

CONTAMINATED MATERIAL AND WATER MANAGEMENT WORK PLAN

**For Construction Activities Associated with
Christina River Bridge Approaches Project
Wilmington, Delaware
(DE-0334)**

DelDOT Contract T200512102

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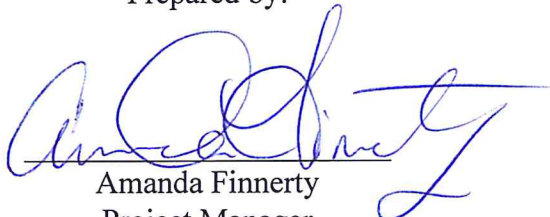
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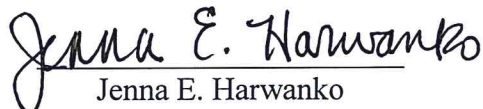
This Contaminated Material and Water Management Work Plan (CMWMWP) was prepared by BrightFields, Inc. (BrightFields) for the Christina River Bridge Approaches Project. This CMWMWP represents BrightFields' knowledge of conditions on the subject site at the time of preparation.

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TABLE OF CONTENTS

DOCUMENT OVERVIEW	1
1.0 INTRODUCTION	3
2.0 SITE BACKGROUND.....	5
2.1 Summary of Previous Investigations – Multiple Property Studies	5
2.1.1 South Wilmington Environmental Assessment, Quadrant 1 & 2 (DNREC, 1996)	5
2.1.2 South Wilmington Environmental Assessment, Quadrant 3 & 4 (DNREC, 1996)	6
2.1.3 Christina River Bridge Site Specific Assessment (BrightFields, 2009)	6
2.1.4 Market Street Safety Improvements Environmental Summary Report (BrightFields, 2009)	7
2.1.5 Christina River Bridge Subsurface Investigation Report (BrightFields, 2012)	8
2.1.6 Christina River Bridge Subsurface Investigation Report #2 (BrightFields, 2016)	8
2.2 Summary of Previous Investigations – Specific Properties	8
2.2.1 Wilmington Coal Gas Site – South (DE-0114).....	8
2.2.2 Stadium Site (DE-1004).....	10
2.2.3 Dravo Shipyard – Harbor Associates (DE-1096)	11
2.2.4 Riverfront Hotel (DE-1518).....	12
2.2.5 Jablow Property (DE-1329, 3-002382).....	13
2.2.6 Industraplate Corporation	15
2.2.7 733 S. Market Street (DE-1502, 3-000454).....	15
2.2.8 Hessler Property (DE-1169 and DE-1203).....	16
2.2.9 Shuster Auto Salvage (DE-1178).....	18
2.2.10 524 A & B South Walnut Street (DE-1235)	19
2.2.11 American Tank Cleaning Company (DE-1180, 7-000200, 3-001515).....	19
2.2.12 Lamplugh Property (DE-1319, 3-001029).....	20
2.2.13 M&N Property (DE-1496).....	20
2.2.14 International Petroleum Corporation (DE-1278, 3-000001).....	21
2.2.15 Christina Landing Retail Center (DE-1401, 3-002400).....	22
3.0 CONTRACTOR RESPONSIBILITIES	24
4.0 EXCAVATION, HANDLING, AND MANAGEMENT OF CONTAMINATED MATERIALS	27
4.1 Soil Remedial Approach	27
4.1.1 Non-Hazardous Soil.....	27
4.1.2 PCB Impacted Soil on Dravo Property	29
4.2 Debris Materials.....	29
4.2.1 Non-Hazardous Debris.....	29
4.2.2 Asbestos Containing Materials (ACM)	29
4.3 USTs, ASTs, and Piping	30
4.4 Sludge/Silt.....	30
4.5 Groundwater	30
5.0 TRANSPORTATION OF CONTAMINATED MATERIALS	32
5.1 Soil Disposal	32
5.2 Other Fill Materials.....	32
5.3 Sludge/Silt Removal (if applicable).....	33
5.4 Petroleum Contaminated Water and Oil (if encountered)	33

6.0 REFERENCES35

FIGURES

- FIGURE 1 Site Location/Topographic Map
- FIGURE 2 Project Location Map
- FIGURE 3a Potential Areas of Concern – Soil and Groundwater – East
- FIGURE 3b Potential Areas of Concern – Soil and Groundwater – West

TABLES

- TABLE 1 – Summary of Known and Possible Contaminants
- TABLE 2 – Typical City of Wilmington Allowable Groundwater Discharge Limits

ATTACHMENTS

- ATTACHMENT 1 – Final Plan of Remedial Action for Christina River Bridge and Approaches Site (DE-0334)
- ATTACHMENT 2 – DNREC May 2010 Soil/Material Re-use Policy at HSCA Regulated Sites
- ATTACHMENT 3 – City of Wilmington Discharge Permit (to be included once permit has been issued)

CONTAMINATED MATERIAL AND WATER MANAGEMENT WORK PLAN

This Contaminated Materials and Water Management Work Plan (CMWMWP) was revised in December 2017 to reflect current project plans. This is a working document and addendums will be issued as necessary.

DOCUMENT OVERVIEW

SITE & LOCATION: The Delaware Department of Transportation (DelDOT) is completing both the Christina River Bridge and Approaches projects to accommodate additional traffic due to the redevelopment along the Wilmington Riverfront. The limits of both projects are shown on Figure 1. The first phase of the project consisted of improvements adjacent to the Riverfront Hotel Site, which was completed in April 2014. Additional phases of the project include the construction of the bridge and approaches, relocating overhead utilities underground, curb improvements, and the installation of electric lines, lighting, drainage infrastructure, landscaping, and hardscaping (Figure 2).

BrightFields has been contracted to identify the locations and types of contaminants that may be encountered during intrusive activities for the Approaches and to develop environmental management documents for use during construction.

A Final Plan of Remedial Action (FPRA) for the Christina River Bridge and Approaches Site issued in October 2016 outlines the cleanup actions required at the Site (Attachment 1). The FPRA requires the placement of at least one foot of clean fill or impervious material, the implementation of a CMWMWP during construction, a site Long-Term Stewardship (LTS) Plan to be submitted to Delaware Department of Natural Resources and Environmental Control (DNREC), and a Remedial Action Completion Report (RACR) be submitted to DNREC after remedial actions have been completed. In addition, the Final Plan requires the institution of an environmental covenant limiting the site use, interference with remedy, and limit withdrawal of site groundwater.

The construction of the Christina River Bridge began in May 2017 and construction of the Approaches are anticipated to begin in 2018. On-site health and safety oversight and environmental management of all aspects of this project will be provided by the DNREC or DNREC's Hazardous Site Cleanup Act (HSCA)-certified environmental consultant.

PURPOSE OF THIS CMWMWP: The purpose of this Contaminated Material and Water Management Work Plan (CMWMWP) is to provide guidelines for safe handling of contaminated materials on the Christina River Bridge Approaches Project.

TYPES OF INTRUSIVE ACTIVITIES: This CMWMWP covers the activities of workers under contract for the Christina River Bridge Approaches Project. Types of intrusive activities include, but are not limited to: excavation for the installation of utilities, light poles, bollards, road beds, drainage infrastructure, landscaping, and hardscaping. Intrusive activities shall be conducted under modified Level D OSHA personal protective equipment (PPE) within the project area by OSHA 24-hour HAZWOPER trained workers. There is a potential for PPE upgrade to Level C while installing utilities on the west side of the river at stations 525+25 to 533+00; 300+00 to 309+00; 223+25 to 230+25 and at stations 106+25 to 112+25; 66+75 to 68+25 on the east side of the river. If a PPE upgrade to Level C is necessary, the work shall be conducted by OSHA 40-hour HAZWOPER trained workers. A description of the PPE required is provided in the Christina River Bridge Approaches Project Health and Safety Plan (HASP) (BrightFields, Revised December 2017). Also included in the HASP are PPE upgrade action levels and requirements for the donning of Level C PPE.

SCHEDULED DATES: This CMWMWP is in effect for the duration of the project. Construction for the Christina River Bridge Approaches project is anticipated to begin in 2018.

Note: The purpose of this CMWMWP is to provide guidance for handling known environmental conditions and unknown environmental conditions that may be encountered during the intrusive activities for the Christina River Bridge Approaches Project. This CMWMWP is intended to be used in conjunction with the Christina River Bridge Approaches Project Health and Safety Plan (HASP) (BrightFields, Revised December 2017).

CONTAMINATED MATERIAL AND WATER MANAGEMENT WORK PLAN

1.0 INTRODUCTION

The Christina River Bridge Approaches (Site) area encompasses multiple tax parcels along either side of the Christina River in Wilmington, Delaware (Figure 2). A Site Specific Assessment (SSA) was performed by BrightFields in April 2009 to investigate the properties associated with Christina River Bridge Orange A Alignment and found several areas of environmental concern associated with this bridge option. After further evaluation by transportation engineers, the Orange B Alignment became the preferred option and supplemental investigations were performed in 2012, 2013, and 2016. As shown in Figure 2, the approaches begin at Beech Street, continue south to the southern extent of the Shipyard Shops (west of the Christina River), the bridge crosses over the River, and approaches continue through the 707 S. Market Street Jablow property (north of James Court) and connect to Market Street, Walnut Street, and Garasches Lane (east of the Christina River).

The Site was historically maintained as undeveloped marsh land, commercial, and industrial properties. Retail businesses and a riverwalk are located to the west of the River. To the east of the River are various businesses including retail shops, electroplating, asphalt sealing, a rim and wheel distributor, a glass and tire distributor, landscaping, metal works, a car shop, and a truck service business. Additional properties have non-operational businesses.

There are many Delaware Department of Natural Resources and Environmental Control (DNREC) Hazardous Substance Cleanup Act (HSCA) sites and Tank Management Section (TMS) sites within and surrounding the Christina River Bridge Approaches Project (Project) area. Some of these sites have been remediated; however, residual contamination may remain and or extend into the Project area.

This CMWMWP shall be implemented by the excavation and trades contractors during intrusive activities associated with the Christina River Bridge Approaches Project. Intrusive activities are defined as activities penetrating the existing ground surface which include, but are not limited to the following:

- Excavation of trenches for the installation of utilities (such as gas lines, electric lines, manholes, storm drains, drainage swales, light poles, and storm water management facilities);
- Excavation of road boxes;

- Backfilling of all excavated areas;
- Management of native site soil, including stockpiling and disposal;
- Stockpiling of soil consistent with this CMWMWP;
- Dewatering activities;
- Test pits and test holes;
- Street-scaping such as installation of pavers and benches;
- Landscaping such as tree pits;
- Hardscaping such as concrete, sidewalks, and asphalt.

This CMWMWP is to provide guidance for handling known environmental conditions and unknown environmental conditions that may be encountered during the construction process. Therefore this CMWMWP describes the procedures to excavate, handle, and manage the following:

1. Soil and excavated materials, including but not limited to concrete, railroad ties and debris, originating from the project area, and/or near adjacent properties;
2. Sludge and silt materials removed within the project area (if necessary);
3. Potentially contaminated groundwater encountered during intrusive activities and any dewatering activities.

In order to prevent the uncontrolled migration of contaminated soil and groundwater, DNREC or DNREC's designated HSCA-certified environmental consultant and the contractor will work together to implement all procedures outlined in this CMWMWP, so that the health and safety of construction workers, the public, and the environment is protected.

The contaminants of concern (COC) in soil that may be encountered in the project area include metals (such as antimony, arsenic, barium, lead, manganese, and mercury), cyanide, petroleum hydrocarbons, pesticides, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), manufactured gas plant (MGP) hydrocarbons, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs). The COCs that may be encountered in groundwater in the project area include: metals, cyanide, petroleum hydrocarbons, pesticides, PCBs, PAHs, VOCs, and SVOCs. Non-Aqueous Phase Liquid (NAPL) may also be encountered within the project area.

2.0 SITE BACKGROUND

The purpose of this section is to summarize existing reports from previous investigations in the project area. In general, the properties surrounding the project area have historically been used for commercial and industrial purposes. The following section summarizes previous investigations and remediation that has occurred on properties along the project area. The first section presents investigations that cover multiple sites and large portions of the project area. The second section presents investigations in order from North to South on the west side of the Christina River and then follows the approaches extending South to North on the east side of the River. The sites discussed below are shown on Figure 2 and potential areas of concern are shown on Figures 3a and 3b.

2.1 Summary of Previous Investigations – Multiple Property Studies

2.1.1 South Wilmington Environmental Assessment, Quadrant 1 & 2 (DNREC, 1996)

DNREC completed an Environmental Assessment of South Wilmington (east), Quadrants 1 and 2 (DE-286) in 1996 which consisted of a large investigation effort performed by DNREC - Site Investigation and Restoration Branch (SIRB) to collect samples from various properties encompassing approximately 110 acres of South Wilmington. Quadrant 1 is the area between South Walnut Street and Buttonwood Street and is bordered to the north and south by B Street and Garasches Lane, respectively. A total of 51 soil samples were collected from the East Assessment Area through test pit excavation and borings. Two samples, one shallow and one deep, were collected from test pit TP-26, located east of South Market Street within the area of the Christina River Bridge Approaches. Samples TP26S and TP26D were field screened for inorganics and organic compounds using DNREC's Mobile Laboratory. Several inorganics, pesticides, polychlorinated biphenyls (PCBs), Gasoline Range Organics (GRO), and Diesel Range Organics (DRO) were detected in TP26D and TP26S, but were below Risk Based Concentration (RBC) criteria. Polycyclic aromatic hydrocarbons (PAHs) were detected in TP 26S above 0.5 mg/kg, but were not detected in TP26D above 0.01 mg/kg. One monitoring well, MW-5 was installed toward the south end of the Christina River Bridge Approaches. Analysis reported iron and manganese concentrations exceeding RBC criteria in the filtered groundwater samples. DNREC concluded that trace amounts of volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), and Tentatively Identified Compounds (TICs) in monitoring well MW-5 may be related

to tar and roofing asphalt reportedly dumped in the area during the 1950s or a former gasoline station shown on historic maps.

2.1.2 South Wilmington Environmental Assessment, Quadrant 3 & 4 (DNREC, 1996)

DNREC completed the South Wilmington Environmental Assessment, Quadrants 3 and 4 (DE-286) in 1996 which consisted of a large investigation effort performed by DNREC-SIRB to collect samples from various properties encompassing 85-acres in South Wilmington. Quadrant 3 is the area between South Market Street and the Christina River. Quadrant 4 is located between South Market and South Walnut Streets, and south of B Street. This includes those properties along James Court, which are south of the eastern approach.

Three shallow soil samples were collected (SS-17, SS-18, and SS-100) and screened for select parameters. Screening results showed concentrations above the RBC criteria in at least one sample for arsenic, lead, GRO, and DRO. Two soil samples were sent for laboratory analysis. Confirmation laboratory results indicated that arsenic and lead concentrations were below Industrial RBC criteria but the lead concentration in one sample exceeded the residential RBC criteria. Several SVOCs, including benzo[a]pyrene, were reported at concentrations which exceeded the RBC criteria. One PCB, Aroclor 1260, was detected at a concentration above the residential RBC criteria.

One surface water sample and one sediment sample were also collected as a part of the Environmental Assessment. In the surface water sample, aluminum, iron, and lead concentrations exceeded the Ambient Water Quality Criteria (AWQC) freshwater chronic criteria. In the sediment sample, GRO and DRO were not detected during screening. Confirmatory laboratory analytical results indicated 14 inorganic constituents above the Industrial or Residential RBC, and/or three times the background concentration for that particular analyte. PCBs exceeded the RBC Residential and Background level criteria. No notable VOCs or SVOCs were detected at concentrations exceeding the RBC criteria.

2.1.3 Christina River Bridge Site Specific Assessment (BrightFields, 2009)

On behalf of the Delaware Department of Transportation, under contract to DNREC, BrightFields conducted a Site Specific Assessment (SSA) of the 32-acre area for the initial proposed Christina River Bridge alignment. A total of 39 soil borings were advanced on either side of the Christina River, revealing mostly imported fill on the west side of the river and industrial fill on the east

side. Laboratory analysis indicated that several contaminants including metals (arsenic and lead), PAHs (benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and dibenz[a,h]anthracene), PCBs, and some petroleum compounds are potential contaminants of concern under a restricted use scenario. Five monitoring wells were installed and groundwater samples were collected from each well. Arsenic was detected above the Uniform Risk-Based Standards (URS) criteria and the City of Wilmington Industrial Pretreatment Regulations limit. Although other metals (aluminum, barium, iron, and manganese) were detected at elevated concentrations in the groundwater, they are not considered contaminants of concern. Four sediment samples were collected and screened. One sediment sample was sent for confirmatory analysis. Metals, one VOC, and PAHs were identified as potential contaminants of concern in sediment. In general, the possible sources of the contamination include spillage from prior USTs, filling activities that previously occurred in this area of the City, and/or from current or past site operations.

2.1.4 Market Street Safety Improvements Environmental Summary Report (BrightFields, 2009)

In September 2009, BrightFields performed soil and groundwater sampling along the Market Street from A Street to just north of the Market/Walnut Street split. The purpose of the sampling was to characterize environmental conditions prior to safety improvements including relocating overhead utilities underground, installation of drainage infrastructure, importing up to four feet of fill to raise the roadway elevation, and installation of landscaping and hardscaping.

A total of 27 borings were drilled along South Market Street and 67 soil samples were collected. All 67 soil samples were screened for metals using X-Ray Fluorescence (XRF). A total of 27 samples were submitted for confirmatory analysis at a HSCA-certified laboratory. Based on the XRF screening results, field observations, existing data, and estimated soil quantities, the project area was broken down into eleven disposal grids. Analysis of the disposal grid soil samples indicated concentrations of lead above the URS criteria and petroleum products above the Delaware Risk-Based Corrective Action Program (DERBCAP) Tier 0 action levels. Groundwater samples were collected at four locations and analyzed for the City of Wilmington Discharge Permit parameters. Concentrations of arsenic, copper, and zinc exceeded both the DNREC URS values and the City of Wilmington Discharge permit limits. Several other metals and some SVOCs exceeded their respective DNREC URS in groundwater samples as well.

Excavated soil and groundwater was managed and properly disposed of as part of the DeIDOT Market Street Safety Improvements Project completed in March 2012.

2.1.5 Christina River Bridge Subsurface Investigation Report (BrightFields, 2012)

BrightFields performed a subsurface investigation to characterize the site soil to approximately 20 feet bgs in areas which are anticipated to be impacted by the construction of the Christina River Bridge and Approaches. A total of 27 boring locations were drilled and sampled. Screening results indicated concentrations of metals (arsenic, lead, iron, antimony, and manganese) exceeding their respective restricted use URS criteria were present in soil samples. Confirmatory analyses reported concentrations of metals and SVOCs (benzo[a]pyrene) above the URS criteria. PCBs, arsenic, lead, PAHs (specifically benzo[a]pyrene), petroleum hydrocarbons, and VOCs were present in the soil across the area. In groundwater, an area of concern due to elevated levels of arsenic in historic samples was identified, but no groundwater samples were collected during the Subsurface Investigation.

2.1.6 Christina River Bridge Subsurface Investigation Report #2 (BrightFields, 2016)

In September 2013, additional borings were advanced and a total of 32 soil samples were collected from the Dravo Shipyard property, the Jablow property, and the Industraplate Corporation property. Screening of soil samples identified arsenic at concentrations exceeding its default Delaware background concentration as well as detectable concentrations of PAHs, TPH (Total Petroleum Hydrocarbons), and Tentatively Identified Compounds (TICs). Laboratory analytical data reported concentrations of various metals and SVOCs exceeding the URS. This report also includes a summary of findings from test holes advanced in 2015 and summaries of contaminants associated with all of the DNREC SIRS and TMS sites located within the 2015 bridge and approaches alignment.

2.2 Summary of Previous Investigations – Specific Properties

2.2.1 Wilmington Coal Gas Site – South (DE-0114)

The Wilmington Coal Gas Site – South is located at Beech Street and Madison Street. The former Wilmington Coal Gas Site is separated into two (north and south) sections by Beech Street. Past uses include a manufactured gas plant which operated from 1889 until 1961, a vehicle storage area, an electrical substation, and a storage building. The surrounding area has mainly been industrial and commercial properties, including ship and car building operations.

Numerous investigations and evaluations have been performed at the site, which was placed on the State priority list in January 1993. Some notable investigations on the property are summarized below. In 1993, Duffield Associates prepared a Preliminary Environmental Site Assessment (ESA) for proposed land acquisition and road improvements to South Madison and Beech Streets. Soil samples contained elevated PAH concentrations when compared to the New Jersey Department of Environmental Protection and Energy (NJDEPE) proposed clean-up standards (DNREC had not yet established standards for clean-up). In 1994, Earth Tech prepared a Facility Evaluation summarizing field investigations and performed a Human Health Risk Assessment. Notable detections in soil samples include PAHs; benzene, toluene, ethylbenzene, and xylenes (BTEX); metals (arsenic, iron, and lead in the surface soil and copper, zinc, and lead in the subsurface soil); and cyanide (in the subsurface). In groundwater samples, notable detections include PAHs, BTEX, and cyanide. Samples of Dense Non-Aqueous Phase Liquid (DNAPL) were also collected and found to be #2 Fuel Oil.

A particular concern on the site is Non-Aqueous Phase Liquid (NAPL), which has led to close monitoring of the site. In 1996, a bio-venting/bio-sparging remedy was implemented and operated for eight years. The system was effective at removing the lighter fraction of hydrocarbons, but not the extent of the NAPL. In 2007, DNREC-SIRB prepared a NAPL Delineation Report for the Wilmington Coal Gas West Site and the Stadium Site (discussed in Section 2.2.2). The investigation found mainly fill across both sites and evidence of soil contamination including visually, by odor, and by photo-ionization detector (PID) readings. Analytical results reported PAHs and TPH in several of the samples. DNREC believed that the Wilmington Coal Gas Site was the source of the contamination. In 2010, AECOM prepared a Focused Feasibility Study (FFS) Report to evaluate additional remedial alternatives.

In December 2010, an Amended Final Plan of Remedial Action was published, which proposed coal tar NAPL remediation through solidification/stabilization and excavation, implementation of a Groundwater Management Zone (GMZ), recording of an Environmental Covenant (EC), development of a Contaminated Material Management Plan, and preparation of a Long Term Stewardship (LTS) plan for soil and asphalt caps. In-situ solidification began in December 2012 and continued through April 2013. In January 2014, AECOM submitted a Final Site Closure Report and Remedial Activity Summary to DNREC outlining the remedial actions performed on the Site. Remedial actions to the Site included the in-situ stabilization (ISS) performed in the southwestern portion of the property (ISS-1) and in the area southeast of the coal gas holder (ISS-2) and, as shown in Figure 3. Additionally, a combustion turbine was decommissioned and a 30,000-gallon above-ground storage tank (AST) was removed from the Site. A total of 12,042

cubic yards of contaminated soil was remediated through ISS. ISS-1 area was backfilled with a stone dust cap, paved with asphalt and ISS-2 area was backfilled with excavated soil that met reuse requirements with a one-foot topsoil cap. A LTS plan for the southern parcel of the site was prepared by AECOM and was submitted by Delmarva Power & Light Company (DP&L) in February 2015.

The LTS plan requires semi-annually gauging of the monitoring wells and groundwater sampling of the monitoring wells for metals, BTEX, PAHs, and TPH, as well as removing NAPL if significant accumulations are observed. It also requires semi-annual inspection of stormwater structures for sedimentation, erosion, or blockage; visual inspection of topography for any changes; and annual inspection of the integrity of the asphalt and vegetative cap. Repairs to the cap, including reseeding and maintenance of the stormwater structures, will be conducted as necessary.

The February 2015 LTS plan, as well as the January 2014 Final Site Closure Report and Remedial Activity Summary, were approved by DNREC in January 2016. A Certificate of Completion of Remedy (COCR) for the Wilmington Coal Gas – South Site was recorded with the New Castle County Recorder of Deeds on May 5, 2016. In July 2016, the property title was transferred from DP&L to the Riverfront Development Corporation (RDC).

DNREC-SIRS continues to conduct Operation and Maintenance (O&M) inspections of the items required by the Amended Final Plan of Remedial Action. The most recent Operations and Maintenance inspection was conducted on August 11, 2017.

2.2.2 Stadium Site (DE-1004)

The Stadium Site is currently the location of Frawley Stadium and the associated parking areas. It was historically part of a larger shipyard.

In 1992, Duffield Associates (Duffield) prepared a Phase II ESA for the Proposed Wilmington Multipurpose Sports Stadium and found trace concentrations of several target analytes and compounds in soil and groundwater samples. The concentrations were considered acceptable when compared to NJDEPE proposed clean-up standards. Petroleum product was observed in subsurface soil along the northern site boundary, possibly from historic practices on a neighboring site. The Phase II ESA also mentioned an undated ESA by Medlab Environmental Testing, Inc., a 1991 Limited Environmental Risk Assessment by Tetra Tech, a 1992 Phase I ESA by Schranze and Associates, and a 1992 Proposed Phase II ESA by Schranze and Associates. The reports

documented that the site was historically used as a shipyard and past analyses showed elevated levels of metals (arsenic, lead, cadmium, and chromium), petroleum hydrocarbons, and SVOCs in the fill material and groundwater. In 1997, Duffield performed a subsurface evaluation in the northwestern portion of the site to evaluate the presence of petroleum hydrocarbons. The petroleum found during the evaluation was characterized as coal tar oil, which is relatively immobile in unsaturated soil. The report also mentions that, in 1992, Delmarva Power assessed the petroleum condition and found a free product plume approximately 200 feet by 100 feet and up to eight inches thick located in the southwestern corner of the southern parcel. As mentioned in Section 2.2.1, in 2007 DNREC released a NAPL Delineation Report for the Wilmington Coal Gas West Site and the Stadium Site. PAHs and TPH were reported in many of the samples.

DNREC-SIRS issued a memorandum dated February 19, 2016, regarding the decision to administratively close the Stadium Site, as it is being addressed as part of the Wilmington Coal Gas – Southern Section (DE-0114).

2.2.3 Dravo Shipyard – Harbor Associates (DE-1096)

The Dravo Shipyard consists of approximately 120 acres that were historically used for shipbuilding and other heavy industrial activities. Much of the area was marshland that was filled with slag and other industrial waste products. A 48-acre portion of the Dravo Shipyard was divided into two DNREC sites, the former Amer property (DE-1092) and the Harbor Associates property (DE-1096), and investigated jointly. The Harbor Associates site consists of approximately 33 acres located on the western and southern portion of the former Dravo Shipyard. These two DNREC sites were then divided into four operable units (OUs) for investigation and remediation purposes. OU-I addressed soil in approximately 30 acres, OU-II addressed groundwater for approximately 48 acres (including the area in OU-I) and soil for 18 acres, OU-III addressed a proposed storm water management system near the riverfront, and OU-IV addressed sediment along the Christina River. The following summary focuses primarily on the Harbor Associates (DE-1096) portion of the Dravo Shipyard area, the location of the western approaches.

Documents reviewed include records of a 500-gallon underground storage tank (UST) located at the south end of the Madison Street property in 1979 and removal of a 1,000-gallon UST in 1998. In 1993, Schranze & Associates, PC performed a Phase II Environmental Assessment and found localized elevated levels of zinc and lead in surficial soil samples. In 1998, a Brownfield Preliminary Assessment II was performed by DNREC to characterize contamination on the site. Notable detections include arsenic, lead, and SVOCs (mainly benzo[a]pyrene) in soil and sediment

samples, as well as metals (aluminum, lead, iron, and manganese) in surface water samples. In 1999, EA Engineering, Science, and Technology (EA) performed a Remedial Investigation/Feasibility Study and compared contaminant concentrations to disposition criteria and suggested placing an impermeable cap over the site. The maximum detected lead concentration in soil exceeded the DNREC unlimited re-use criteria. Metals (aluminum, iron, and manganese) exceeded their respective URS values in groundwater samples. In 2000, EA prepared an OUIV Analytical Sediment Summary Report. Concentrations of several VOCs, PAHs, and metals (arsenic, lead, chromium, and zinc) exceeded their respective URS criteria in sediment samples. In February 2001, a Final Plan of Remedial Action which required containment of impacted soil, a deed restriction for non-residential use, notification and approval from DNREC prior to future intrusive activity, placement of a groundwater management zone (GMZ), and development of an O&M Plan for the containment system. In 2012, an O&M Plan was prepared for the site, excluding two properties that are being addressed by current owners, the Riverfront Hotel Parcel and the Amer Parcel. The 2012 O&M Plan states that ECs will be placed on the different parcels within the site. Currently, this property is used for commercial retail space, a riverwalk, a parking lot, and open land.

DNREC-SIRS continues to conduct Operation and Maintenance (O&M) inspections of the items required by the Final Plan of Remedial Action. The most recent Operations and Maintenance inspection was conducted on November 1, 2016.

Because one of the areas where the elevated PCBs were found during the Subsurface #1 Investigation may be disturbed by the CRB and/or approaches projects, BrightFields collected delineation samples in 2016 and 2017. The elevated PCB area was not able to be fully delineated during these sampling events. The PCB concentrations were found in one area to be higher than the concentrations that were initially found. Given the high concentrations of PCBs, the characterization and cleanup in this area is regulated by the United States Environmental Protection Agency (USEPA) Toxic Substance Control Act (TSCA) as well as DNREC-SIRS. BrightFields submitted the PCB summary report to DNREC on November 29, 2017. The area is within the limit of construction for the CRB and approaches projects but is currently surrounded by an orange construction fence and is not being disturbed.

2.2.4 Riverfront Hotel (DE-1518)

The Riverfront Hotel site is located in an area of the Wilmington Riverfront that has been in continuous industrial use since the late 1700s. Specific uses included steamship construction and

paper production. The site, previously part of the Dravo Shipyard Harbor Associates Voluntary Cleanup Program Site (DE-1096), was certified as a Brownfield in February 2012.

In 2012, Weston Solutions, Inc. (Weston) submitted a Brownfield Remedial Investigation which detailed contamination including benzo[a]pyrene and arsenic in soils, VOCs and various metals in groundwater, and benzene in soil gas. In 2012, a Final Plan of Remedial Action was published which outlined the future use of the property as a hotel and required proper management of contaminated materials. In addition, it required an EC to restrict future land use to commercial and industrial purposes and prohibit groundwater well installation for drinking water. Redevelopment and construction activities for a ten-story hotel structure were completed in April 2014. An Environmental Covenant for the Riverfront Hotel Site was recorded with the New Castle County Recorder of Deeds on August 12, 2015.

DNREC-SIRS continues to conduct O&M inspections of the items required by the Final Plan of Remedial Action. The most recent O&M inspection was conducted on October 27, 2015. A COCR is being withheld pending final payment to DNREC.

2.2.5 Jablow Property (DE-1329, 3-002382)

The Jablow Property is a 6-acre property located at 707 South Market Street. The site has been in commercial/industrial use since the 1960s as an auto salvage and repair facility. Prior to its current use, the subject property was used as a beef slaughterhouse since the 1930s. In 2006, it was certified as a Brownfield.

In 2004, Tetra Tech performed a Phase I ESA and observed probable surficial soil contamination, a possible UST, and several known or potential pollution sources. Tetra Tech also performed a Phase II ESA in 2004 and found that concentrations of metals in shallow and deep soil as well as groundwater exceeded DNREC URS unrestricted use criteria. Organic contaminants were also detected at unknown concentrations in soil and groundwater. Possible sources of contamination identified during the site investigation included more than 100 drums, tanks, vessels, and batteries, many of which were observed to be damaged. In 2006, three USTs were removed and cleaned and the excavation was backfilled and sampled. Solid and hazardous wastes were removed from five acres of the site. Additional hazardous and non-hazardous wastes remained onsite. In 2007, Advanced Geological Services performed a geophysical investigation and found three anomalies, none of which were believed to be USTs. At this time, Tetra Tech also advanced eight soil borings. Two samples collected from near one of the anomalies had TPH-GRO, benzene, and total BTEX levels higher than the Delaware Risk-Based Corrective Action Program Tier 0 levels. In

July 2007, 238.75 tons of soil that had been excavated with the USTs was disposed of offsite and DNREC issued a No Further Action letter. In 2012, LandmarkJCM performed a Brownfield Investigation. Analyses detected concentrations above the URS for metals, SVOCs, one pesticide, and one PCB in soil samples and for metals and one VOC in groundwater samples. In August 2013, BrightFields performed a PCB Delineation. PCBs were reported at concentrations below the DNREC 2013 Screening Level in all samples analyzed. All samples were screened for lead and select samples were sent for confirmatory analysis, some of which exceeded the DNREC 2013 Screening Level, the DNREC URS for restricted use, and/or the hazardous waste regulatory criteria (for Toxicity Characteristic Leaching Procedure (TCLP) lead). The report was submitted to DNREC in April 2014.

BrightFields performed an additional hazardous lead delineation and removal effort between November 2016 and January 2017 due to concerns about previously-detected lead concentrations in soil areas that were likely to be disturbed during bridge/utility construction activities. Four lead soil hotspots were identified from previous investigations as either known or suspected to contain characteristically hazardous lead concentrations. BrightFields performed delineation sampling at all four locations in November 2016 and determined that lead was not present at hazardous concentration in two of the four locations. BrightFields returned to the Jablow Property in January 2017, and excavated the remaining two hotspot areas. Approximately 80 cubic yards of soil with hazardous concentrations of lead was removed and subsequently disposed at Republic Environmental Systems landfill in Hatfield, Pennsylvania. The excavation areas were backfilled with approved fill material and confirmatory samples were taken from both excavations to verify that the hazardous lead containing soil had been removed.

In response to a comment letter issued by DNREC on February 16, 2017 BrightFields prepared and submitted a Supplemental Brownfield Investigation Report (BIR) to address additional information requested by DNREC. The Supplemental BIR was approved by DNREC-SIRS in a letter dated March 28, 2017. Following approval of the Supplemental BIR, a PPRA was issued in May 2017 and was adopted as the FPRA in June 2017. Following the issuance of the PPRA in May 2017, R.E. Pierson began construction work for the Christina River Bridge project. While clearing and grubbing the site, a large amount of debris was unearthed. The debris was removed, segregated, and properly disposed. It is likely that additional debris may be present.

2.2.6 Industraplate Corporation

Industraplate Corporation is located at 5 James Court. The property is currently owned by Robert H. Wahl Revocable Trust and is bordered by the Jablow Property to the north, the James Court and Bald, LLC property to the east, the James Court Associates, LLC Property to the south, and the Christina River to the west. A precision electroplating business currently operates on this property. Industraplate is a regulated Air Program and Hazardous Waste Generator facility.

In 1984, Stable-Reutter Inc. completed a Baseline Monitoring Report with information regarding sampling and analyses of Industraplate's wastewater discharge to the Wilmington publicly-owned treatment works. Samples were analyzed for cyanide, cadmium, lead, and pH. In 1986, DNREC inspected the facility, which performs specialty precision electroplating. They had plating baths of aluminum, nickel, cadmium, copper, zinc, and chromium as well as an anodizing bath. There were two hazardous waste streams (Chromium Waste Stream and Stripping Process Waste Stream) that were generated on a regular basis. A Small Quantity Generator (SQG) Waste Evaluation in 1992 summarized the processes and recorded two violations in regards to the lack of land disposal restriction notification forms and accumulation time for drums exceeding the 180 day time frame. The Waste Evaluation report also stated that the facility was clean and there were no signs of spillage at the plating operations area. In August 1992, DNREC Hazardous Waste Management Branch issued a Notice of Violation to Industraplate for the two violations noted in the Hazardous Waste Evaluation Report.

2.2.7 733 S. Market Street (DE-1502, 3-000454)

733 South Market Street (formerly known as Tire Sales & Service and Bentley Truck Services, Inc. and formerly owned by First State Enterprises and Gene Associates C/O Eastern States Leasing LLC, respectively) is bordered by James Court to the north, South Market Street to the east, several commercial/industrial properties to the south, and Cobra Machine & Fabrication property to the west. The property is currently owned by Dun-Rite Tires Plus Wheels, Inc., who operates a rim and tire sales business.

Between 1994 and 1995, a 2,000-gallon UST was removed from the site and in 1995 the DNREC UST Branch completed a Tank Removal Report. BTEX and TPH were detected in soil samples collected from the former tank area, with contamination increasing downward in the tank pit. In 1996, First State Enterprises informed DNREC that a 1,000-gallon heating oil tank was in use at the facility. Laboratory analysis indicated that there had been a release, so J&M Industries emptied and properly removed the tank. In 1996, DNREC reviewed the analytical data for samples

collected from around the former 2,000-gallon gasoline UST and issued a No Further Action letter. In addition, J&M proposed a plan for an oil recovery system which DNREC approved. Samples collected from around the former 1,000-gallon heating oil UST showed detections of diesel range petroleum hydrocarbons (DRPH) and DNREC required additional investigation to determine the extent of contamination. In October 1996, Duffield submitted a Hydrogeologic Report and Proposed Corrective Action Work Plan which proposed a Product Collection System and summarized the subsurface evaluation at the facility. Free phase petroleum was observed floating in all of the test pits, but the fill layer acted as a trap and kept the water and product perched. As a result, Duffield did not perform the Geoprobe borings or groundwater samples. In 1997, Duffield submitted a Product Collection Summary Report outlining the installation of product collection sumps and the test pit evaluation. Petroleum hydrocarbons were detected in soil samples. The product collection sumps began operating in November 1996 and showed heavy oil accumulation. By June 1998, the total volume of petroleum removed was estimated to be 56.2 gallons. In December 1998, the DNREC UST Branch issued a No Further Action letter. It appears that Tire Sales & Service removed the product collection sumps and backfilled the area at this time as well. In 2011 a Brownfield Investigation Report was prepared for the site. There are no contaminants of concern in surface or subsurface soil. Contaminants of concern in groundwater are arsenic, iron, and manganese. In May 2012, a Final Plan of Remedial Action was published requiring that soil excavation be performed in accordance with the Contaminated Materials and Water Management Work Plan (CMWMWP) and Health and Safety Plan (HASP) and the site owner to record an EC. The Site is currently awaiting redevelopment and remedial actions.

2.2.8 Hessler Property (DE-1169 and DE-1203)

The Hessler Property is located at 401 Garasches Lane. It is approximately 8.5 acres and is surrounded by commercial and light industrial properties. In 2001, a portion of the Hessler Property was certified as a Brownfield and identified by DNREC-SIRS as facility DE-1169. In 2002, a second portion of the Hessler Property was certified as Brownfield and identified by DNREC-SIRS as facility DE-1203. The owner entered into the Voluntary Cleanup Program in 2003. In December 2014, DNREC administratively closed the Hessler Property Site identified as facility DE-1169 and began classifying both portions of the property as Hessler Property Site DE-1203.

DNREC completed a Brownfield Preliminary Assessment II in April 2001, which revealed fill and debris across the site and petroleum-like odors in several test pit excavations. Elevated concentrations of metals (arsenic and lead), PAHs, PCBs, and pesticides were detected in soil

samples. In addition, contaminants related to petroleum were detected in many of the soil samples. In groundwater samples, iron and arsenic exceeded benchmark levels.

The Hessler Property Site was entered into a Brownfield Development Agreement by Cornerstone West Community Development Corporation in February 2015. BrightFields conducted a Brownfield Investigation on the Site in January 2015 and submitted the final BI report to DNREC in June 2015. The final Brownfield Investigation report was approved by DNREC in July 2015. Metals (antimony, arsenic, total chromium, chromium VI, copper, iron, lead, and zinc), PAHs, and total PCBs were detected in the surface soil above DNREC January 2015 screening levels. Metals (aluminum, antimony, arsenic, barium, cadmium, total chromium, chromium VI, cobalt, copper, lead, mercury, nickel, silver, and zinc), PAHs, and total PCBs were detected in the subsurface soil above DNREC January 2015 screening levels. TCLP lead was detected in soil above RCRA hazardous waste criteria. Metals (arsenic, barium, chromium, iron, lead, and manganese), SVOCs (benzo[a]pyrene and benzo[b]fluoranthene), and VOCs (TCE and vinyl chloride) were detected in the Site dissolved groundwater above DNREC January 2015 screening levels. Metals (aluminum, arsenic, barium, cadmium, copper, iron, lead, manganese, mercury, and zinc) and organics (benz[a]anthracene, benzo[a]pyrene, pyrene, and 4,4'DDE) were detected above DNREC January 2015 screening levels in surface water. Metals (antimony, arsenic, cadmium, total chromium, copper, iron, lead, manganese, mercury, nickel, silver, and zinc), cyanide, and PAHs were detected in sediment above DNREC January 2015 screening levels. Visual observation and laboratory analysis indicated the presence of potential asbestos-containing material (ACM) in test pit TP-06.

A Supplemental Investigation to delineate the extent of elevated arsenic, lead, and asbestos-containing material (ACM) previously identified on the Site was performed by BrightFields in June 2015. Twenty-two soil borings were advanced and ten test pits were excavated as part of the Supplemental Investigation. Based on field observations and analytical data, ACM is primarily concentrated at a depths ranging from 5 to 10 feet below ground surface within the vicinity, and extending to the south, of test pit TP-06 (excavated during the 2015 Brownfield Investigation). Based on observations made during initial and supplementary test pit excavations and knowledge that the property was historically used for landfilling operations, it is likely that additional debris may be encountered during excavation.

A Focused Feasibility Study (FFS) was completed in September 2015. The study evaluated several different remedial actions to address remediation of site COCs. The recommended remedial actions include a phased approach which will be incorporated with the development of the property and provide for evaluation of each action before implementing additional remedial

actions. The first recommended remedial action is to place an institutional control on the site to prevent disturbance of buried ACM on the central portion of the site and to prohibit the withdrawal of groundwater. In conjunction with the development of the property, an impervious cover will be placed on the entire site and monitoring wells installed. The monitoring wells will be sampled to evaluate if groundwater contamination is naturally attenuating or if additional remedial measures are necessary. If additional remedial actions are required to address the groundwater contamination, a permeable reactive barrier along the ditch on the eastern boundary of the property may be installed. If additional remedial actions are required to address surface water contamination, reactive core mats may be installed on the western side and bottom of the ditch along the eastern property line. A PPRA for the site currently is being drafted by DNREC. DNREC has requested that an area approximately 20 feet in width be preserved between the ditch and the planned future road to allow for installation of a groundwater treatment system, if determined to be necessary.

2.2.9 Shuster Auto Salvage (DE-1178)

Shuster Auto Salvage is located at 601 South Market Street. Historically, the site was a salvage yard including a storage area and a car crusher.

The property was included in the South Wilmington Environmental Assessment, Quadrants 3 & 4 completed by DNREC in 1996. Elevated concentrations of arsenic, cadmium, chromium, copper, lead, manganese, mercury, nickel, zinc, and bis(2-ethylhexyl) phthalate were detected in soil samples. A monitoring well installed on the northern portion of the property revealed elevated levels of arsenic, iron, and manganese in both filtered and unfiltered samples. In 2001, Environmental Alliance completed the South Wilmington Salvage Yards Remedial Investigation which indicated TPH-DRO and arsenic present at concentrations exceeding HSCA levels in soil and dissolved iron exceeding the HSCA level in groundwater. In 2009, Environmental Alliance performed a Remedial Investigation and found that the chemicals of concern in soil and groundwater include metals, VOCs, SVOCs, and TPH.

A PPRA was issued in February 2017 and was adopted as the FPRA in April 2017. Following the issuance of the FPRA, a Contaminated Materials Management Plan for the Shuster Auto Salvage Site was prepared and submitted by Environmental Alliance on behalf of the Riverfront Development Corporation.

2.2.10 524 A & B South Walnut Street (DE-1235)

The 524 A & B South Walnut Street property is located between Garasches Lane and C Street. Historically, the site was used as a junkyard from the 1930s through the early 1960s. The eastern portion of the site was owned by railroad companies through 1988.

Geotechnical investigations in 1973, 1974, and 1987 showed fill including rocks, broken concrete, trash, cinders, slag, incinerated rubbish, rags, wood, glass, plastic, and coal from 0 to 15 feet below grade across the Site. In December 1997 and December 2000, Tetra Tech performed Phase I Environmental Site Assessments. Tetra Tech subsequently performed a Remedial Investigation (RI) in September 2001. The RI reported elevated concentrations of arsenic, lead, PAHs, PCBs, and SVOCs (benzo[a]pyrene and dibenz[a,h]anthracene) in the soil. Concentrations of metals (mainly arsenic), SVOCs, PCBs, and pesticides exceeded their respective DNREC URS values in shallow groundwater samples.

A PPRA was issued in August 2002 and was adopted as the FPRA in July 2002. The 2002 Final Plan of Remedial Action required that a deed restriction be placed on the property and that the pavement and landscaped areas be kept in good condition through an O&M Plan. A Certificate of Completion of Remedy was issued on September 9, 2002. DNREC-SIRS continues to conduct O&M inspections of the items required by the Final Plan of Remedial Action. The most recent Operations and Maintenance inspection was conducted on February 20, 2017.

2.2.11 American Tank Cleaning Company (DE-1180, 7-000200, 3-001515)

American Tank Cleaning Company is located at 535 South Market Street. The tank trailer cleaning business has operated since 1980. Tanks containing both hazardous and non-hazardous wastes have been cleaned by the company. There were three USTs onsite; two were removed in 1987 and the third was removed in 1994.

The site was investigated as a part of the 1996 South Wilmington Environmental Assessment, Quadrants 3 & 4 by DNREC and some PCBs were detected in the soil. In 2001, Environmental Alliance completed the South Wilmington Salvage Yards Remedial Investigation which reported iron and manganese in groundwater samples collected from the western portion of the site and lead in soil samples.

The site was certified as a Brownfield in January 2016 and is identified as DNREC-SIRS facility DE-1180. A Remedial Investigation was conducted in 2015 by Environmental Alliance. During

the investigation, one subsurface soil sample collected from fill material exhibited a total PCB concentration greater than 50 parts per million. Based on the findings of the investigation, a PCB-Delineation Investigation and Feasibility Study were recommended to evaluate the extent of PCB contamination and evaluate potential remedies for the Site. The Remedial Investigation Report was approved by DNREC in a letter dated December 29, 2016. A PCB-delineation Investigation was conducted by Environmental Alliance in May and June 2017. The investigation identified PCB concentrations exceeding 50 ppm in several shallow soil samples. Based on the results of the delineation of PCBs in shallow soil, a removal action of approximately 59 cubic yards of surficial soil was recommended. A Feasibility Study has not yet been performed for the site.

2.2.12 Lamplugh Property (DE-1319, 3-001029)

The Lamplugh Property (also known as B&M Auto) property is a 4.29-acre property located at 525 South Market Street. Based on previous investigations, this site may have been used as a gas station. Three USTs were removed in the 1980s. Based on the soil sample results from the removal, DNREC recommended a Hydrogeologic Investigation be performed on the property. Based on the Brownfield Investigation, which included a Hydrogeologic Investigation, performed by BrightFields in 2004, it was concluded that lead, PAHs, and arsenic are contaminants that may be found in the soil near this property. Metals, SVOCs, and PCBs were detected in sediment samples from previous investigations at concentrations exceeding their respective URS. Arsenic and naphthalene may be encountered in the groundwater in the vicinity of this property. The Brownfield Investigation Report (including Hydrogeologic Report) was approved by DNREC in a letter dated March 29, 2005. A Proposed Plan of Remedial Action has not been issued for the property.

2.2.13 M&N Property (DE-1496)

The M&N Property is located at 516 South Market Street. Past uses include a skate park, an auto sales yard, and a wire shelving supply house. Soil and groundwater contamination is believed to be associated with historical fill deposited prior to commercial uses. The M&N Property was certified as a Brownfield in October 2010 and is identified as DNREC-SIRS facility DE-1496.

Environmental Alliance performed a Brownfield Investigation in 2011. Surface soil is generally clean while the subsurface soil contains arsenic, lead, and SVOCs such as PAHs. Groundwater contains dissolved iron, manganese, arsenic, aluminum, and antimony. A FPR was issued in August 2011 stating that an EC would be recorded limiting the site to light industrial or commercial use and groundwater well installation and disturbance of soil will be prohibited unless

prior written approval from DNREC was obtained, a LTS Plan would be developed and implemented, and a Contaminated Materials Management Plan would be developed and implemented. These items were completed and DNREC issued a Certificate of Completion of Remedy in late 2011. DNREC-SIRS continues to conduct O&M inspections of the items required by the Final Plan of Remedial Action. The most recent Operations and Maintenance inspection was conducted on October 12, 2016.

2.2.14 International Petroleum Corporation (DE-1278, 3-000001)

The International Petroleum Corporation (IPC) property is located at 505 South Market Street. The property has been historically used as a petroleum facility since early 1900s, with reports of operations dating back to 1931. Prior to IPC, site operators included a fuel oil distributor and a home heating-oil company. Property ownership has been transferred several times, but processing and recycling of petroleum products has continued. Heritage-Crystal Clean (formerly IPC) of Siemens Industries currently operates on the site.

In 1991, WIK Associates conducted an initial investigation of soil and groundwater quality. The investigation indicated the presence of VOCs and SVOCs in the soil and groundwater. In 2001, Environmental Resources Management (ERM) conducted a limited soil and groundwater investigation at the Site. Additional soil and groundwater samples were collected. The investigation indicated the presence of TPH and methyl tertiary butyl ether (MTBE) in soil and VOCs and SVOCs in groundwater. Based on the November 2003 ERM Remedial Investigation Report, previous soil samples contained PCBs (Aroclor 1260), pesticides, and metals (notably arsenic, lead, and iron). The ERM RI report also indicated that four tanks; two 6,000-gallon tanks, one 5,000-gallon tank, and one 550-gallon tank were removed in 1992 from the eastern side of the site that was formerly a gas station. BTEX and TPH-GRO were detected in the site soil around the USTs. The contaminants that may be encountered in the soil in the vicinity of this property are PCBs, pesticides, metals (notably arsenic, lead, and mercury), VOCs, SVOCs, and TPH-GRO. BTEX, MTBE, naphthalene, PAHs, and free product may be encountered in groundwater in the vicinity of this property. In May 2005, a FPRA was prepared for the site to continue including the site in the City of Wilmington GMZ, place a deed of restriction on the property, require preparation and submittal of an O&M Plan, and to require monitoring of the status of the phytoremediation and wetland restoration effort along the waterfront. The interim action for groundwater as a part of the FPRA included the continued monitoring, recovery, and removal of free-product petroleum from the on-site product recovery wells as well as a current evaluation of groundwater contamination.

ERM, on behalf of Siemens Industries, prepared and submitted a Supplemental Plan of Remedial Action (SPRA) in June 2017 which presented a work plan for removal of free-product petroleum (LNAPL) from on-site recovery wells as the final work task under the approved 2005 Final Plan of Remedial Action. In a response letter dated September 27, 2017, DNREC-SIRS indicated that a SPRA would not be approved until additional efforts are conducted to characterize the extent and severity of LNAPL contamination at the site.

2.2.15 Christina Landing Retail Center (DE-1401, 3-002400)

The Christina Landing Retail Center, also known as the Howard Street Commercial Development, is located at 310 South Market Street. The property is located at the northern extent of the project area on the east side of the Christina River; therefore, only the southern portion of the site will be encountered during construction activities. Historically, the site was used as a metals salvage yard to process scrap metal from the 1950s through 2005. Operations included crushing metal objects and equipment which may have resulted in a release of PCBs.

Various investigations indicate PCBs, arsenic, lead, and some PAHs to be the main contaminants of concern in soil, sediment, and groundwater on the property. In 2005, Duffield Associates performed a Modified Phase I ESA with Limited Sampling and found concentrations of benzo[a]pyrene, dibenz[a,h]anthracene, PCBs, arsenic, and lead exceeding URS standards in soil samples. Duffield Associates collected additional samples for the 2005 Preliminary Supplemental Remedial Evaluation to investigate a possible PCB “hotspot” and address other data gaps. PCB concentrations ranged from 9.6 mg/kg to 5,300 mg/kg and manganese and iron were detected in groundwater samples exceeding the DNREC groundwater quality standards. A 2007 Remedial Investigation/Feasibility Study (RI/FS) summarized all non-PCB data and compared different remedial actions. A Self-implementing On-Site Cleanup and Disposal of PCB Remediation Waste/Risk Based Disposal Approval Plan (Hybrid Plan) was submitted to DNREC and USEPA Region 3 in October 2007. In January 2008, contaminated soil was excavated and sampled for disposal. In April 2008, PCB-contaminated soil was excavated and a low-permeability clay cap was installed over the residual contamination, which was later covered with a parking lot. At that time, two gasoline USTs were discovered and removed from the site. A FPRA was issued in January 2009 and outlined the cleanup of PCB-contaminated soil, placement of marker fabric, and installation of an asphalt cap. In addition, the FPRA required the implementation of an environmental oversight program during redevelopment, the institution of ECs, and restriction of groundwater through the City of Wilmington GMZ. These remedial actions were completed and the COCR was recorded on February 4, 2010.

DNREC-SIRS and the property owner continue to conduct O&M inspections of the items required by the FPRA. The most recent Operations and Maintenance inspection was conducted on August 11, 2017. A Five-Year Remedy Evaluation Report was prepared and submitted by Weston on behalf of the Buccini/Pollin Partners I, LLC in December 2016 and was approved by DNREC in a letter dated December 28, 2016.

3.0 CONTRACTOR RESPONSIBILITIES

The following list of items will be carried out *prior* to any intrusive activities:

1. The Contractor shall not begin intrusive subsurface work until the Contractor has read, understood, and signed the CMWMWP and HASP.
2. The Contractor will notify and coordinate with DNREC's designated HSCA-certified environmental consultant 5 days prior to any intrusive work in the Project area. This notification will include the type of activity being performed (i.e. test holes, test pits, excavation, dewatering, silt/sludge removal) and the area within the site where the activity will occur.
3. Contractor shall submit to DNREC's designated HSCA-certified environmental consultant, the quantity (truckloads) of soil to be excavated.
4. Contractor must notify DNREC's designated HSCA-certified environmental consultant, of any off-site fill source a minimum of six weeks prior to bringing on site. Any soil used as fill, obtained from an off-site source, shall be sampled by DNREC or DNREC's designated HSCA-certified environmental consultant, prior to bringing on site. DNREC or DNREC's designated HSCA-certified environmental consultant, will evaluate the analytical results and determine whether it is an acceptable source of fill material. DNREC must approve of all soil from a Delaware HSCA site (surface or subsurface) to be used as fill. The information to be submitted to DNREC for accepting soil from a HSCA site will include a comparison of the analytical data of the fill soil and the onsite soil and be consistent with DNREC's May 2010 Soil Re-Use Policy (Attachment 2).
5. The Contractor shall be prepared to provide appropriate personnel, equipment, and supplies to comply with methodology described and to meet the objectives of this CMWMWP and the site specific HASP, including all necessary personal protective equipment (PPE).
6. Contractor will be responsible for pumping from the excavation into the groundwater discharge pretreatment system as described in Section 4.5.
7. The Site Safety and Health Officer (SSHO) will conduct a health and safety briefing as described in the HASP. The contractor shall conduct pre-construction safety meetings with

all personnel involved in the excavation activities within the project area. All personnel working on the project will review and sign the HASP.

The following list of items will be carried out *during* intrusive activities:

1. In the event that suspicious soil or other materials are encountered during excavation activities, the contractor shall prepare a temporary soil stockpile area as specified in Section 4.0 of this CMWMWP. Soil and other materials (i.e. timbers) shall not be removed or placed within the stockpile area without the approval and oversight of DNREC's designated HSCA-certified environmental consultant. The location of the temporary stockpile may change due to the needs of the project (e.g., consolidation, shifting, and screening). The Contractor is responsible for maintaining erosion and sediment control measures around the stockpile as required.
2. The contractor shall cover the contaminated stockpiles with 8-mil plastic at the end of each work day.
3. DNREC's designated HSCA-certified environmental consultant will maintain copies of completed non-hazardous and hazardous (if necessary) waste manifests for soil, contaminated water, and oil transported to an approved disposal location as specified by RK&K and/or DeIDOT.
4. The contractor shall maintain all perimeter sediment controls in working condition to prevent sediment loss from the soil stockpile area. The contractor shall keep all roadways entering and leaving the stockpile area free from soil. If necessary a tracking pad or street sweeper will be used to prevent and clean any soil tracked on roadways from trucks leaving the site.
5. Contractor will be responsible for transportation and disposal of all concrete, asphalt, metal, and untreated wood. Oily concrete, or other debris, if it is encountered, shall be pressure-washed at the site by the DNREC's designated HSCA-certified environmental consultant prior to loading into trucks for off-site recycling or disposal by the Contractor, unless the recycling or disposal facility agrees with the Contractor to accept the material as is. Water (i.e., washwater) is to be collected and treated prior to discharge. Non-oily debris shall be shaken to remove the majority of attached soil, if any, prior to offsite disposal.

6. The Contractor will notify and coordinate with DNREC's designated HSCA-certified environmental consultant at least 2 weeks prior to any dewatering activities within the Project area. Contractor shall submit to DNREC's designated HSCA-certified environmental consultant a summary of the daily volume of water to be discharged to the sanitary sewer or storm sewer, as approved, if necessary. If water treatment is required, DNREC or DNREC's designated HSCA-certified environmental consultant will supply and maintain the pretreatment system and will install a totalizing flow meter on the water treatment system outlet as described in Section 4.5. Discharging to the sanitary sewer or storm sewer during rain events will be prohibited, as required by the City of Wilmington discharge permit (Attachment 3).
7. The Contractor shall be responsible for the security of the construction area and equipment throughout the project. The Contractor shall provide adequate security measures to prevent public exposure to possible contamination.
8. The Contractor shall perform work to insure minimum interference with vehicular traffic and other site activities.
9. The Contractor shall maintain emergency and fire routes from the project area.
10. The Contractor must supply adequate water to control dust during all on-site activities. Dust suppression activities will be coordinated between the Contractor and the SSHO.
11. In the event that petroleum contaminated materials or USTs are encountered during construction, the USTs will be properly removed by a Delaware certified tank removal contractor, and the recovered petroleum and the soil will be sampled and managed according to the Delaware Regulations Governing Underground Storage Tank Systems.

The following list of items will be carried out *after* intrusive work is completed:

1. Contractor shall properly decontaminate equipment as needed.
2. The Contractor shall submit a copy of weight tickets from all offsite fill sources used throughout the duration of the project.

4.0 EXCAVATION, HANDLING, AND MANAGEMENT OF CONTAMINATED MATERIALS

4.1 Soil Remedial Approach

A summary of contaminants associated with sites located within and adjacent to the Christina River Bridge Approaches project limits is included in Table 1. Potential areas of concern are shown on Figures 3a and 3b. Since construction for the Christina River Bridge and Approaches will be performed in different stages, a separate CMWMP has been prepared for the Christina River Bridge Approaches to appropriately manage soil and groundwater generated during construction.

If excavated soil cannot be reused as backfill in the excavation because of environmental and/or structural reasons, it shall be stockpiled in the designated stockpile area, sampled, if necessary, and disposed off-site at an approved disposal facility. DNREC's designated HSCA-certified environmental consultant personnel will direct the Contractor as to which stockpile to place the excavated material. Waste characterization data will be used to determine whether the material is hazardous or non-hazardous waste and aid in the selection of an appropriately licensed disposal facility.

4.1.1 Non-Hazardous Soil

The Contractor shall use materials and equipment that are standard for excavation and removal activities and that comply with specification requirements. Tiger Teeth excavator buckets or similar equipment may be necessary in areas with ISS, specifically areas located on and surrounding the Wilmington Coal Gas Site (Section 2.2.1), shown on Figure 3b and on the Contaminated Materials Plan sheets and profiles in the Final Plans for the project. Environmentally and structurally suitable soil will be reused wherever possible within the project area beneath a one foot cap or impervious material.

Soil is environmentally unsuitable if PID readings on the soil are consistently greater than 25 ppm, if there is unusual or potent olfactory evidence of contamination, or if soil is visually suspect (i.e., unusually colored soil, evidence of obvious hydrocarbon product mixed with soil).

Odor suppression products and/or lining the excavation with 8-mil poly sheeting may be necessary in MGP and petroleum impacted areas. If soil within the Project area cannot be reused as backfill due to evidence of contamination, those locations will be noted to ensure proper handling and

disposal. If these areas are encountered during intrusive activities, the soil should be stockpiled separately and disposed off-site at a designated disposal facility.

It is the goal of this project to dispose of all contaminated soil off site as soon as possible after it is excavated. If soil cannot be reused, soil will be loaded directly into trucks, if warranted, for transport to a DNREC-approved location for disposal as specified by the owner. The Contractor shall coordinate with the Engineer and DNREC's designated HSCA-certified environmental consultant to schedule trucks for soil disposal in advance of soil excavation. The SSHO will conduct photo-ionization detector (PID) and dust monitoring during soil excavation activities.

The Contractor shall comply with the following procedure for stockpiling:

- Polyethylene Sheeting: At the designated stockpile staging area, the contractor shall use 8 mil thick polyethylene sheeting (clear or black) to stockpile contaminated soils. Three layers of the sheeting will be placed on the ground surface and the soil stockpiled on top of the poly sheeting. The soil pile will be covered with the polysheeting at the end of each work day and will be secured and weighted to prevent wind damage to the staging area.
- Stockpile Maintenance: Contractor shall shape and lap the cover edge of the polysheeting to shed water and cover the pile at the end of each work day. The Contractor shall promptly replace degraded or torn cover material. The Contractor shall install silt fencing around the stockpile area, install a construction entrance, and provide inlet protection, as specified in the project erosion and sediment control plans.

The contractor shall prevent, to the greatest extent possible, the infiltration of surface water into the excavated areas.

The intrusive activities shall be conducted under modified Level D OSHA PPE within the project area by OSHA 24-hour HAZWOPER trained workers. In the event that a PPE upgrade to Level C is necessary, intrusive activities shall be conducted by OSHA 40-hour HAZWOPER trained workers. A description of the PPE required is provided in the HASP. Also included in the HASP are PPE upgrade action levels and requirements for the donning of Level C PPE.

In the event that any visual, olfactory or instrumental evidence of contamination is found, and in conjunction with recent soil analytical results, DNREC's designated HSCA-certified

environmental contractor will instruct the contractor which stockpile to use for staging soil until the appropriate disposal facility has been approved. The contractor cannot take any soil off site unless approved by DNREC or DNREC's designated HSCA-certified environmental consultant.

4.1.2 PCB Impacted Soil on Dravo Property

All Soil with PCBs greater than 50ppm is regulated by TSCA and DNREC-SIRS. Removal of PCB-impacted soil within the area shown on Figure 3B will be performed by DelDOT's hazmat contractor in accordance with a separate Remedial Action Work Plan. This area has been fenced off and is not to be utilized by the CRB Approaches contractor until the removal action is completed.

4.2 Debris Materials

4.2.1 Non-Hazardous Debris

All non-hazardous debris materials (i.e., timbers, treated wood, railroad ties, and/or concrete) encountered during excavation activities will be segregated from excavated soil and stockpiled on 8-mil polyethylene sheeting. Treated wood and/or railroad ties encountered during excavation activities will be segregated from excavated soil and stockpiled on 8 mil poly sheeting in the designated stockpile area. It is the responsibility of the contractor to cut all railroad tie material into three foot sections before loading into disposal trucks or roll offs for transport to the appropriate disposal/recycling facility (if necessary).

If debris material is determined to be hazardous, it will be managed following RCRA generator, transportation, and disposal requirements. Contractor will be responsible for transportation and disposal of all concrete, asphalt, metal, and untreated wood.

4.2.2 Asbestos Containing Materials (ACM)

In the event that ACM is encountered during intrusive activities, the material must be segregated and a State of Delaware certified/licensed asbestos contractor must properly remove the ACM prior to any activities that would disturb the identified ACM, in accordance with Federal, State, and local asbestos regulations. All contractors must be made aware of the identified asbestos materials prior to any work in the vicinity of the identified ACM to prevent accidental disruption of the asbestos materials and subsequent exposure prior to their removal.

4.3 USTs, ASTs, and Piping

If USTs, ASTs, or associated piping are encountered during any of the intrusive activities in the project area, the Contractor will immediately stop work and notify DNREC's HSCA-certified environmental consultant. USTs, ASTs, or associated piping will be properly drained of liquids, removed, decontaminated, and disposed off-site in accordance with the Delaware Regulations Governing Underground Storage Tank Systems. If residual non-aqueous phase liquid (NAPL) is present in the ground it will be handled through the dewatering treatment system or excavated, as appropriate, in accordance with DNREC regulations.

4.4 Sludge/Silt

If necessary, the Contractor shall provide labor, material, and equipment for removing all sludge and silt material generated. The material will be stockpiled in the designated stockpile area.

4.5 Groundwater

As described in Figures 3a and 3b, there are potential areas of concern in groundwater throughout the Project area. All groundwater that will be dewatered from excavations and discharged into the City of Wilmington sanitary sewer system will require treatment. A copy of the discharge permit will be included as Attachment 2, once received from the City of Wilmington. If volume of pumped water is greater than 50,000 gallons per day a DNREC Water Allocation permit may be required. Other DNREC permits may also be applicable for portions of the project.

Initial pretreatment may include a sedimentation tank to reduce the suspended solids, an arsenic removal filtration unit, a carbon unit, and an oil/water separator (when necessary) before discharging into the sewer system. Water pumped from the excavation shall be treated, as necessary, to meet the discharge concentrations specified by the wastewater discharge permit issued by the City of Wilmington. If initial discharge limits are exceeded, to meet the permit requirements, DNREC or DNREC's designated HSCA-certified environmental consultant shall notify the Contractor that additional pretreatment will be required. DNREC or DNREC's designated HSCA-certified environmental consultant shall install, maintain, and operate the pretreatment system with an optional carbon filtration system and/or oil-water separator and/or arsenic removal filtration unit and/or cyanide resin unit (depending on discharge exceedances). After pretreatment, all dewatering fluids shall be routed into one of the designated sanitary sewer manholes approved by the City of Wilmington in accordance with the Wastewater Discharge

Permit (to be included as Attachment 2, once received from the City of Wilmington). The typical allowable discharge levels for the City permit are presented in Table 2.

DNREC's designated HSCA-certified environmental consultant shall take samples during the dewatering activities to ensure that water criteria limits have not been exceeded. DNREC's designated HSCA-certified environmental consultant will collect an initial sample of discharge water during the first day of dewatering. Some analytical results will be available within 24 hours. Because of the time it takes to process these samples for certain analytical requirements, a faster turn-around time may not be possible. All analytical results will be obtained within two weeks from the date the sample is taken to the lab and will be reported to the appropriate agency. Based on the results, DNREC or DNREC's designated HSCA-certified environmental consultant may have to modify treatment methods to meet the permit's requirements for discharge.

DNREC's designated HSCA-certified environmental consultant shall meter the instantaneous discharge rate and the cumulative discharge volume for all water discharged. DNREC's designated HSCA-certified environmental consultant shall maintain a log detailing the dates and hours of discharge, the rate of discharge in gallons per hour, and the cumulative gallons discharged.

If an oil/water separator is necessary, then the recovered oil shall be removed from the oil storage area of the oil/water separator and properly disposed. DNREC or DNREC's designated HSCA-certified environmental consultant will subcontract the oil removal to a DNREC approved waste disposal facility.

If a carbon unit and/or arsenic removal filtration unit is necessary, it will be provided by DNREC's designated HSCA-certified environmental consultant. The units must be of a design which can handle the anticipated discharge flow and remove solvents or elevated arsenic concentrations. The type of system that is anticipated is an appropriately sized carbon unit and/or arsenic removal filtration unit. Depending on the size of the system and the initial VOC or arsenic concentrations, frequent changing of the system, shall be properly maintained and monitored for breakthrough of contaminants. If carbon (black globules) is observed on the discharged water, a breakthrough has occurred. Depending on which type of arsenic removal system is used, there are different ways to know if a breakthrough has occurred. At the conclusion of the project or as needed, the contaminated portion of the units shall be properly disposed according to the manufacturer's specifications.

5.0 TRANSPORTATION OF CONTAMINATED MATERIALS

This section describes the procedures to be followed during the loading and transportation of the contaminated material (soil, oil if present, railroad ties, debris, and sludge/silt) to the respective off-site recycling/disposal facilities.

5.1 Soil Disposal

- A. Contaminated soil and or structurally unsuitable soil that is excavated from the project areas will be live loaded or temporarily stockpiled in preparation for loading into dump trucks or trailers by the Contractor, as coordinated and approved by DNREC or DNREC's designated HSCA-certified environmental consultant. DNREC or designated HSCA-certified environmental consultant will monitor the loading and stockpiling of soil. The soil will be transported to a DNREC-approved disposal location, as specified by DNREC's designated HSCA-certified environmental consultant.
- B. The trucks shall be loaded so that the solids are at least six (6) inches below the top of the trailer bed.
- C. The trucks shall be covered during transport.
- D. DNREC's designated HSCA-certified environmental consultant will monitor the release of dust, vapor emissions, and wet soil from the trucks leaving the site.
- E. The contractor shall keep all roadways entering and leaving the project location free from soil. If necessary, a tracking pad or street sweeper will be used to prevent and clean any soil tracked on roadways from trucks leaving the site.
- F. DNREC's designated HSCA-certified environmental consultant shall prepare and provide the facility with completed required waste manifests.
- G. All manifests shall be signed by the owner's representative or agent, prior to vehicles leaving the site.

5.2 Other Fill Materials

- A. All railroad ties and treated wood shall be loaded into trucks or roll offs, which are to be covered during transport to the approved disposal facility

- B. Contractors will be responsible for transportation and disposal of all concrete, asphalt, metal and untreated wood.

5.3 Sludge/Silt Removal (if applicable)

- A. Contaminated sludge/silt shall be sampled by DNREC's designated HSCA-certified environmental consultant prior to being loaded into dump trucks or VAC trucks.
- B. The trucks shall be loaded so that the solids are at least six (6) inches below the top of the trailer bed and then transported to an approved disposal location as specified by the owner.
- C. The trucks shall be covered during transport.
- D. DNREC's designated HSCA-certified environmental consultant will monitor the release of dust, vapor emissions, and any wet soil from the trucks leaving the site.
- E. The contractor shall remove accumulated material from the truck tires prior to the trucks leaving the construction site and or the sludge management area. DNREC's designated HSCA-certified environmental consultant, will monitor for excess water from washing of truck tires, as well as prevent excess water leaking from trucks while moving any soil offsite.
- F. The contractor shall keep all roadways entering and leaving the project location free from soil. If necessary a tracking pad or street sweeper will be used to prevent and clean any soil tracked on roadways from trucks leaving the site.

5.4 Petroleum Contaminated Water and Oil (if encountered)

- A. Petroleum contaminated water will be pumped into holding tanks, sampled, and transported to a designated facility.
- B. The transporter for any recovered oil will be a DNREC approved waste disposal facility that is fully licensed, insured, and permitted to transport petroleum contaminated liquids in the State of Delaware.
- C. DNREC's designated HSCA-certified environmental consultant will provide the driver with completed non-hazardous waste manifests and maintain and submit all manifest documentation to necessary parties.

- D. All manifests shall be signed by the owner's representative or agent, prior to vehicles leaving the site.

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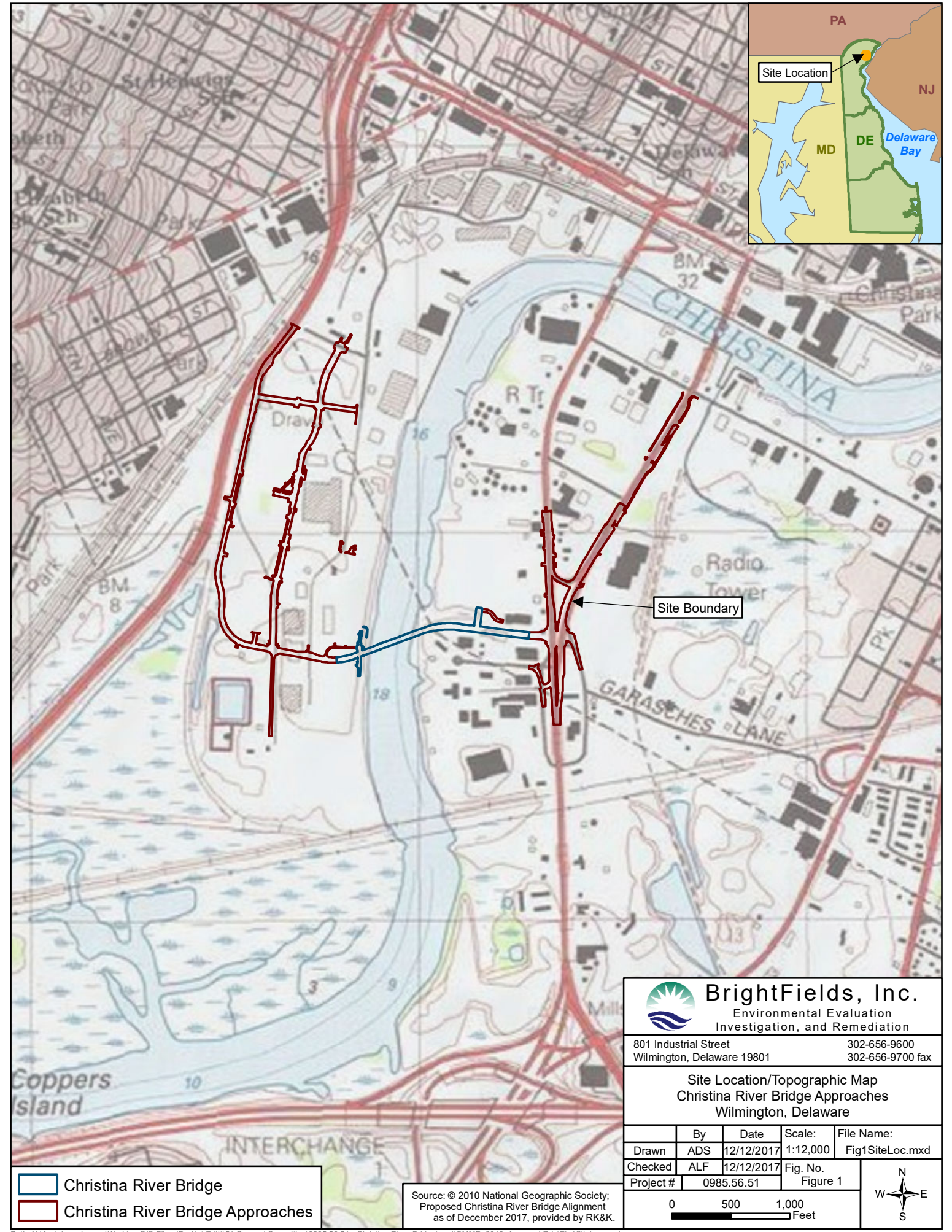
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FIGURES



Site Boundary

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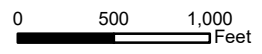
801 Industrial Street
 Wilmington, Delaware 19801

302-656-9600
 302-656-9700 fax

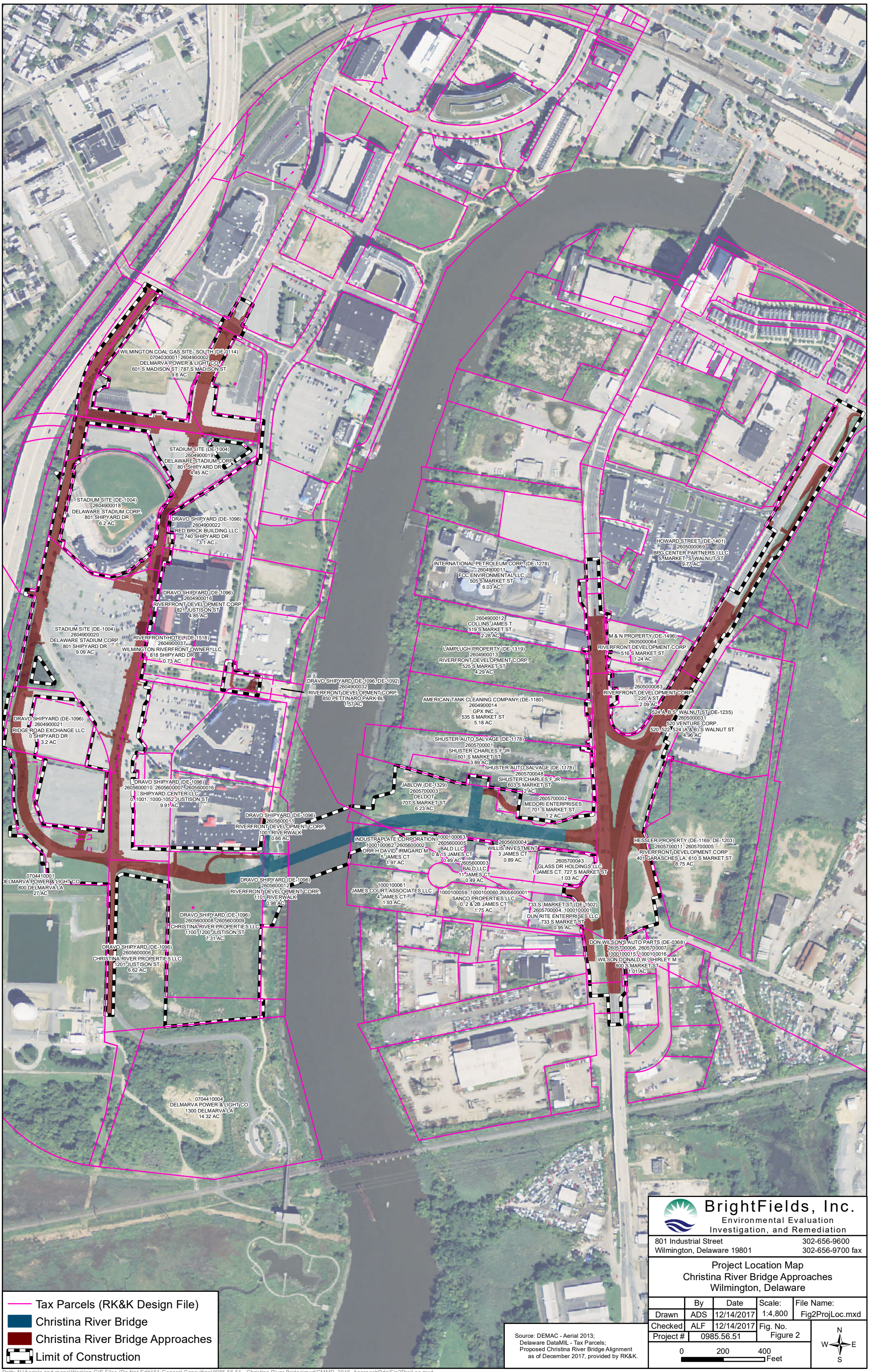
Site Location/Topographic Map
 Christina River Bridge Approaches
 Wilmington, Delaware

	By	Date	Scale:	File Name:
Drawn	ADS	12/12/2017	1:12,000	Fig1SiteLoc.mxd
Checked	ALF	12/12/2017	Fig. No.	
Project #	0985.56.51		Figure 1	


Source: © 2010 National Geographic Society;
 Proposed Christina River Bridge Alignment
 as of December 2017, provided by RK&K.



- Christina River Bridge
- Christina River Bridge Approaches



— Tax Parcels (RK&K Design File)
— Christina River Bridge
— Christina River Bridge Approaches
 Limit of Construction



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801 Industrial Street 302-656-9600
 Wilmington, Delaware 19801 302-656-9700 fax

Project Location Map
 Christina River Bridge Approaches
 Wilmington, Delaware

By	Date	Scale:	File Name:
Drawn	ADS	12/14/2017	1:4,800 Fig2ProjLoc.mxd
Checked	ALF	12/14/2017	Fig. No.
Project #	0985.56.51	Figure 2	

Source: DEMAC - Aerial 2013;
 Delaware DataML - Tax Parcels;
 Proposed Christina River Bridge Alignment
 as of December 2017, provided by RK&K.

0 200 400
 Feet



Groundwater Notes:

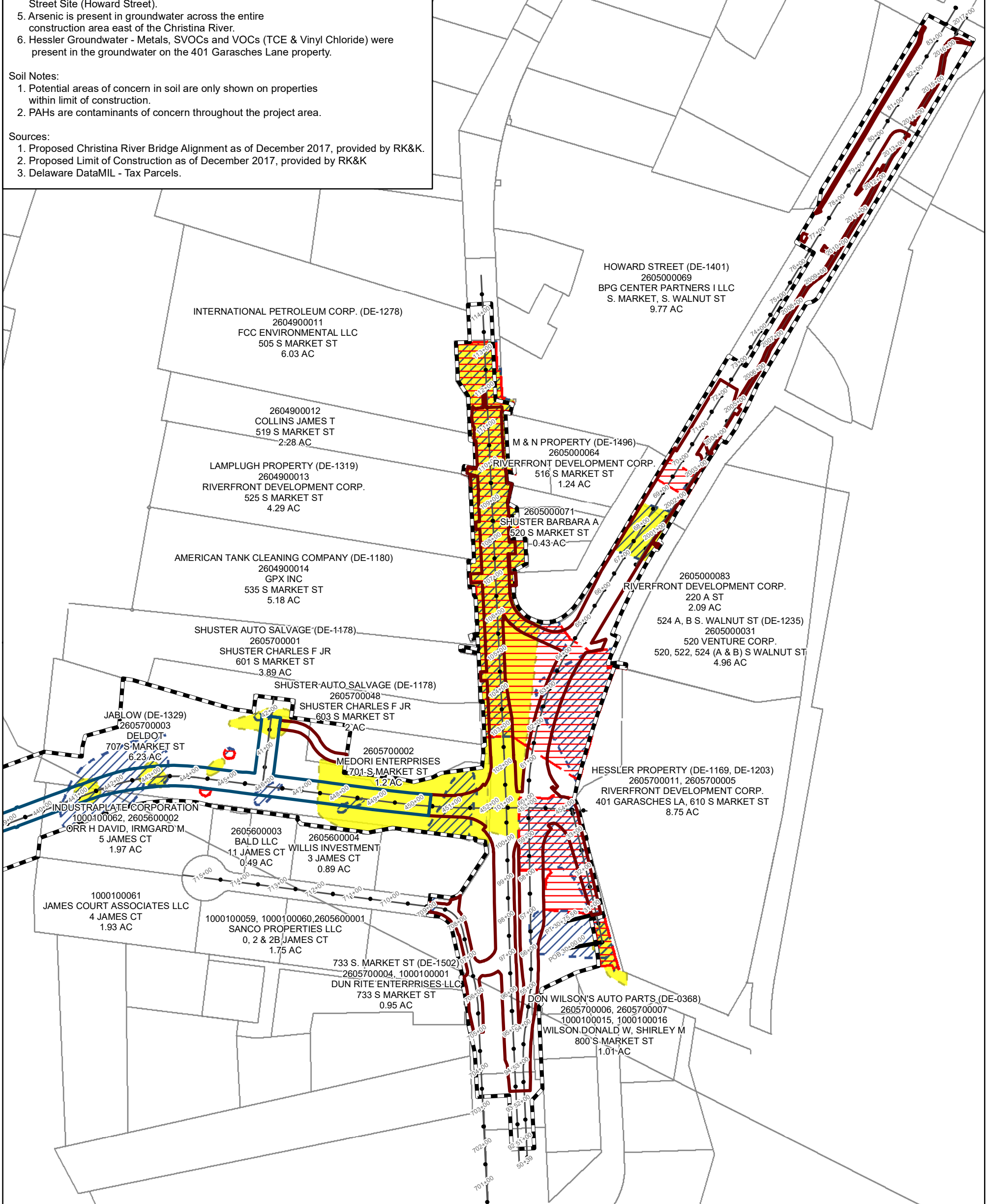
1. MTBE was present in groundwater across 707 Market Street (Jablow Property). The extent of impact is unknown.
2. Metals, VOCs, SVOCs, and TPH were present in the groundwater on the 601 S Market Street (Shusters Auto Salvage) Property. The extent of impacts are unknown.
3. VOCs, SVOCs, and petroleum hydrocarbons were found on the 505 S Market Street Site (International Petroleum Corp). The extent of impacts are unknown.
4. PCBs were identified in the groundwater on the 301 S Market Street Site (Howard Street).
5. Arsenic is present in groundwater across the entire construction area east of the Christina River.
6. Hessler Groundwater - Metals, SVOCs and VOCs (TCE & Vinyl Chloride) were present in the groundwater on the 401 Garasches Lane property.

Soil Notes:

1. Potential areas of concern in soil are only shown on properties within limit of construction.
2. PAHs are contaminants of concern throughout the project area.

Sources:

1. Proposed Christina River Bridge Alignment as of December 2017, provided by RK&K.
2. Proposed Limit of Construction as of December 2017, provided by RK&K
3. Delaware DataMIL - Tax Parcels.



Alignment Stations
 Horizontal Alignment
 Tax Parcels (RK&K Design File)
 Christina River Bridge
 Christina River Bridge Approaches
 Limit of Construction
 Approximate Extent of Arsenic Contamination in Soil (>30 mg/kg)
 Approximate Extent of Lead Contamination in Soil (>1,000 mg/kg)
 Approximate Extent of Petroleum and/or VOC Contamination in Soil

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**Areas of Concern - East
 Christina River Bridge Approaches
 Wilmington, Delaware**

By	Date	Scale:	File Name:	
Drawn	ADS	12/14/2017	1:3,000	Fig3aEast.mxd
Checked	ALF	12/14/2017	Fig. No.	Figure 3a
Project #	0985.56.51			

Source: Delaware DataMIL - Tax Parcels;
 Proposed Christina River Bridge Alignment
 as of December 2017, provided by RK&K.

Groundwater Notes:

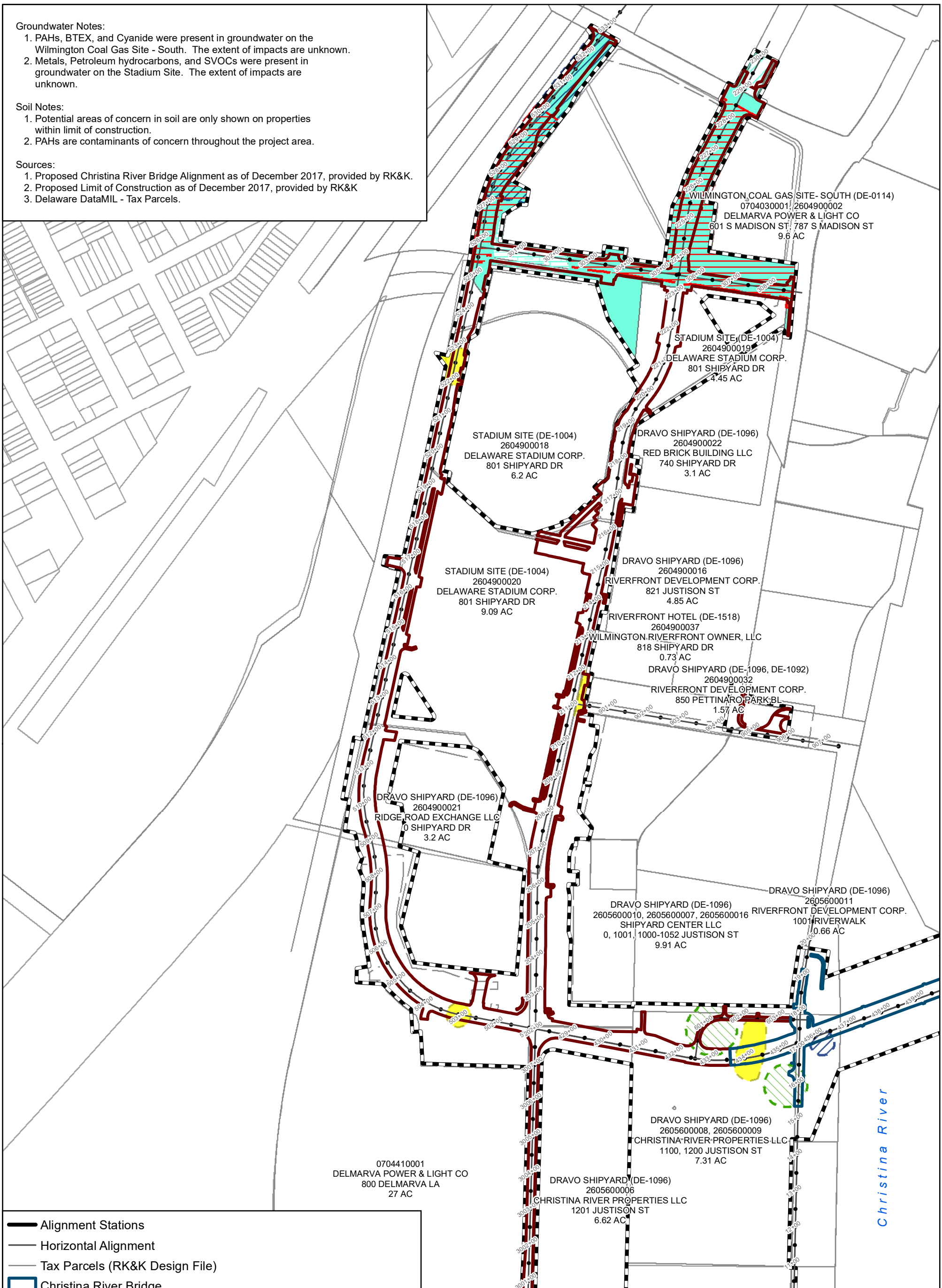
1. PAHs, BTEX, and Cyanide were present in groundwater on the Wilmington Coal Gas Site - South. The extent of impacts are unknown.
2. Metals, Petroleum hydrocarbons, and SVOCs were present in groundwater on the Stadium Site. The extent of impacts are unknown.

Soil Notes:

1. Potential areas of concern in soil are only shown on properties within limit of construction.
2. PAHs are contaminants of concern throughout the project area.

Sources:

1. Proposed Christina River Bridge Alignment as of December 2017, provided by RK&K.
2. Proposed Limit of Construction as of December 2017, provided by RK&K
3. Delaware DataMIL - Tax Parcels.



Legend

- Alignment Stations
- Horizontal Alignment
- Tax Parcels (RK&K Design File)
- ▭ Christina River Bridge
- ▭ Christina River Bridge Approaches
- ▭ Limit of Construction
- ▭ ISS Treated Areas
- ▭ Approximate Extent of Arsenic Contamination in Soil (>30 mg/kg)
- ▭ Approximate Extent of Lead Contamination in Soil (>1,000 mg/kg)
- ▭ Approximate Extent of PCB Contamination in Soil (> 1 mg/kg)
- ▭ MGP Impacted Areas
- ▭ MGP Excavation Areas
- ▭ Approximate Extent of Petroleum and/or VOC Contamination in Soil

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Areas of Concern - West
 Christina River Bridge Approaches
 Wilmington, Delaware

	By	Date	Scale:	File Name:
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Checked	ALF	12/14/2017	Fig. No.	
Project #	0985.56.51		Figure 3b	

0 125 250 Feet

Source: Delaware DataMIL - Tax Parcels;
 Proposed Christina River Bridge Alignment
 as of December 2017, provided by RK&K.

TABLES

Table 1 – Summary of Known and Possible Contaminants

Christina River Bridge Approaches Project Area				
Site	DNREC ID(s)	Known Soil Contaminants	Known Groundwater Contaminants	Other Possible Contaminants
Wilmington Coal Gas Site – South	DE-0114	BTEX, cyanide, metals (arsenic, iron, lead, copper, & zinc), PAHs, TPH	BTEX, cyanide, metals (arsenic & lead), naphthalene, SVOCs (PAHs)	Coal tar NAPL; historic land filling activities
Stadium Site	DE-1004	Metals (arsenic, cadmium, chromium, & lead), petroleum hydrocarbons, SVOCs (PAHs), TPH	Metals (arsenic, cadmium, chromium, & lead), petroleum hydrocarbons, SVOCs	Coal tar NAPL; petroleum product in subsurface soil; historic fill
Dravo Shipyard – Harbor Associates	DE-1096	Metals (arsenic, lead, & zinc), PCBs, SVOCs (benzo[a]pyrene & PAHs), TPH	Metals (aluminum, iron, & manganese)	Metals (arsenic, chromium, lead, & zinc), SVOCs (benzo[a]pyrene & PAHs), & VOCs in sediment; Metals (aluminum, iron, lead, & manganese) in surface water
Riverfront Hotel	DE-1518	Arsenic, benzo[a]pyrene	Metals (arsenic), VOCs	Benzene in soil gas
Jablow	DE-1329	Metals, SVOCs, pesticides, PCBs	Metals, VOCs	BTEX (benzene) & TPH-GRO around a former UST but soil was excavated and removed; various debris throughout site
733 S Market Street	DE-1502	Metals (arsenic & lead)	Metals (arsenic, iron, & manganese)	Free product; historic fill; BTEX, DRPH, & TPH detected around former UST locations
Hessler Property	DE-1169 and DE-1203	Metals (aluminum, arsenic, barium, calcium, chromium, chromium VI, cobalt, copper, lead, manganese, nickel, silver, & zinc), PCBs, SVOCs (PAHs)	Metals (arsenic, barium, chromium, iron, lead, manganese), SVOCs (PAHs), TCE, vinyl chloride	Fill; petroleum-like odor; asbestos containing materials found in TP06; isolated areas of hazardous lead
Shuster Auto Salvage	DE-1178	Bis(2-ethylhexyl)phthalate, metals (aluminum, antimony, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, vanadium, & zinc), SVOCs (PAHs), TPH, VOCs	Metals (arsenic, barium, iron, & manganese), SVOCs, VOCs, TPH	DRO detected; Metals (chromium, copper, mercury, nickel, & zinc), SVOCs (PAHs) in sediment

Christina River Bridge Approaches Project Area				
Site	DNREC ID(s)	Known Soil Contaminants	Known Groundwater Contaminants	Other Possible Contaminants
524 A & B S Walnut St	DE-1235	Metals (arsenic & lead), PCBs, SVOCs (benzo[a]pyrene, dibenz[a,h]anthracene, & PAHs)	Metals (arsenic, barium, iron, & manganese), PCBs, pesticides, SVOCs	Significant fill across the site
American Tank Cleaning Company	DE-1180	Metals (lead), PCBs, SVOCs (PAHs), TPH	Metals (iron & manganese)	Possible USTs
Lamplugh Property	DE-1319	Metals (arsenic, iron, & lead), PCBs, SVOCs (PAHs)	Arsenic, naphthalene	Metals, PCBs, & SVOCs (PAHs) in sediment
M&N Property	DE-1496	Metals (arsenic & lead) & SVOCs (PAHs) in subsurface; fairly clean surface soil	Metals (aluminum, antimony, arsenic, iron, & manganese)	
International Petroleum Corporation	DE-1278	Metals (notably arsenic, iron, lead, & mercury), PCBs, pesticides, SVOCs (benzo[a]pyrene), TPH-GRO, VOCs	Bis(2-ethylhexyl)phthalate, BTEX, metals (arsenic, iron, lead, & manganese), MTBE, 2-methyl naphthalene, naphthalene, SVOCs (PAHs)	BTEX & TPH-GRO detected around former USTs; possible free product; benzo[a]pyrene, metals (arsenic & lead), PAHs, & phenanthrene in sediment
Howard Street Property	DE-1401	Metals (arsenic & lead), PCBs, SVOCs (PAHs)	Metals (arsenic & lead), PCBs, SVOCs (PAHs)	Metals (arsenic & lead), PCBs, SVOCs (PAHs); historic fill

Christina River Bridge Project Area				
Site	DNREC ID(s)	Known Soil Contaminants	Known Groundwater Contaminants	Other Possible Contaminants
Dravo Shipyard – Harbor Associates	DE-1096	Metals (arsenic, lead, & zinc), PCBs, SVOCs (benzo[a]pyrene & PAHs), TPH	Metals (aluminum, iron, & manganese)	Metals (arsenic, chromium, lead, & zinc), SVOCs (benzo[a]pyrene & PAHs), & VOCs in sediment; Metals (aluminum, iron, lead, & manganese) in surface water
Jablow	DE-1329	Metals, SVOCs, pesticides, PCBs	Metals, VOCs	BTEX (benzene) & TPH-GRO around a former UST but soil was excavated and removed; various debris throughout site
Industraplate		Unknown	Unknown	Former electroplating facility, metals (soil & groundwater)

TABLE 2
Typical City of Wilmington Allowable Groundwater Discharge Limits

		City of Wilmington POTW Standards (Typical)
Analyte	Laboratory Method	mg/L
Arsenic	EPA 200.7	0.09
Cadmium	EPA 200.7	0.07
Total Chromium	EPA 200.7	4
Copper	EPA 200.7	0.91
Lead	EPA 200.7	1.94
Mercury	EPA 245.1	0.0057
Nickel	EPA 200.7	1.00
Selenium	EPA 200.7	0.65
Zinc	EPA 200.7	3.49
Cyanide	EPA 335.3	0.49
Ammonia as Nitrogen	n/a	35.00
Total PCB Congeners	EPA 1668A	n/a
BOD	SM18-5210B	500.00
Total Suspended Solids (TSS)	EPA 160.2	500.00
pH	Field Test	6-9 su
Phenolics, total	n/a	10.00

The City of Wilmington POTW Standards are the maximum allowable concentrations for discharge into the Sanitary Sewer system. Sec. 11-201.3 - Local limits.

n/a - not available

ATTACHMENTS

ATTACHMENT 1

Final Plan of Remedial Action Christina River Bridge and Approaches Site (DE-0334)

FINAL PLAN OF REMEDIAL ACTION



CHRISTINA RIVER BRIDGE AND APPROACHES SITE

October 2016

Wilmington, Delaware

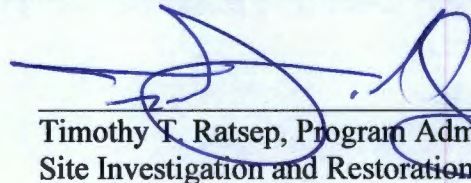
DNREC Project No. DE-0334

This Final Plan of Remedial Action (Final Plan) presents clean-up actions required by the Department of Natural Resources and Environmental Control (DNREC) to address environmental contamination at the Christina River Bridge and Approaches Site.

DNREC issued public notice of the Proposed Plan of Remedial Action (Proposed Plan) for the Christina River Bridge and Approaches Site on September 25, 2016 and opened a 20-day public comment period. The Proposed Plan is attached. There were no comments from the public; therefore, the Proposed Plan is adopted as the Final Plan.

Approval:

This Final Plan meets the requirements of the Hazardous Substance Cleanup Act.



Timothy T. Ratsep, Program Administrator
Site Investigation and Restoration Section

October 21, 2016
Date



PROPOSED PLAN OF REMEDIAL ACTION

**Christina River Bridge and Approaches Site
Wilmington, Delaware
DNREC Project No. DE-0334**



September 2016

**Delaware Department of Natural Resources and Environmental Control
Division of Waste and Hazardous Substances
Site Investigation & Restoration Section
391 Lukens Drive
New Castle, Delaware 19720**

CONTENTS

- **Figure: 1 & 2**
- **Glossary of Terms**

PROPOSED PLAN OF REMEDIAL ACTION

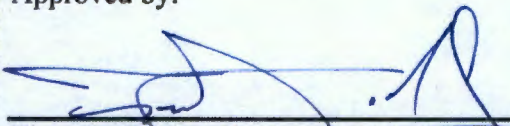
Christina River Bridge and Approaches Site
Wilmington, Delaware
DNREC Project No. DE-0334



Approval:

This Proposed Plan meets the requirements of the Hazardous Substance Cleanup Act.

Approved by:



Timothy Ratsep, Environmental Program Administrator
Site Investigation & Restoration Section

Date

September 22, 2016

Christina River Bridge and Approaches Site DE-0334



What is the Proposed Plan of Remedial Action?

The Proposed Plan of Remedial Action (Proposed Plan) summarizes the clean-up (remedial) actions that are being proposed to address contamination found at the Site for public comment. A legal notice is published in the newspaper for a 20-day comment period. DNREC considers and addresses all public comments received and publishes a Final Plan of Remedial Action (Final Plan) for the Site.

What is the Christina River Bridge and Approaches (CRB) Site?

The Christina River Bridge and Approaches (CRB) Site is a Hazardous Substance Cleanup Act (HSCA) site. The Delaware Department of Transportation (DelDOT) is planning to build a new bridge crossing over the Christina River in South Wilmington (Figure 1). This bridge will serve to support the growing transportation needs that have occurred since 1996 in response to the extensive redevelopment of the Wilmington Riverfront area. As shown in Figure 2, the approach roads begin at Beech Street and continue south to the southern extent of the Shipyard Shops (west of the Christina River) where the bridge crosses over the River and the roads continue east through the 707 S. Market Street Jablow property (north of James Court) and connect to Market Street, Walnut Street, and Garasches Lane. The CRB Site is currently covered with paved roadways, parking lots, vegetation, portions of the Riverwalk, asphalt and former building slabs.

The CRB Site runs through and adjacent to several existing Hazardous Substance Cleanup Act (HSCA) sites. As shown in Figure 1, on the west side of the Christina River the Site includes portions of the Wilmington Coal Gas Site-South (DE-0114), the Stadium Site (DE-1004), the Riverfront Hotel Site (DE-1518), and the Dravo Shipyard Harbor Associates Site (DE-1096). On the east side of the Christina River, the Site includes the 707 S. Market Street Jablow Site (DE-1329) (north of James Court) before connecting to Market Street, Walnut Street, and Garasches Lane. The project runs adjacent to several existing HSCA sites along Market Street and Walnut Street including the International Petroleum Corporation Site (DE-1278), the Lamplugh Property Site (DE-1319), the American Tank Trailer Site (DE-1180), the Shuster Auto Salvage Site (DE-1178), the 733 South Market Street Site (DE-1502), the 800-810 South Market Street Site (DE-0368), the Don Wilson Auto Parts Site (DE-0368), the Hessler Property Site (DE-1169 & 1203), the 524 A&B South Walnut Street Site, (DE-1235), the M & N Property Site (DE-1496), and the Howard Street Property Site (DE-1401).

What happened at the CRB Site?

Historical research indicates the Site was historically maintained as undeveloped marsh land, commercial, and industrial properties. A portion of the Site located west of the Christina River

was previously part of the Dravo Shipyard and also used for the manufactured gas plant operations of Wilmington Coal Gas.

The Jablow Property Site, which is located on the east side of the Christina River, was used as a beef slaughterhouse from the 1930s to the early 1960s and through 2004, the Site was used as an auto repair and auto salvage facility. DelDOT has acquired the Jablow Property Site (DE-1329) and a portion of the Site will be used for construction of the bridge and approach roads; therefore, a portion of the Jablow Site is being included in this Proposed Plan of Remedial Action.

What is the environmental problem at the CRB Site?

The shallow soil (0-2 feet below ground surface) contains lead, arsenic, polychlorinated biphenyls (PCBs) and polynuclear aromatic hydrocarbons (PAHs) above the DNREC screening level criteria. The subsurface soil (more than 2 feet below ground surface) contains arsenic, lead, PCBs, benzene, toluene, ethylbenzene, xylenes (BTEX), cyanide, petroleum hydrocarbons, and PAHs above the DNREC screening criteria. Groundwater sampling results showed elevated concentrations of arsenic, lead, vanadium and methyl tertiary butyl ether (MTBE). Historic groundwater contaminants associated with the HSCA sites east of the River include: metals, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs) and PCBs. Historic groundwater contaminants associated with the HSCA sites west of the River include BTEX, cyanide and PAHs.

What clean-up actions have been taken at the CRB Site?

A portion of the Jablow Property Site (DE-1329) is included in the CRB Site. Automobiles, automobile parts, solid waste, and oil-stained soils were observed on the Jablow Property near the northern boundary during a site inspection in 2004. In 2006, the buildings on a portion of the Jablow Property Site were demolished, three (3) underground storage tanks along with hazardous waste containers, several compressed gas cylinders, and contaminated soil were removed from the Site and disposed of properly offsite. In March 2009, a storm water control system and pre-cast concrete sediment trap was installed at the Site and asbestos pipes, tires and other solid waste materials were removed from the Site.

A portion of the Dravo Shipyard Harbor Associates (DE-1096) is included in the CRB Site. In 2001, a Final Plan of Remedial Action issued which chose management of contaminated soil and site capping as the remedy for this Site.

A portion of the Wilmington Coal Gas Site-South (DE-0114) is also included in the CRB Site. On December 22, 2010 an amended Final Plan of Remedial Action was which selected solidification, stabilization and excavation of coal tar impacted soil, and capping as the remedy for this Site. The remedy was implemented in 2013 and the Site requires semi-annual groundwater sampling and cap inspections.

The CRB Site is included within the City of Wilmington Groundwater Exclusion Zone (GEZ) therefore the use of groundwater is restricted.

What is planned for the CRB Site?

DelDOT, the Riverfront Development Corporation (RDC) and the City of Wilmington in cooperation with the Federal Highway Administration (FHWA) are planning a new bridge crossing over the Christina River in South Wilmington. This proposed bridge and associated approach roads would serve to support the growing transportation needs that have occurred since 1996 in response to the extensive redevelopment of the Wilmington Riverfront area.

What additional clean-up actions are needed at the CRB Site?

DNREC proposes the following remedial actions for the CRB Site, which needs to be completed before a Certificate of Completion of Remedy (COCR) can be issued:

1. The Site must be capped with at least one foot of clean fill or impervious material (e.g. buildings, asphalt, or concrete).
2. Submit to DNREC a CMMP within 60 days of the issuance of a Final Plan of Remedial Action. The CMMP will allow construction workers to safely handle any potential contaminated soil and groundwater at the Site.
3. Submit an Environmental Covenant to DNREC for approval within 60 days of the completion of the remedial actions required in this Proposed Plan.
4. Record an Environmental Covenant, consistent with Delaware's Uniform Environmental Covenants Act (Title 7, Del. Code Chapter 79, Subtitle II) (UECA), in the office of the Recorder of Deeds within 60 days of DNREC approving the Long Term Stewardship Plan. The Environmental Covenant will include the following:
 - [a.] Use Restriction. Use of the Property shall be restricted solely to those non-residential type uses permitted within Commercial, Manufacturing, or Industrial Districts;
 - [b.] Interference with Remedy. There shall be no digging, drilling, excavating, grading, constructing, earth moving, or any other land disturbing activities on the Property without the prior written approval of DNREC-SIRS;
 - [c.] Limitation of Groundwater Withdrawal. No groundwater wells shall be installed, and no groundwater shall be withdrawn from any well on the Property without the prior written approval of DNREC-SIRS and DNREC Division of Water;
5. A Long-Term Stewardship (LTS) Plan shall be submitted to DNREC for approval within 60 days of the completion of the remedial actions required in this Proposed Plan. The LTS plan will consist of an agreement between DelDOT and the City of Wilmington, notification to DNREC-SIRS, and following the CMMP if digging below the cap in order to ensure the long-term integrity of the remedy.
6. The LTS Plan must be implemented within 60 days of its approval by DNREC.

7. A Remedial Action Completion Report must be submitted to DNREC within 60 days of the completion of the remedial actions required in this Proposed Plan.
8. A request for a Certification of Completion of Remedy (COCR) must be submitted to DNREC within 60 days of approval of the Remedial Action Completion Report.

What are the long term plans for the CRB Site after the cleanup?

The Site is planned to be used for a bridge and approach roads to the bridge across the Christina River. DNREC plans to issue a COCR for the Site after the completion of clean-up, and the redevelopment of the property.

How can I find additional information or comment on the Proposed Plan?

The complete file on the Site including the Site Specific Assessment Report and the various reports are available at the DNREC office, 391 Lukens Drive in New Castle, 19720. Most documents are also found on: <http://www.nav.dnrec.delaware.gov/DEN3/>

The 20-day public comment period begins on September 25, 2016 and ends at close of business (4:30 pm) on October 17, 2016. Please send written comments to the DNREC office at 391 Lukens Drive, New Castle, DE 19720 to Robert C. Asreen, Jr., Project Officer.

Figure 1: Site Location / Topographic Map

Figure 2: Site Location / Topographic Map

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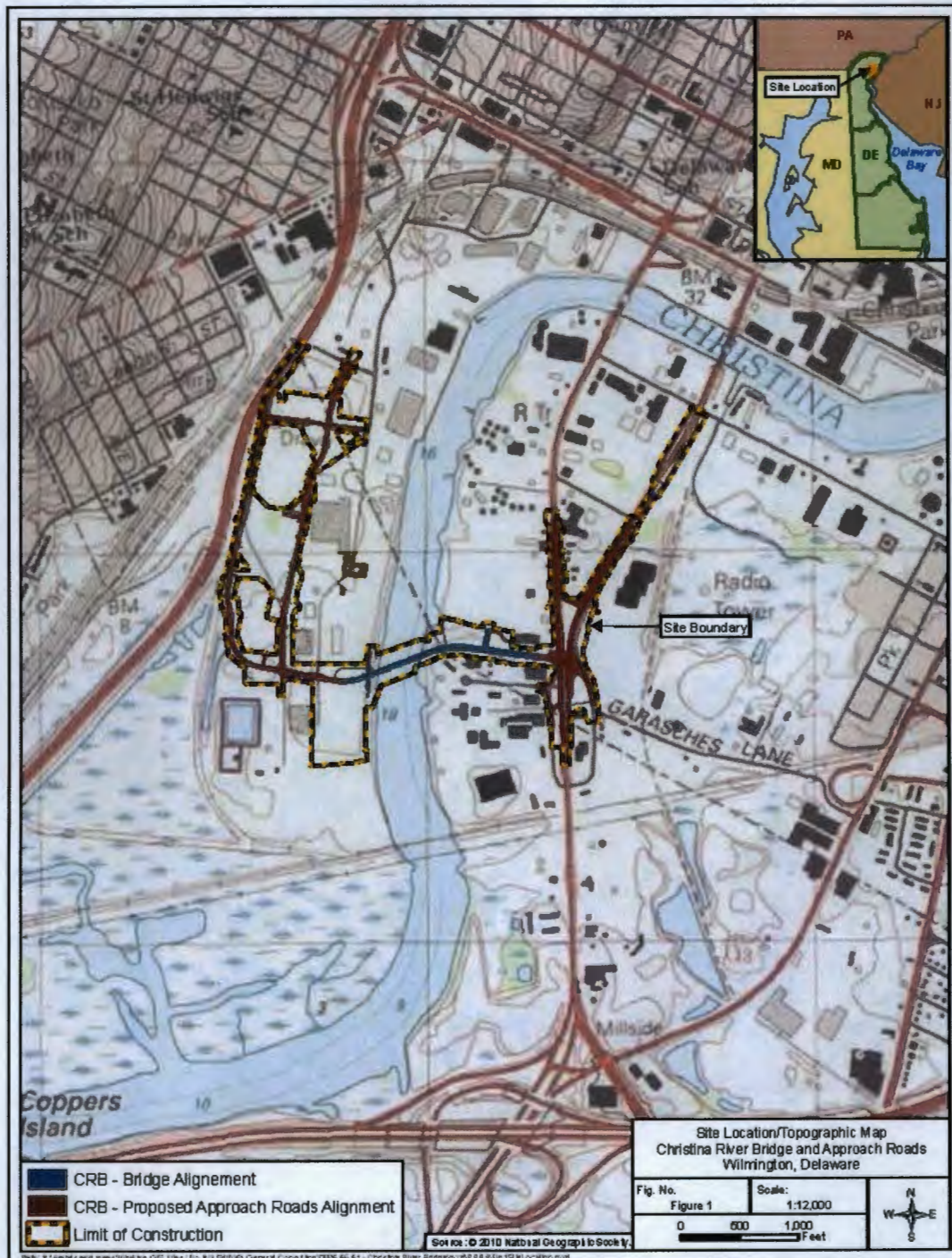


Figure 1: Site Location / Topographic Map

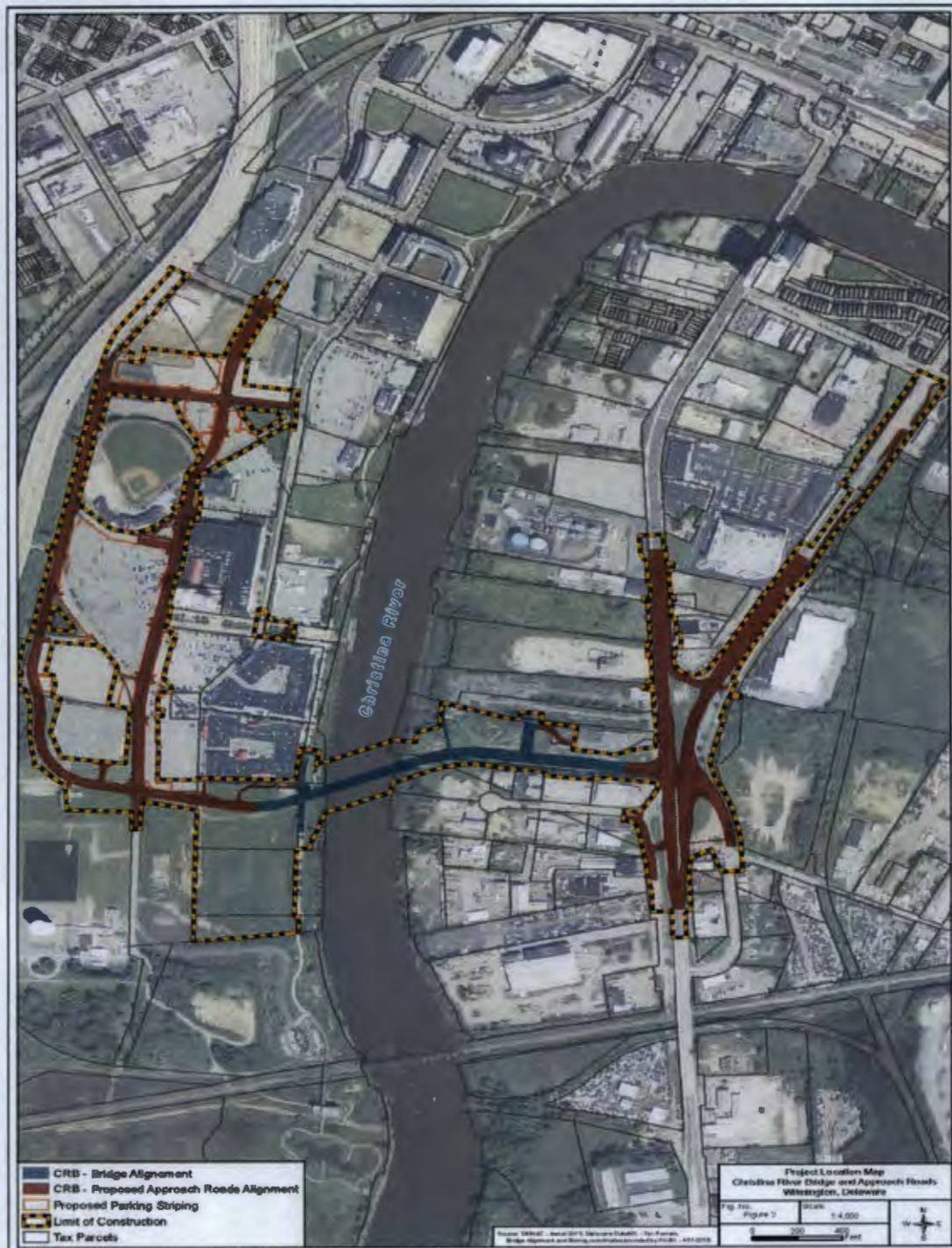


Figure 2: Site Location / Topographic Map

Glossary of Terms Used in this Proposed Plan

Certification of Completion of Remedy (COCR)	A formal determination by the Secretary of DNREC that remedial activities required by the Final Plan of Remedial Action have been completed.
Contaminated Materials Management Plan	A written plan specifying how potentially contaminated material at a Site will be sampled, evaluated, staged, transported and disposed of properly.
Final Plan of Remedial Action	DNREC's adopted plan for cleaning up a hazardous site.
Groundwater Exclusion Zone (GEZ)	A geographical area where DNREC restricts drilling for ground water because it is contaminated
Hazardous Substance Cleanup Act (HSCA)	Delaware Code Title 7, Chapter 91. The law that enables DNREC to identify parties responsible for hazardous substances releases and requires cleanup with oversight of the Department.
Poly chlorinated biphenyls (PCBs)	A synthetic, carcinogenic chemical formerly used in a wide variety of industrial applications but banned from most uses by the US EPA in 1979.
Restricted Use	Commercial or Industrial setting
SIRS	Site Investigation Restoration Section of DNREC, which oversees cleanup of sites that were contaminated as a result of past use, from dry cleaners to chemical companies
US EPA	United States Environmental Protection Agency

ATTACHMENT 2

DNREC May 2010 Soil/Material Re-use Policy at HSCA Regulated Sites

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF AIR AND WASTE MANAGEMENT
SITE INVESTIGATION & RESTORATION BRANCH

MEMORANDUM

TO: Kathleen Stiller, SIRB Branch Manager *KMS 5/25/10*

THROUGH: Paul Will, Program Manager I, SIRB *PW 5/24/10*
Qazi Salahuddin, Program Manager I, SIRB *QS 5/24/10*
Timothy Ratsep, Program Manager I, SIRB *TR 5/25/10*

FROM: Todd Keyser, Project Officer - SIRB
John Cargill, Project Officer - SIRB
Rick Galloway, Project Officer - SIRB
Lindsay Hall, Project Officer - SIRB
Steve Johnson, Project Officer - SIRB
Krystal Stanley, Project Officers - SIRB

DATE: May 19, 2010

RE: **Policy Soil/ Material Re-use Policy at HSCA Regulated Sites**

The Department of Natural Resources and Environmental Control – Division of Air and Waste Management – Site Investigation and Restoration Branch (DNREC-SIRB) adopts this Policy to guide the re-use of soil/material from regulated (HSCA, RCRA) sites (sites) and non-regulated properties (properties) at HSCA regulated sites. The intent of this policy is to provide a mechanism for the safe and efficient re-use of suitable soils/materials that does not create an unacceptable risk to human health or the environment. Soil/material eligible for re-use under this policy is soil/material that will be removed from a regulated site or non-regulated property and transported to a HSCA-regulated site for use as a fill material (surface and/or subsurface applications). This policy specifically *excludes* soil/material excavated at a HSCA-site that is re-used at the same HSCA site as part of a DNREC-SIRB approved remedial action.

As mentioned above, this policy will address two (2) categories of re-use:

- A) Soil/material removed from a regulated site for use at a HSCA regulated site either as surface or sub-surface material. Regulated refers to HSCA or other State or Federally regulated environmental program or guidance.
- B) Soil/material removed from a non-regulated property for re-use at a HSCA regulated site as surface or subsurface material. Non-regulated properties may be commercial borrow pits, construction sites, or any other property not currently regulated under the HSCA program.

The soil/material that will be considered may come from several different types of sources. The following list is based upon current practice but any source may be considered, if it meets the requirements of this soil/material re-use policy.

Types of Sources and Data Availability:

- 1) Undisturbed property with no previous operational use and no Phase I,
- 2) Property with past operational use but Phase I investigation shows no likely environmental impact,
- 3) Developed property with potential for contamination based on Phase I investigation,
- 4) Site as defined by a DAWM program (SIRB, TMB, SHWMB) with confirmed environmental impact and data that meets the Soil Re-Use Policy volume and constituent criteria or a Beneficial Use Determination (BUD) from the SHWMB, or
- 5) Site as defined above with recently completed and approved Remedial Investigation (RI) Report.

Appropriate re-use will be based upon current data. Impacted soil/material is defined as having a compound present that exceeds the applicable Uniform Risk-Based Standard (URS) or equivalent standard as determined by SIRB for the intended re-use of soil/material. For example, if the soil/material is to be used as a surface cap at a site under an unrestricted (residential) use scenario, then the material will be compared to the unrestricted use URS value(s) to determine if it is an appropriate reuse.

Soil/Material Sampling

Soil/material may be found in multiple types of locations and dispositions. This policy provides the applicant with acceptable options for characterizing the soil/material where and how it is located. Soil/material may be re-used when it is found in-situ and when it has been excavated and staged, provided that it is adequately sampled. Samples will be tested for Target Analyte List and Target Compound List (TAL/TCL) contaminants in all cases. Composite sampling will not be considered appropriate for volatile sampling. Discrete sampling must occur for volatiles at the frequency listed for each situation listed below. The sampling frequency options are listed below.

Composite Sampling Composite sampling is most often used in locations where soil is easily accessed such as a stockpile or borrow pit.

Stockpiles- 1 (one) 30-point composite sample per 1,000 cubic yards and 5 volatile discrete sample. A typical residential lot is 0.25 acre. 1,000 cubic yards is equivalent to 1 sample per ¼ acre residential lot 2 feet deep.

In-situ Soil (Non-regulated properties) including Borrow Pits- 1 (one) 20-point composite per 4,000 cubic yards and 4 volatile discrete samples with Phase I or DNREC determined comparable documentation indicates no evidence of potential impact. 4,000 cubic yards is equivalent to 1 sample per acre 2 feet deep.

Regulated Site - DNREC Project officers will evaluate if the soil is sufficiently characterized to use on another site. If additional sampling is judged to be necessary, one (1) 10 point composite per 8,000 cubic yards and 3 discrete volatile samples may be required to further characterize the site, 8,000 cubic yards is equivalent to 1 sample per 2 acres, 2 feet deep.

Composite sampling criteria is based upon Hewitt, et al, *Validation of Sampling Protocol and the Promulgation of Method Modifications for the Characterization of Energetic Residues on Military Testing and Training Ranges*, June 2009 (ERDC/CRREL TR-09-6).

Discrete (Default) Sampling - Discrete sampling may be used in multiple situations but is most often used when soil/material is located in-situ at a site. Discrete or grab sampling is what a typical remedial investigation uses. The number of discrete samples to be taken should follow the table below.

Discrete Sampling Table

Volume of soils (Yd ³)	Sampling Frequency	Total # of Samples
0-500	1 sample per 100 yd ³ .	1-5
501-5,000	5 samples plus 1 sample per 250 yd ³ >500.	5-23
>5,000	23 samples plus 1 sample per 500 yd ³ >5,000.	>23

Depending upon the source and potential re-use of the soil/material, different criteria may need to be met. The evaluation criteria are the minimum conditions that must be met in order to obtain approval from DNREC-SIRB. The evaluation criteria are presented below. Following the evaluation criteria listed below are the specific scenarios and the required evaluation criteria for each.

Section 1- Criteria Used to Evaluate the Suitability of Soil/Material for Re-use at a HSCA-regulated site

- 1) **Consistent with Final Plan:** The re-use of the soil/material from the source site at the destination site is consistent with any Final (or Interim) Plan of Remedial Action that may exist for each site.
- 2) **No Hazardous Waste:** The soil/material is not a hazardous waste as defined by the Delaware Regulations Governing Hazardous Waste, Part 261,
- 3) **No Solid Waste:** The soil/material does not contain asphalt, trash, solid waste or yard-type waste,
- 4) **Contaminant Type and Concentration Specific Evaluation :** The source soil/material meets **one** of the conditions listed below:
 - a) The soil/material contaminant concentration (95% UCL or mean) does not exceed background conditions as listed in the **Remediation Standards Guidance** or current SIRB guidance at the destination site,

- b) The contaminant concentrations are less than the 95% upper confidence limit of contaminants that already exist on the destination site, and the cumulative risk of the contaminants is below the 1×10^{-5} ,
 - c) A quantitative risk assessment consistent with the current SIRB guidance shows that reuse of the proposed soil/material does not create an unacceptable risk (above 1×10^{-5} or HI above 1) at the destination site or,
 - d) The contaminant concentrations are less than what already exist onsite. Compare mean concentrations of source soil to mean soil concentrations for the destination site. A 95% UCL comparison of source and destination site soil may also be conducted in lieu of the mean.
- 5) **No Groundwater Risk:** The soil/material does not contribute to groundwater contamination or increases groundwater risk at the destination site.
- 6) **Letters to DNREC-SIRB:** The owners of both sites will acknowledge in writing to DNREC-SIRB that they are aware of the quality of the soil/material proposed for re-use and are responsible for any potential future liability.

Section 2- Potential Reuse Scenarios and Appropriate Criteria

Scenario 1: Soil/ Material from a Regulated Site to HSCA Site

Soil shall meet Criteria:

- #1) Consistent with Final Plan
- #2) No Hazardous Waste
- #3) No Solid Waste
- #4) Contaminant Type and Concentration Specific Evaluation
- #5) No Groundwater Risk
- #6) Letters to DNREC-SIRB

Scenario 2a: Contaminant Impacted Soil/Material from a non-regulated property to HSCA site

- #1) Consistent with Final Plan
- #2) No Hazardous Waste
- #3) No Solid Waste
- #4) Contaminant Type and Concentration Specific Evaluation
- #5) No Groundwater Risk

Scenario 2b: Non-impacted Soil/Material from a non-regulated property to HSCA site

#1) Consistent with Final Plan

#3) No Solid Waste

In all cases, the party proposing the soil re-use is responsible for presenting analytical data that shows the re-use meets all of the appropriate conditions for the scenario proposed **prior to transport**. The re-use proposal will be submitted to DNREC-SIRB at least two weeks prior to the intended date for transporting the soil/material. DNREC-SIRB will respond via email and in writing with an approval once the proposal is approved. Data obtained in the investigation may be adequate or may be supplemented with additional samples. In lieu of a site specific sampling plan, the individuals proposing the reuse may elect to use the default sampling frequency shown in the Discrete Sampling table or Composite Sampling description.

Material with BUD (Beneficial Use Determination) - Obtain a copy of BUD determination from Solid and Hazardous Waste Management Branch and review for potential contaminant issues for your site.

Other Material Debris -This scenario should be considered only if a BUD has not been obtained for the material but there appears to be a possible beneficial use of a recovered resource. For material other than that covered in a SHWMB-BUD, the process shall be the same as Scenario 1.

“Other” Material Reuse Determination

DNREC will evaluate on a case-by-case basis, any material that does not fit into the above criteria.

An approval granted by DNREC-SIRB for soil/material reuse is not to be construed as a substitute for any other permit or permission required by other agencies for the activity. Soil/Material reuse policy approval applies directly and only to the environmental (contaminants) suitability of the proposed soil/material. After soil from a source site has been approved, at the discretion of the DNREC-SIRB project officer, it may not need to be re-sampled in the future to determine if it is appropriate to use as a continued source.

This policy replaces “Policy for Presumptive Soil Re-use” dated September 21, 2004 and May 4, 2006.

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ATTACHMENT 3

City of Wilmington Discharge Permit
(to be included once permit has been issued)