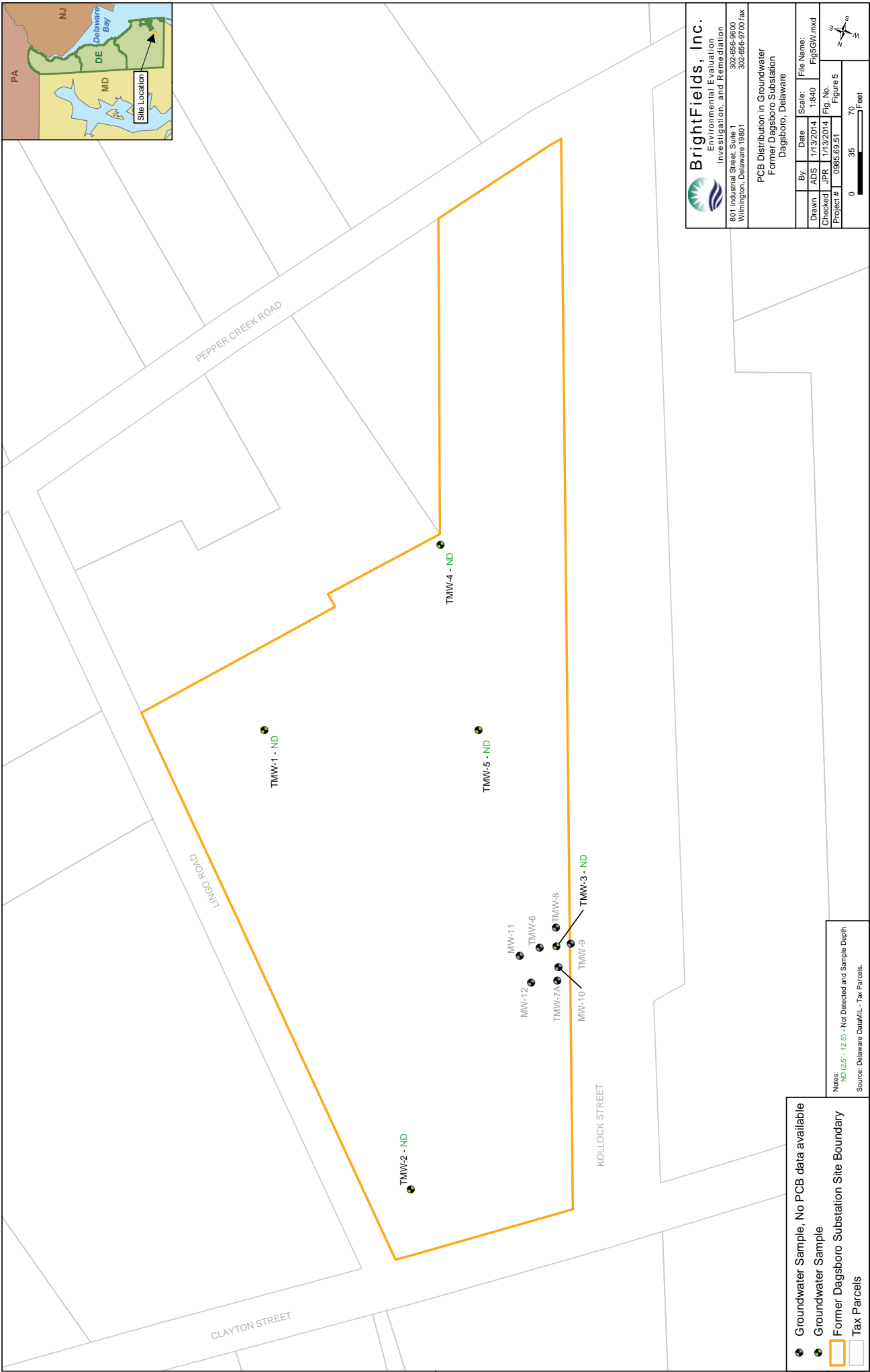
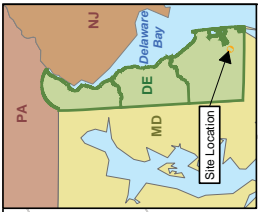
PCB Distribution in Surface Soils Underneath Soil
Former Diagnostic Substation
Diagnostic Database

Client	DE	Scale	1" = 100'
Drawn By	JLR	Date	11/25/2013
Checked	JLR	Drawn No.	0085-09-01
Project	0085-09-01	Drawn 3	

Removed during Excavation
Soil Sample, No PCB data available
Soil Sample
Estimated PCB Distribution
Former Diagnostic Substation Site Boundary
TMA Parcels

Notes: 1. Areas with PCB concentrations are not shown with
2. Areas with PCB concentrations are not shown with
3. Areas with PCB concentrations are not shown with





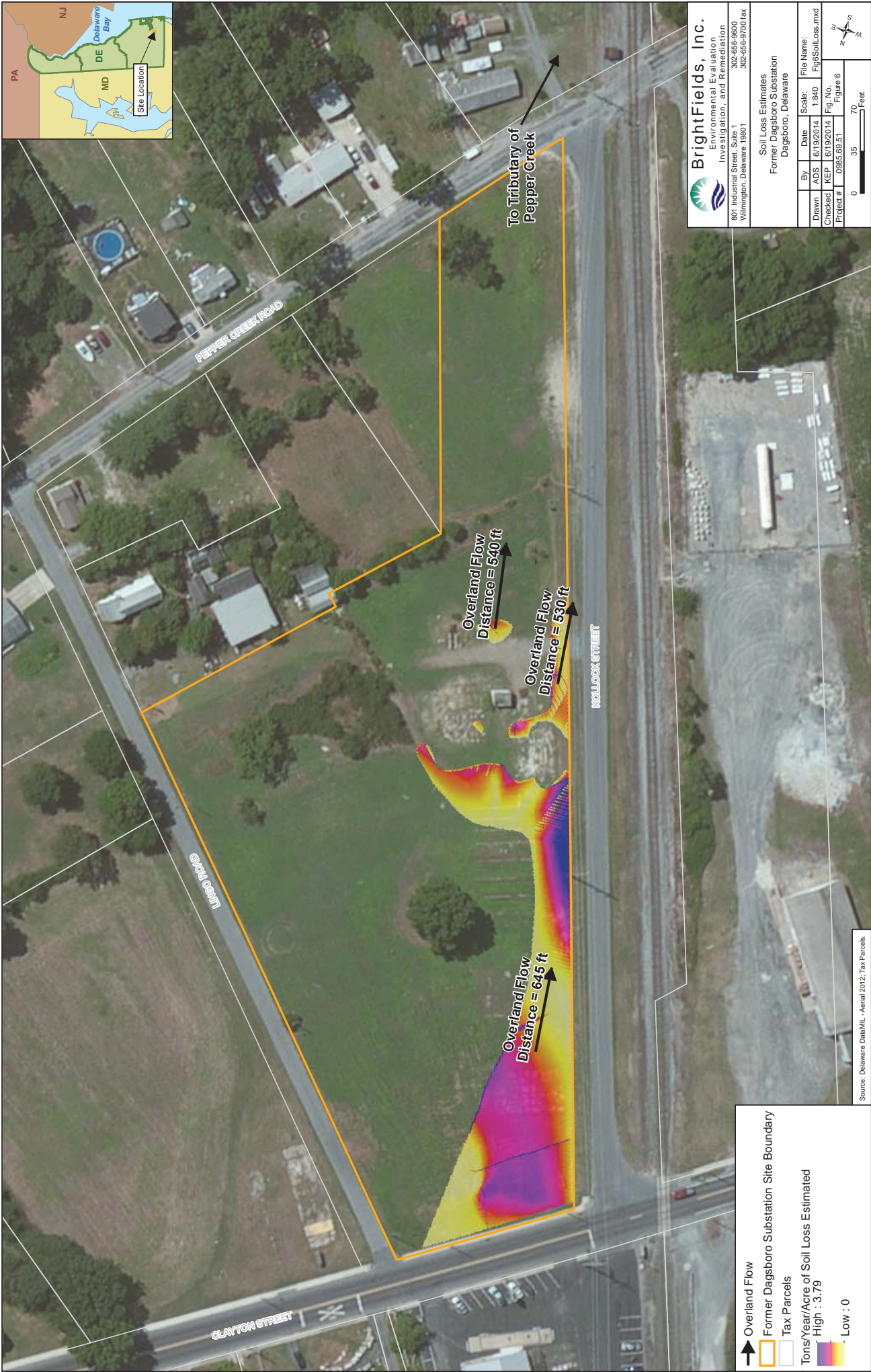
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 801 Industrial Street, Suite 1
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PCB Distribution in Groundwater
 Former Dagsboro Substation
 Dagsboro, Delaware

By	Date	Scale:	File Name:
Drawn ADS	1/13/2014	1:840	Fig5GW.mxd
Checked JPR	1/13/2014	Fig. No.	Figure 5
Project #	0985.69.51	Figure #	70
0	35	70	Feet

Notes:
 ND (2.5'-12.5') - Not Detected and Sample Depth
 Source: Delaware DASMIL - Tax Parcels.

- Groundwater Sample, No PCB data available
- Groundwater Sample
- ▭ Former Dagsboro Substation Site Boundary
- ▭ Tax Parcels



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Soil Loss Estimates
 Former Dagsboro Substation
 Dagsboro, Delaware

By	Date	Scale	File Name
Drawn ADS	6/19/2014	1:840	Fig6SoilLoss.mxd
Checked KEP	6/19/2014	Fig. No.	Figure 6
Project #	0985.68.51	Figure #	0

0 35 70 Feet

↑ Overflow Flow
 Former Dagsboro Substation Site Boundary
 Tax Parcels
 Tons/Year/Acre of Soil Loss Estimated
 High : 3.79
 Low : 0

Source: Delaware DataML - Aerial 2012, Tax Parcels.

PCB Mass Loading Phase II
Former Dagsboro Substation
SIRS ID: DE-1287
Dagsboro, Delaware



Tables

Table 1
PCB Screening Results For Soil
Former Dagsboro Substation (DE-1287)
Dagsboro, DE

Sample Identification	Sample Depth (feet bgs)	Sampling Company	Report Name	Report Date	Total PCBs DNREC-SIRS Screening Level (January 2014) (mg/kg) NCA
1A	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
1B	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
1C	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
1D	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
2A	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
2B	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
2C	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
2D	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
3A	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
3B	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
3C	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
3D	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
4A	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
5A	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
5B	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
5C	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
5D	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
5E	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
5F	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
5G	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
5H	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
6A	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	> 10
6A	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	> 10
6A12"	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	> 10
6A24"	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	> 10
6A36"	3'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	> 2.5, < 10
6A2	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	> 10
6A3	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	> 2.5, < 10
6B	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	> 10
6C	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	> 10
7A	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
7B	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
7C	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
7D	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
7E	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
7F	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
7G	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
7H	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
8A	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
8B	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
8C	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
8D	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
8E	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
8F	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
8G	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5

Table 1
PCB Screening Results For Soil
Former Dagsboro Substation (DE-1287)
Dagsboro, DE

Sample Identification	Sample Depth (feet bgs)	Sampling Company	Report Name	Report Date	Total PCBs DNREC-SIRS Screening Level (January 2014) (mg/kg) NCA
8H	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
8I	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	> 2.5, < 10
8J	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	> 2.5, < 10
8K	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	> 2.5, < 10
8L	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
8M	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
8N	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
8O	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
8P	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
8Q	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
8R	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	< 2.5
B1	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B1	2' -3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B10	2' -3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B11	2' -3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B13	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B14	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B14	2' -3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B15	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B15	2' -3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B16	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B16	2' -3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B17	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B18	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B18	2' -3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B19	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B2	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B2	2' -3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B20	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B20	2' -3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B21	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B21	2' -3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B22	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B22	2' -3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B24	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B25	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B26	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B26	2' -3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B27	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B27	2' -3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B28	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B29	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B3	2' -3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B30	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B31	0' -2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND

Table 1
PCB Screening Results For Soil
Former Dagsboro Substation (DE-1287)
Dagsboro, DE

Sample Identification	Sample Depth (feet bgs)	Sampling Company	Report Name	Report Date	Total PCBs DNREC-SIRS Screening Level (January 2014) (mg/kg) NCA
B32	0' - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B33	0' - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B34	2' - 3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B35	0' - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B36	0' - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B37	2' - 3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B38	0' - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B39	0' - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B4	0' - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B4	2' - 3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B5	0' - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B5	2' - 3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B6	0' - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B6	2' - 3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B8	0' - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B8	2' - 3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
B9	2' - 3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
SPA	0'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
SPB	0'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
TMW-1	2' - 3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
TMW-3	0' - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
TMW-3	2' - 3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
TMW-4	0' - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
TMW-4	2' - 3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
TMW-5	0' - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND
TMW-5	2' - 3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	2005	ND

Note: All results reported in mg/kg.

Qualifiers:
bgs - Below ground surface
NCA - No criteria available
ND - Not detected

Table 2
PCB Analytical Results For Soil
Former Dagsboro Substation (DE-1287)
Dagsboro, DE

Sample Identification	Sample Depth (feet bgs)	Sampling Company	Report Name	Report Date	DNREC-SIRS Screening Level (mg/kg) 0.39	DNREC-SIRS Screening Level (mg/kg) 0.14	DNREC-SIRS Screening Level (mg/kg) 0.14	DNREC-SIRS Screening Level (mg/kg) 0.14	DNREC-SIRS Screening Level (mg/kg) 0.22	DNREC-SIRS Screening Level (mg/kg) 0.11	DNREC-SIRS Screening Level (mg/kg) 0.22
8J	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	0.033	U	0.033	U	0.033	U	0.22
8K	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	0.033	U	0.033	U	0.033	U	0.63
8L	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	0.033	U	0.033	U	0.033	U	1.7
8M	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	0.033	U	0.033	U	0.033	U	0.4
8N	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	0.033	U	0.033	U	0.033	U	0.4
8O	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	0.033	U	0.033	U	0.033	U	0.4
8P	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	0.033	U	0.033	U	0.033	U	0.4
8Q	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	0.033	U	0.033	U	0.033	U	0.033
8R	<2'	Tetra Tech	Former Dagsboro Substation Phase II Environmental Site Assessment	1995	0.033	U	0.033	U	0.033	U	0.033
B10	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.0038	U	0.0097
B11	2 - 3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.0038	U	0.0042
B14	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.0036	U	0.0054
B17	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.12	U	0.97
B19	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	4.700	U	2.000
B22	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.0037	U	0.025
B34	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.0027	U	0.089
B35	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.0072	U	0.047
B36	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.57	U	0.17
B36	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.0043	U	0.05
B37	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.028	U	0.05
B38	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	31	U	11
B38	2 - 3'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.014	J	0.005
B39	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.47	U	0.28
B40	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.018	U	0.28
B41	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.0036	U	0.057
B42	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	92	U	23
B43	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.0036	U	0.036
B44	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.018	U	0.2
B45	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.0036	U	0.036
B46	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.0036	U	0.036
B47	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.11	U	0.15
B48	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	83	U	14
B49	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.016	U	0.02
B52	0 - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	0.0036	U	0.036
B57	0 - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.0036	U	0.0036	U	0.0036	U	0.0036
B58	0 - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.0036	U	0.0036	U	0.11	U	0.0036
B59	0 - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.0036	U	0.0036	U	0.024	U	0.023
B60	0 - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.0036	U	0.0036	U	0.0036	U	0.004
B61	0 - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.0036	U	0.0036	U	0.0036	U	0.0036
PEC-1A	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	1.8	U	1.8	U	1.8	U	2.7
PEC-1B	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.072	U	0.072	U	0.072	U	0.37
PEC-1C	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.72	U	0.72	U	0.72	U	2
PEC-1D	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.0074	U	0.0074	U	0.0074	U	0.025
PEC-2A	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.09	U	0.09	U	0.09	U	0.3
PEC-2B	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.072	U	0.072	U	0.072	U	0.32
PEC-2C	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.18	U	0.18	U	0.18	U	0.44
PEC-2D	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.72	U	0.72	U	0.72	U	1.1
PEC-3A	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.18	U	0.18	U	0.18	U	1.2
PEC-3B	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.036	U	0.036	U	0.036	U	0.21

Table 2
PCB Analytical Results For Soil
Former Dagsboro Substation (DE-1287)
Dagsboro, DE

Sample Identification	Sample Depth (feet bgs)	Sampling Company	Report Name	Report Date	Aroclor-1016 DNREC-SIRS Screening Level (mg/kg) 0.39	Aroclor-1221 DNREC-SIRS Screening Level (mg/kg) 0.14	Aroclor-1232 DNREC-SIRS Screening Level (mg/kg) 0.14	Aroclor-1242 DNREC-SIRS Screening Level (mg/kg) 0.22	Aroclor-1248 DNREC-SIRS Screening Level (mg/kg) 0.22	Aroclor-1254 DNREC-SIRS Screening Level (mg/kg) 0.11	Aroclor-1260 DNREC-SIRS Screening Level (mg/kg) 0.22
PEC-3C	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.36	U	0.36	U	0.36	U	0.91
PEC-3D	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.036	U	0.036	U	0.036	U	0.19
PEC-4A	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	3.5	U	3.5	U	3.5	U	4.2
PEC-4B	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.071	U	0.071	U	0.071	U	0.35
PEC-4C	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.0072	U	0.0072	U	0.0072	U	0.04
PEC-4D	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.036	U	0.036	U	0.036	U	0.21
PEC-5A	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.92	J	0.92	J	0.92	U	1.7
PEC-5B	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.036	U	0.036	U	0.036	U	0.15
PEC-5C	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.071	U	0.071	U	0.071	U	0.24
PEC-5D	2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.036	U	0.036	U	0.036	U	0.52
PEC-COMP A	0' - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.36	U	0.36	U	0.36	U	2.7
PEC-COMP B	4' - 5'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.02	U	0.02	U	0.02	U	0.032
PEC-COMP C	0' - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.078	U	0.078	U	0.078	U	0.41
PEC-COMP D	3' - 4'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.0039	U	0.0039	U	0.0039	U	0.0039
PEC-COMP E	0' - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.18	U	0.18	U	0.18	U	1.5
PEC-COMP F	3' - 4'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.019	U	0.019	U	0.019	U	0.4
PEC-COMP G	0' - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.036	U	0.036	U	0.036	U	0.31
PEC-COMP H	3' - 4'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.0037	U	0.0037	U	0.0037	U	0.0037
PEP-1	0' - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.036	U	0.036	U	0.036	U	0.17
PEP-2	0' - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.0072	U	0.0072	U	0.0072	U	0.06
PEP-3	0' - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.035	U	0.035	U	0.035	U	0.22
PEP-4	0' - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.0073	U	0.0073	U	0.0073	U	0.072
PEP-5	0' - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.071	U	0.071	U	0.071	U	0.38
PEP-6	0' - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.0035	U	0.0035	U	0.0035	U	0.037
PEP-7	0' - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.0036	U	0.0036	U	0.0036	U	0.015
PEP-8	0' - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.18	U	0.18	U	0.18	U	1.4
PEP-9	0' - 2'	Environmental Alliance	Former DP&L Substation - Dagsboro: Soil Removal Report	Apr-06	0.0036	U	0.0036	U	0.0036	U	0.015
TMW-5	0' - 2'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	ND	ND	ND	ND	ND	ND	0.0039

Note: All results reported in mg/kg.

Qualifiers:
bgs - Below ground surface
NCA - No criteria available
ND - Not detected
U - Sample not detected above the laboratory method detection limit
J - Estimated value
Bold and shaded - Exceeds DNREC-SIRS January 2014 Screening Levels

Table 3
 PCB Analytical Results For Groundwater
 Former Dagsboro Substation (DE-1287)
 Dagsboro, DE

Sample Identification	Screen Depth (feet bgs)	Sampling Company	Report Name	Report Date	Aroclor-1016 DNREC-SIRS Screening Level (ug/L) (January 2014)	Aroclor-1221 DNREC-SIRS Screening Level (ug/L) (January 2014)	Aroclor-1232 DNREC-SIRS Screening Level (ug/L) (January 2014)	Aroclor-1242 DNREC-SIRS Screening Level (ug/L) (January 2014)	Aroclor-1248 DNREC-SIRS Screening Level (ug/L) (January 2014)	Aroclor-1254 DNREC-SIRS Screening Level (ug/L) (January 2014)	Aroclor-1260 DNREC-SIRS Screening Level (ug/L) (January 2014)
TMW-1	2' - 12"	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	0.11	0.004*	0.095	0.034*	0.095	0.031*	0.034*
TMW-2	2.5' - 12.5'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	0.095	0.16	0.095	0.095	0.097	0.095	0.095
TMW-3	1.8' - 11.8'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	0.097	0.17	0.097	0.097	0.097	0.097	0.097
TMW-4	1' - 11'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	0.095	0.16	0.095	0.095	0.095	0.095	0.095
TMW-5	2.5' - 12.5'	Environmental Alliance	Remedial Investigation - Former DP&L Substation/Dagsboro	Feb-05	0.19	0.38	0.095	0.19	0.29	0.19	0.29

Note: All results reported in ug/L.

Qualifiers:

- bgs - Below ground surface
- * - Screening level likely below the routine method detection limit
- U - Sample not detected above the laboratory method detection limit

PCB Mass Loading Phase II
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Site Photographs



The view of the site from across Clayton Street looking southeast.



The vegetation and small elevation changes along Clayton Street in the northern portion of the site.



Midway along the western site boundary (Kollock Street) where the construction area and grass meet.



Along Kollock Street where the bare construction area and grass meet with tall trees in the background.



The area around the retention pond located in the southern extent of the Site is sloped upwards and is higher than the surrounding elevation.



The retention pond wall from the southeast on Pepper Creek Road.



Looking northwest from Lingo Road onto the site.



A dirt mound with large weeds sits on the eastern corner of the site and tall weeds line Lingo Road, which runs northeast of the site.

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Overland Flow Calculations

**PCB Loading Calculations from the Revised Universal Soil Loss Equation (RUSLE)
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Surface PCB Concentration mg/kg

Symbol	Factor	Value	Units
R	Rainfall/Runoff Erosivity Index	175	10 ² ft-tonf-in/ac-hr-yr
K	Soil Erodibility	0.15	0.01 ton-ac-hr/ ac-ft-tonf-in
	Erodible Area	0.63	Acres
LS	Topographic Factor	0.04	Dimensionless
C	Cover and Management Factor	0.45	Dimensionless
P	Support Practice Factor	1	Dimensionless
A	Average Annual Soil Loss	0.49	ton/ac-yr

PCB Loading via Overland Flow **grams/year - PCBs**

PCB Mass Loading Phase II
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Groundwater Transport Calculations

**PCB Loading Calculations - Groundwater Discharge to Surface Water
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Dagsboro, Delaware**

**TABLE A
Groundwater Discharge Calculations**

Hydraulic Conductivity (K) (ft/day)	Horizontal Gradient (i) (ft/ft)	Cross-sectional Area (A) (ft ²)	Groundwater Discharge*	
			Liters/day	Gallons/day
14.2	0.0058	2,340	5,460	1,440
42.5	0.0084	5,840	59,000	16,000

**TABLE B
Potential Groundwater PCB Concentration Calculation**

PCB Soil Concentrations (µg/kg)	f _{oc} (fraction of organic carbon)		Pore Water PCB (µg/L)	
	Maximum	Minimum	Maximum	Minimum
630	0.01	0.05	0.69	0.14
450	0.01	0.05	0.49	0.099

**TABLE C
Estimated Mass Loadings of PCBs in Groundwater**

Maximum Estimated Groundwater Concentration (µg/L)	Estimated PCB Mass Loading (g/yr)	
	Minimum	Maximum
0.69	1.4	15