

STATE OF DELAWARE  
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL-  
SITE INVESTIGATION AND RESTORATION BRANCH

PROPOSED PLAN OF REMEDIAL ACTION



March 2006

SCANNED

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File # 1377 B8

**Justison Landing Redevelopment – Phase I**  
300, 350 and 400 South Madison Street  
Wilmington, Delaware

**DNREC Project No. DE-1377**

This Proposed Plan of Remedial Action (Proposed Plan) presents the Department of Natural Resources and Environmental Control's (DNREC's) proposed cleanup alternatives for the comprehensive remediation and management of approximately 15 acres of brownfield property located in the Christina Riverfront. This property is planned to be redeveloped as a mixed-use residential, commercial and retail project named Justison Landing (Phase I). For related environmental reports and more information, please see the public participation section of this document.

The purpose of the Proposed Plan is to provide; 1) specific information about the soil and groundwater conditions 2) the cleanup alternatives DNREC has considered and the proposed remedial actions for the Site. In addition, as described in Section 12 of the Delaware Regulations Governing Hazardous Substance Cleanup (Regulations), DNREC will provide notice to the public and an opportunity for the public to comment on the proposed plan. At the comment period's conclusion, DNREC will review and consider all of the comments received and then will issue a Final Plan of Remedial Action (Final Plan). The Final Plan shall designate the selected remedy for the Site. All investigations of the Site, the Proposed Plan, comments received from the public, DNREC's responses to the comments, and the Final Plan will constitute the Remedial Decision Record.

This Proposed Plan summarizes the Remedial Investigation (RI) and Feasibility Studies and the administrative record file upon which this Proposed Plan is based. Copies of the Site-related documents can be obtained or viewed at locations listed at the end of this document.

**DNREC's proposed remedy is preliminary and a final decision will not be made until all of the comments are considered. The final remedy selected could differ from the proposed remedy based on DNREC's responses to comments.**

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## 1.0 INTRODUCTION

The planned Justison Landing Redevelopment Project is located south of West Street, between South Madison Street and the Christina Riverwalk (Figure 1). Portions of this formerly industrialized area have recently been redeveloped commercially, and other commercial and residential developments are envisioned. Justison Landing will be created through the City of Wilmington’s subdivision process. The process will result in five (5) new tax parcels. Each of these new parcels, shown on Figure 2, will be a distinct developable parcel. In addition, the development will encompass new and realigned roads and utilities that will serve Justison Landing and other destinations in the Christina Riverfront. Including the roads, Justison Landing is approximately 15 acres in size.

The four (4) largest existing tax parcels in the vicinity of the Justison Landing Project are currently owned by the City of Wilmington and the Delaware Department of Transportation (Figure 3). Because of their industrial past uses, these properties were environmentally investigated through the Voluntary Cleanup Program (VCP) in accordance with DNREC’s Hazardous Substance Cleanup Act (HSCA). Table 1 summarizes the existing property addresses, tax parcel numbers and acreages. Their current and former property names and DNREC site numbers are also provided, as a link to the environmental reports that have been completed for each of these properties.

**Table 1 – Four Largest Existing Tax Parcels that will comprise Justison Landing**

<b>Tax Parcel Number(s)</b>	<b>Property Address (&amp; Owner)</b>	<b>Acreage</b>	<b>Former Property Names &amp; Abbreviations</b>	<b>DNREC Site Number</b>	<b>Redevelopment Parcel</b>
26-042.00-005	300 S. Madison St. (City of Wilmington)	2.0	Wilmington Public Works Yard (PWY)	DE-1090	3,4
26-042.00-006	Same as above	7.04	Same as above	Same as above	1
26-042.00-023	350 S. Madison St. (DelDOT)	1.27	Parcel D (former Brandywine Counseling)	DE-1335	5
26-042.00-024	400 S. Madison St. (DelDOT)	4.0	Parcel C (former Delaware Transit Corporation)	DE-1040	2

Portions of other existing tax parcels will also be incorporated into Justison Landing. These include 250 South Madison Street (Roundhouse property, DE-1055), which received a Certificate of Completion of Remedy for commercial use from DNREC in 1997, and slivers of other tax parcels that will be added after the realignment of South Madison Street. The Proposed Plan includes a summary of the industrial history, environmental investigations, feasibility studies and proposed remedial actions for the largest properties that make up Justison Landing.

Justison Landing is located in an area that has been in continuous industrial use since the late 1700s. Portions of the site have been owned and/or used by builders of iron ships and railroad cars (Harlan & Hollingsworth), the United Steel Barrel Company, the Wilmington & Northern Railroad Company, Bethlehem Steel, the Wilmington Coal Gas Company, Delmarva Power & Light (DP&L), and the City of Wilmington. Over the years, the site has been filled with brick, rock, coal and coal ash, wood, slag, foundry wastes, and other debris. Figure 4 shows the Harlan & Hollingsworth Shipyard in the early 1900s.

## **2.0 300 SOUTH MADISON STREET INVESTIGATIONS** ***(Public Works Yard)***

### **2.1 Site Description & History - PWY**

The Wilmington Public Works Yard (PWY) is located along the west bank of the Christina River at 300 South Madison Street (Figure 3). The PWY is bordered to the north by the new Riverfront Headquarters (AAA) building, a temporary parking lot, and the Roundhouse property; to the east by the Christina Riverwalk and the Christina River; to the south by the City of Wilmington's Shipley Run Combined Sewer (CSO#30) and two properties owned by the Delaware Department of Transportation; and to the west, by South Madison Street and property owned by DP&L. A small portion of the PWY, known as the Triangle Parcel, is located west of South Madison Street, north of Linden Street and southeast of the elevated Amtrak rail line. Presently, the PWY is covered by asphalt pavement, concrete building slabs, stone or vegetation.

The PWY is currently the location of the City of Wilmington's vehicle maintenance and fueling facilities and the Wilmington Rowing Club. Until 2004, the PWY also housed the Department of Public Works' Turner Administration Building, a communications building, equipment including dump trucks, trash trucks, street sweepers, sewer and water utility supplies, a salt dome, and piles of sand, stone and asphalt for street maintenance. These facilities were moved out and/or demolished in 2004 as part of a phased relocation to prepare for redevelopment of the property. The Vehicle Maintenance Building and the Rowing Club will be relocated by June 2006, to prepare the property for environmental remediation and redevelopment.

### **2.2 Environmental Investigation History - PWY**

A 1997 Brownfield Preliminary Assessment and a 1999 Christina River Pedestrian Walkway (Phases III & IV) Remedial Investigation showed the presence of metals, polycyclic aromatic hydrocarbons (PAHs), and pesticides in soil; metals, cyanide, and volatile and semivolatile organic compounds (VOCs and SVOCs) in groundwater, and metals, SVOCs, pesticides and polychlorinated biphenyls (PCBs) in sediment.

In 2000, during Riverwalk construction, the following remedial action was implemented: 1) Construction of a stormwater management system; 2) Placement of concrete and brick walkways over impacted soil; and 3) Stabilization of the riverbank by removing some impacted soil, and covering the bank with a geotextile material and stone.

### 2.3 Remedial Investigation & Results - PWY

A Remedial Investigation, performed between 2001 and 2005, separated the PWY into three major sections, or Operable Units (OU) – OU1, OU2 and the “Rest of the Site” (“ROS”).

- OU1 - investigation of PCBs in soil and groundwater at a former electrical equipment storage area.
- OU2 - investigation of manufactured gas plant (MGP) residues in soil around the former coal gas holder.
- “ROS” – general contaminant distribution in soil and water.

Additional investigations were also performed to gain a better understanding of the extent of contaminated areas. Figure 5 shows the locations of the PWY sampling points.

Contaminants identified on the PWY during the environmental investigations are shown in Table 2. Where oil, gasoline, or coal tar were observed, they are collectively referred to as NAPL, or Non-Aqueous Phase Liquid, meaning that they do not mix with water, but exist as a separate oily phase.

**Table 2 - Contaminants of Concern on the PWY**

<b>Contaminant of Concern</b>	<b>Soil</b>	<b>Groundwater</b>
NAPL	OU2, Triangle Parcel	
PAHs	X	OU2
VOCs		OU2, Triangle Parcel
Pesticides		OU2
PCBs	OU1, ROS	OU1
Arsenic	X	
Lead	X	
Cyanide	OU2	OU2

Shaded = Not a site contaminant of concern

Several of these contaminated areas and potential sources of contamination have been excavated and removed as Interim Remedial Actions:

- 48 cubic yards of PCB-contaminated soil from OU1, in March 2005.
- 10 old hydraulic cylinder lifts and a 2,500-gallon underground storage tank associated with the former Turner Building auto repair garage in March 2005.
- 30 feet of former gas holder piping, 1,421 tons of NAPL-contaminated soil and 3,522 tons of PAH-contaminated soil from OU2 between March and October 2005.
- 50,098 gallons of groundwater from OU2 collected, treated, and discharged to the sanitary sewer system.

### 3.0 400 AND 350 SOUTH MADISON STREET INVESTIGATIONS (former Parcels C & D)

#### 3.1 Site Description & History – Parcels C & D

Parcel C, or 400 South Madison Street (tax parcel ID# 26-042.00-024) is approximately four acres and Parcel D, or 350 South Madison Street (tax parcel ID# 26-042.00-023) is approximately 1.27 acres. These properties are owned by the Delaware Department of Transportation, and are located immediately south of the Public Works Yard (Figure 3).

The Brandywine Counseling building on Parcel D and the Delaware Transit Corporation (DTC) building on Parcel C were demolished in 2005 and 2006, respectively, to prepare for the Justison Landing redevelopment. The concrete building slabs and asphalt parking lot surface are in the process of being removed to prepare the property for remediation and redevelopment.

#### 3.2 Environmental Investigation History – Parcels C & D

A Phase II Environmental Site Assessment of the 400 S. Madison Street, Parcel C, property was performed in 1995. Arsenic and chromium were detected in soil. Groundwater did not contain contaminants of concern above regulatory levels. DNREC prepared a Proposed Plan and Final Plan of Remedial Action that limited the property to commercial use. The 350 South Madison Street, Parcel D, investigation is a part of the current investigation summarized in Section 3.3.

#### 3.3 Remedial Investigation & Results – Parcels C & D

A 2005 Remedial Investigation (Figure 6 shows sampling locations) identified the following contaminants of concern:

**Table 3 - Contaminants of Concern on Parcels C & D**

Contaminant of Concern	Soil	Groundwater
PAHs	X	
PCBs	X	
Antimony	X	
Lead	Three areas of potential concern	
Zinc	X	

Shaded = Not a site contaminant of concern

Approximately 3,720 cubic yards of PCB-contaminated soil is currently being removed as an

Interim Remedial Action; target completion date is early March 2006.

## **4.0 RISK EVALUATION – JUSTISON LANDING**

Multiple risk assessment scenarios were performed to evaluate the cumulative risks associated with exposure to soil and groundwater from the PWY and Parcel C & D properties. All of these risk assessments were calculated prior to any site cleanup. The risk assessment information is the basis for the remedial plans for the properties.

### **4.1 Human Health Risk Summary**

A risk assessment looks at the chemicals detected at a site, the frequency and concentration of detected chemicals, the toxicity of the chemicals, ways that people can be exposed, and for how long. Routes of exposure to people are generally through ingestion (eating), dermal contact (skin), or inhalation (breathing). Based on the standard risk assessment guidelines established for use nationwide by the U.S. Environmental Protection Agency (EPA), exposures for an on-site resident are generally assumed to be daily contact over a 30-year period starting with children ages 0-6, and continuing from 6-30 years. The health risk assessment describes the increased possibility of adverse health effects, based on the best scientific information available.

Exposure risk was calculated for soil and groundwater and also for subsurface vapor intrusion into buildings. Table 4 (at end of this document) summarizes the results of the different types of risk assessments performed for the PWY and Parcels C & D properties.

There are unacceptable risks if people are exposed to soil or groundwater contaminants at the levels found in the investigations. Currently, the soil and groundwater are covered and do not present any risk to site workers. However, during the redevelopment process construction workers will be exposed to the soil and groundwater. Future residents and workers also need to be protected from exposure to soil and groundwater contaminants. The risk assessments indicate that soil remediation, soil capping, soil management during construction, and vapor barriers beneath future buildings are required on portions of the PWY and former Parcels C & D in support of the Justison Landing redevelopment.

### **4.2 Environmental Risk Summary**

The Christina River is the most sensitive environmental receptor in the Justison Landing vicinity. For both the PWY and former Parcels C & D, mass loading calculations indicate that the groundwater discharge to the Christina River does not result in any exceedances of the current DNREC URS for surface water protection or the DNREC Surface Water Quality Standards criteria for protection of aquatic life (fresh water chronic) and, therefore, does not pose a risk to surface water receptors in the area.

## **5.0 REMEDIAL ACTION OBJECTIVES**

According to Section 8.4(1) of the HSCA Regulations, site-specific Remedial Action Objectives (RAOs) must be established for all plans of remedial action. The Regulations provide that DNREC will set objectives for land use, resource use, and cleanup levels that are protective of human health and the environment. Future use of the Justison Landing properties is for an urban,

mixed use, residential and commercial development. To meet this planned use, the following qualitative and quantitative objectives are appropriate:

#### Qualitative Objectives

1. Minimize migration of contaminants of concern off-site.
2. Prevent human exposure (e.g., dermal, inhalation, or ingestion) to site-related contaminants in source materials, site soil and groundwater.
3. Protect environmental receptors by minimizing the potential for direct contact with on-site soils and future migration of site-related materials off-site.

#### Quantitative Objectives

1. Prevent human contact with site soil and groundwater that have constituents that exceed  $10 \times 10^{-5}$  cumulative cancer risks or a hazard index of 1.0 for restricted or unrestricted use, depending on the future use of each parcel.
  - Most of the new Justison Landing parcels (Parcels 1, 2, 4 and 5) will be remediated to residential levels, even though these properties will also contain retail stores and parking garages.
  - Justison Landing Parcel 3 will be used for office buildings and will be remediated to commercial levels, as will the new and relocated roads.

These objectives are consistent with the planned use of the site as a mixed use residential/commercial use in an urban setting, City of Wilmington zoning policies, and State and City of Wilmington regulations governing water supply and worker health and safety.

## **6.0 EVALUATION OF POTENTIAL REMEDIAL ALTERNATIVES**

To accomplish the above remedial action objectives, a range of potential remedial alternatives were presented in the Feasibility Studies and each remedial alternative was evaluated against the criteria specified in Delaware's HSCA regulations. The following combination of remedial actions is recommended for both the PWY and Parcels C & D:

**Hot Spot Removal, Redevelopment Integrated with Remedial Approach, Capping, Vapor Barriers, Groundwater Monitoring, and Institutional Controls.**

## **7.0 PROPOSED PLAN OF REMEDIAL ACTION**

Based on DNREC's evaluation of the Site information, which includes current and past environmental investigations, historical information, risk assessments for the contaminants present at the Site, and the above remedial action objectives, DNREC developed a Proposed Plan of Remedial Action for the Justison Landing Redevelopment Project.

The Proposed Plan includes removal of hotspots with elevated levels of organic contaminants, a redevelopment approach that includes worker safety monitoring and management during construction, safe management and disposal of contaminated materials encountered during construction, placement of a barrier cap across the surface of the site, installation of vapor barriers beneath occupied buildings, groundwater monitoring, and institutional controls. This Proposed Plan of Remedial Action is protective of human health and the environment, and is supportive of the planned urban, mixed use redevelopment. It is described in more detail below:

**1. Hot Spot Removal** - Prior to constructing any new buildings or infrastructure, remove and dispose soil from the following areas with elevated organic contaminants, specifically NAPL and PCBs (Figure 7):

- GH-1 (gas holder area) - NAPL and PAH impacted areas around the gas holder that have already been removed as Interim Remedial Actions are shown in blue and shading, respectively.
- T-1 and T-2 (Triangle Parcel area) – NAPL impacted areas contain petroleum from the former fueling facility and coal tar residues from the former coal gas plant on the adjacent property.
- L-1 and L-2 (Turner Building Hydraulic Lift areas) – NAPL impacted areas contain petroleum from former lifts and tanks and coal tar residues from the former gas holder
- SM-5 (soil management area 5) – two areas of PCB impacted soil (one on the north side of the PWY and one on Parcels C & D). Although PCBs in these areas are not high enough to impact human health, the decision was made to remove them to prevent future migration into groundwater.
- Upon completion of the soil removal process the excavated areas will be backfilled with imported clean fill, or suitable onsite material that has been approved by DNREC. If fill is to be imported onto the property the source will be identified and representative sampling will be performed so the source can be approved by DNREC-SIRB prior to transporting the fill onto the site.
- If other hot spots are identified during construction, they will be managed in accordance with DNREC approved Contaminated Materials Management Plan (CMMP).

**2. Environmental Management During Construction** - During the planning, design and construction phases of Site redevelopment, develop and implement the following approach:

- Prepare a Contaminated Materials Management Plan to describe and guide safe handling and disposal practices for contaminated soil, groundwater, underground storage tanks, debris and other materials that may be encountered during excavation work
- Prepare a Health & Safety Plan and Training Program to guide construction and utility workers and to provide for protective measures to prevent exposure to residual contaminated materials.
- Manage excavation work during construction in designated Soil Management Areas in accordance with the Contaminated Materials Management Plan.
- As site preparation and construction proceeds, and buildings and roads are demolished, collect appropriate samples to evaluate these areas, as needed. If contaminants are detected that require remediation, perform the remedial work in accordance with this Justison Landing Proposed Plan of Remedial Action and the Justison Landing Contaminated Materials Management Plan. If contaminants are detected at levels that require a completely different remedial alternative than is set forth in the Proposed Plan of Remedial Action, then DNREC will prepare and advertise a supplemental Proposed Plan of Remedial Action to address the new remedy.

**3. Barrier Cap** - Place a barrier cap across the surface of the property.

- The cap will consist of a minimum of two feet of clean imported fill. The result will be a barrier that prevents access to the existing site soil.

- Collect and analyze representative samples of any imported fill and submit to DNREC for approval prior to transporting the fill onto the site.
- In areas where impermeable surfaces (including building slabs, paving and hardscaping) will be installed as part of the redevelopment process, DNREC may, in its sole discretion, deem these surfaces equivalent to 2 feet of imported earthen fill for the purpose of providing a barrier between site soil and future residents and/or office and retail-based workers.

**4. Vapor Barriers** - Design and install vapor barriers beneath occupied buildings. Although vapor intrusion evaluations did not indicate unacceptable risk over most of the property, redevelopment may substantially alter subsurface conditions including vapor migration pathways. For this reason, DNREC has determined that vapor barriers will be installed beneath all occupied Justison Landing buildings. A vapor barrier will consist of a physical barrier beneath the footprint of the occupied structure and a piping manifold which will provide a conduit for future vapor testing, integrity testing of the physical barrier, and for active venting (i.e., connecting a vacuum pump to the piping to draw vapors out from beneath the building) if such a need arose in the future. Provide the vapor barrier design to DNREC-SIRB for review and approval prior to installation.

**5. Groundwater Monitoring** - Prepare a Groundwater Monitoring Plan and submit it to DNREC for review 1 year after construction begins. The purpose of the Plan is to document and evaluate the groundwater quality and flow direction after the Justison Landing redevelopment has been completed. Groundwater monitoring will allow for future assessments of changes in the site conditions. This monitoring system is anticipated to be incorporated into an area wide groundwater monitoring network. The DNREC is undertaking an area wide groundwater monitoring and evaluation project to determine if any further investigation or remediation of the groundwater in the Christina Riverfront area is required. The results of the groundwater project will be available to the public when the project is complete.

**6. Institutional Controls** – Perform and implement the following:

- Place an environmental covenant on the Site, consistent with Delaware’s Uniform Environmental Covenants Act (UECA). This approach will address future maintenance, notice to DNREC-SIRB prior to future intrusive activities and restricted use of groundwater. In this document, identify the site as being located within the Groundwater Management Zone (GMZ), which is already in place for the City of Wilmington (August 2001). The GMZ prohibits the installation of any water wells on, or groundwater usage at the site without prior written approval of DNREC.
- Prepare and implement the DNREC-approved Redevelopment O&M Plan within ninety (90) days after the completion of final paving, streetscaping, and landscaping for the new development. The O&M Plan will detail the procedures, practices and reporting requirements, including regular inspections, and repairs when needed, to minimize the potential for disturbing the surface cover and to promote the long term integrity of the system. It will also include accessibility to appropriate health and safety documentation. Incorporate the Site into DNREC’s Long-Term Site Stewardship program as it develops.

### **Proposed Plan Summary**

The proposed remedial action is the best option considering the overall implementation, technical practicality, reduction of mobility and volume, overall cost, and durability. The

alternative also provides the least disturbance to the surrounding community to achieve the remedial action objectives for the site.

## **8.0 CERTIFICATE OF COMPLETION OF REMEDY**

The Justison Landing development consists of phases that will take several years to construct. Environmental remediation will be implemented in sequential phases, prior to, and in conjunction with, the redevelopment. For this reason, all remedial actions will be tracked and summarized in a Remedial Action Completion Report according to the new Justison Landing parcel(s) and/or roads on which they are located (Figure 2). After the completion of the report for each parcel, the Owner will request that DNREC provide a Certificate of Completion of Remedy (COCR) for the parcel. The Groundwater Monitoring Plan will be implemented by the City of Wilmington and DelDOT on the Justison Landing Project as a whole, and it will not impact the issuance of the Parcel COCRs.

The COCRs will be issued according to the following parcels:

1. Parcel 1
2. Parcel 2
3. Parcel 3 (Note that Parcel 3 includes the 250 South Madison site which was separately investigated and remediated, and has received a Certificate of Completion of Remedy for commercial use).
4. Parcel 4
5. Parcel 5
6. Owner-constructed Road (Poole Place)
7. DelDOT-constructed Roads (Madison Street, Justison Street, Harlan Boulevard, Hollingsworth Avenue)
8. Parcel 6 (this property will be managed in a future phase of Justison Landing; however, it is noted here because a portion of this property, the Triangle Parcel, is currently part of the PWY Site. Following the hot spot removal, the Triangle Parcel will be subdivided out of the PWY site and combined with Parcel 6.

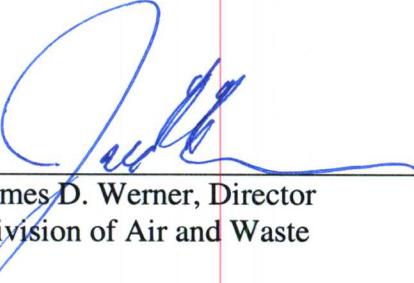
At DNREC's discretion, DNREC may assign operable unit titles and tracking numbers to each of these parcels, and issue the COCRs according to those designations.

## 9.0 PUBLIC PARTICIPATION

The Department is actively soliciting written public comments and suggestions on the proposed plan of remedial action. The comment period begins March 6, 2006, and ends at the close of business (4:30 p.m.) on March 27, 2006.

**DNREC will hold a public hearing on the Justison Landing Proposed Plan on Tuesday, March 28, 2006 at 6:00pm at a location to be announced.**

If you have any questions or concerns regarding the Public Works Yard Site, or if you would like to review the reports or other information regarding the Site, please contact the Project Manager, Wilmer Reyes, at 391 Lukens Drive, New Castle, Delaware 19720 or at 302.395.2600.



James D. Werner, Director  
Division of Air and Waste

1 MARCH 2006

Date of Review

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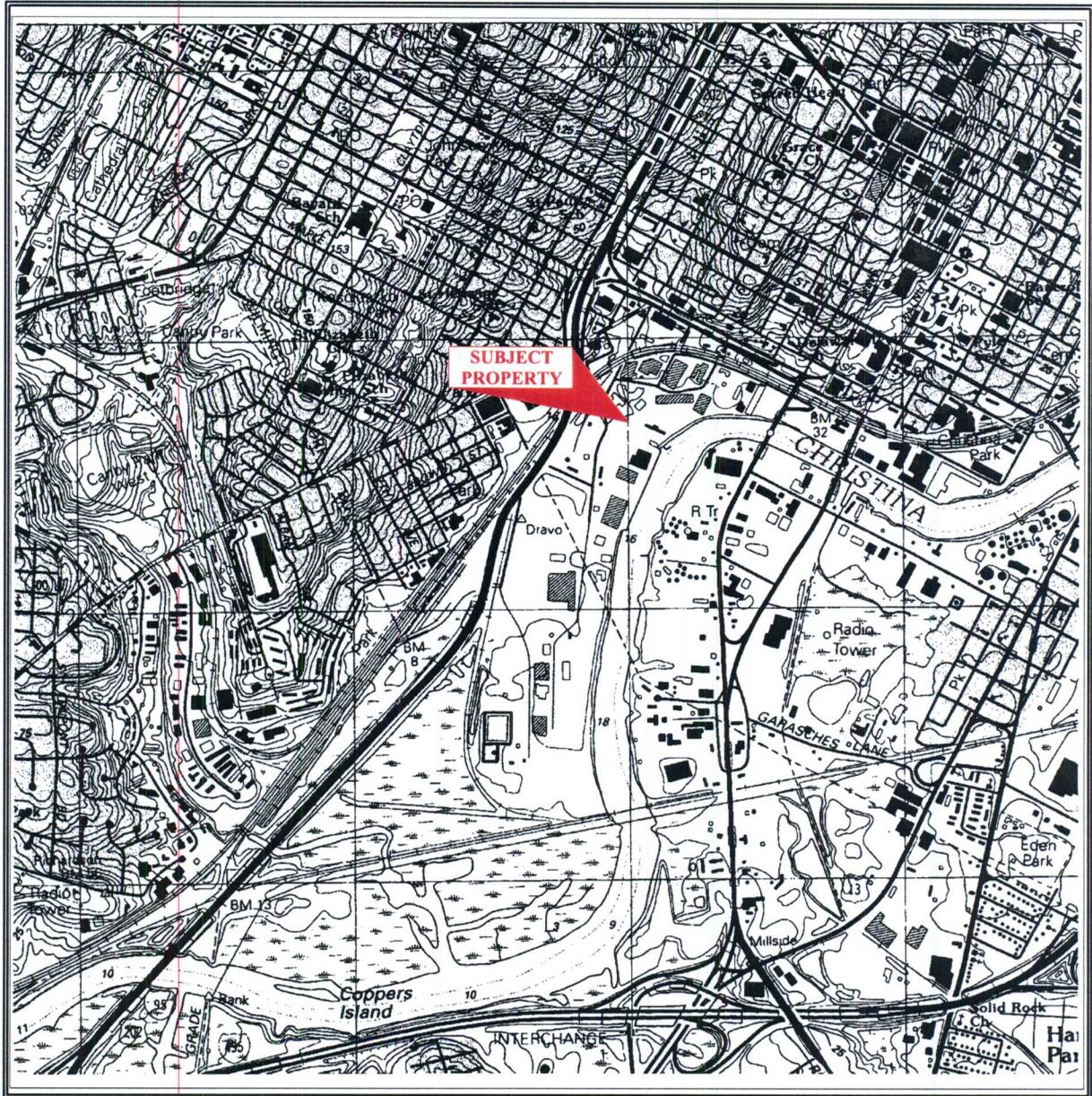
**Table 4 Risk Assessment Summary (Prior to any remedial action)  
Justison Landing**

Site Name	Occupant (Resident or Worker)												Construction Worker			
	Soil-restricted use			Soil-unrestricted use			Groundwater		Vapor Intrusion*		Soil - Resident gardener			Soil		
	Total Hazard Index	Total Cancer Risk	Total Cancer Risk	Total Hazard Index	Total Cancer Risk	Total Cancer Risk	Total Hazard Index	Total Cancer Risk	Total Hazard Index	Total Cancer Risk	Total Hazard Index	Total Cancer Risk	Total Hazard Index	Total Cancer Risk	Total Hazard Index	Total Cancer Risk
Parcels C and D	0.23	1.67 x 10 <sup>-5</sup>	7.50 x 10 <sup>-5</sup>	2.98	7.50 x 10 <sup>-5</sup>	3.41 x 10 <sup>-4</sup>	10.07	3.41 x 10 <sup>-4</sup>	*	*	0.065	2.79 x 10 <sup>-6</sup>	1.36	2.73 x 10 <sup>-6</sup>		
Parcel D	-	-	-	-	-	-	-	-	0.017	3.12 x 10 <sup>-6</sup>	-	-	-	-	-	-
PWY-ROS (includes OU1)	0.59	5.20 x 10 <sup>-5</sup>	2.33 x 10 <sup>-4</sup>	7.77	2.33 x 10 <sup>-4</sup>	included in All PWY	included in All PWY	included in All PWY	*	*	included in All PWY	included in All PWY	2.37	8.56 x 10 <sup>-6</sup>		
PWY-OU2	0.71	2.98 x 10 <sup>-4</sup>	1.34 x 10 <sup>-3</sup>	9.28	1.34 x 10 <sup>-3</sup>	included in All PWY	included in All PWY	included in All PWY	0.015	5.6 X 10 <sup>-7</sup>	included in All PWY	included in All PWY	2.72	5.03 x 10 <sup>-5</sup>		
PWY - Triangle Parcel	0.35	2.05 x 10 <sup>-4</sup>	9.20 x 10 <sup>-4</sup>	4.58	9.20 x 10 <sup>-4</sup>	included in All PWY	included in All PWY	included in All PWY	*	*	included in All PWY	included in All PWY	1.06	3.45 x 10 <sup>-5</sup>		
All PWY (ROS, OU2, and Triangle Parcel)	-	-	-	14.05	3.75 x 10 <sup>-4</sup>				*	*	0.102	6.00 x 10 <sup>-5</sup>	-	-		

DNREC's acceptable risk guidelines for no remedial action are a Hazard Index equal to 1 and a cancer risk below 1 x 10<sup>-5</sup>

- = Not calculated

\* = Additional vapor intrusion evaluation was performed to assess which future buildings would likely require a vapor barrier. Further evaluation will be performed during the remedial design phase

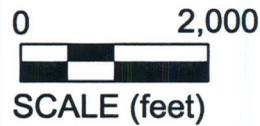


**FIGURE 1 - Site Location Map**

From USGS Wilmington South Quadrangle  
 Wilmington Del. - N.J.  
 7.5 minute series, 1993

Justison Landing  
 Wilmington, Delaware

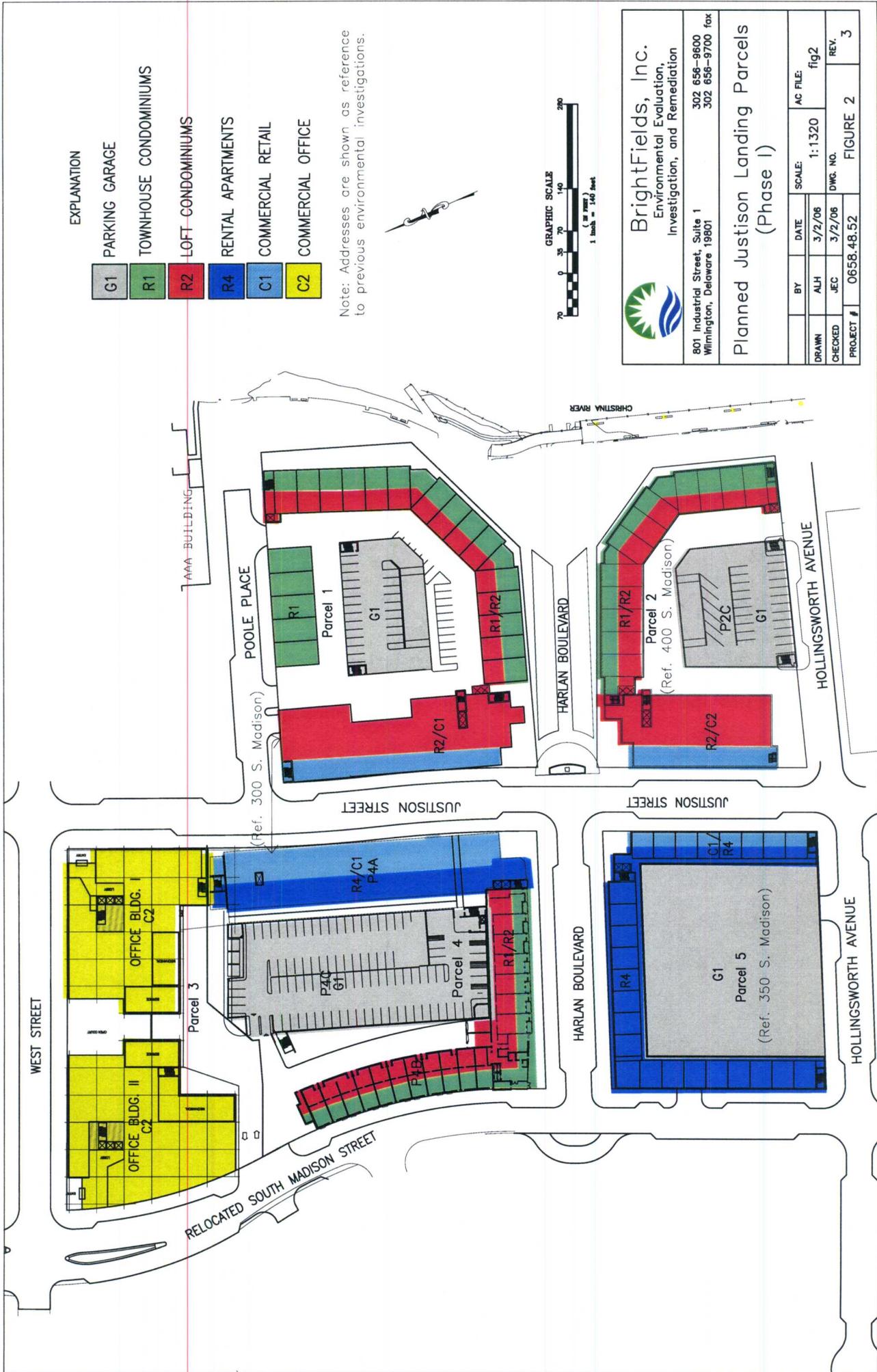
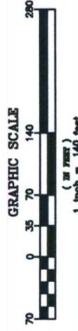
File No. 0658.48.52



EXPLANATION

G1	PARKING GARAGE
R1	TOWNHOUSE CONDOMINIUMS
R2	LOFT-CONDOMINIUMS
R4	RENTAL APARTMENTS
C1	COMMERCIAL RETAIL
C2	COMMERCIAL OFFICE

Note: Addresses are shown as reference to previous environmental investigations.

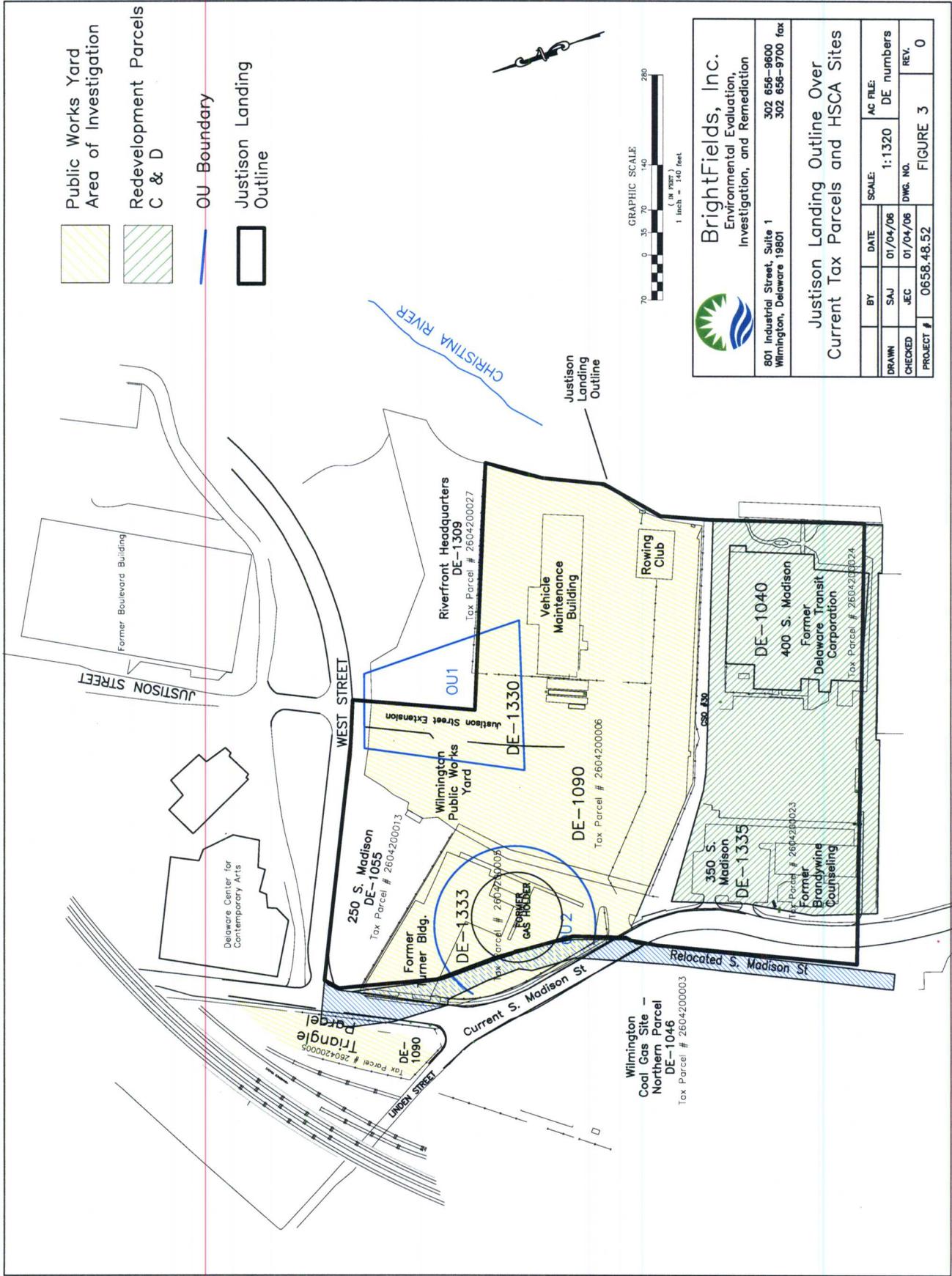


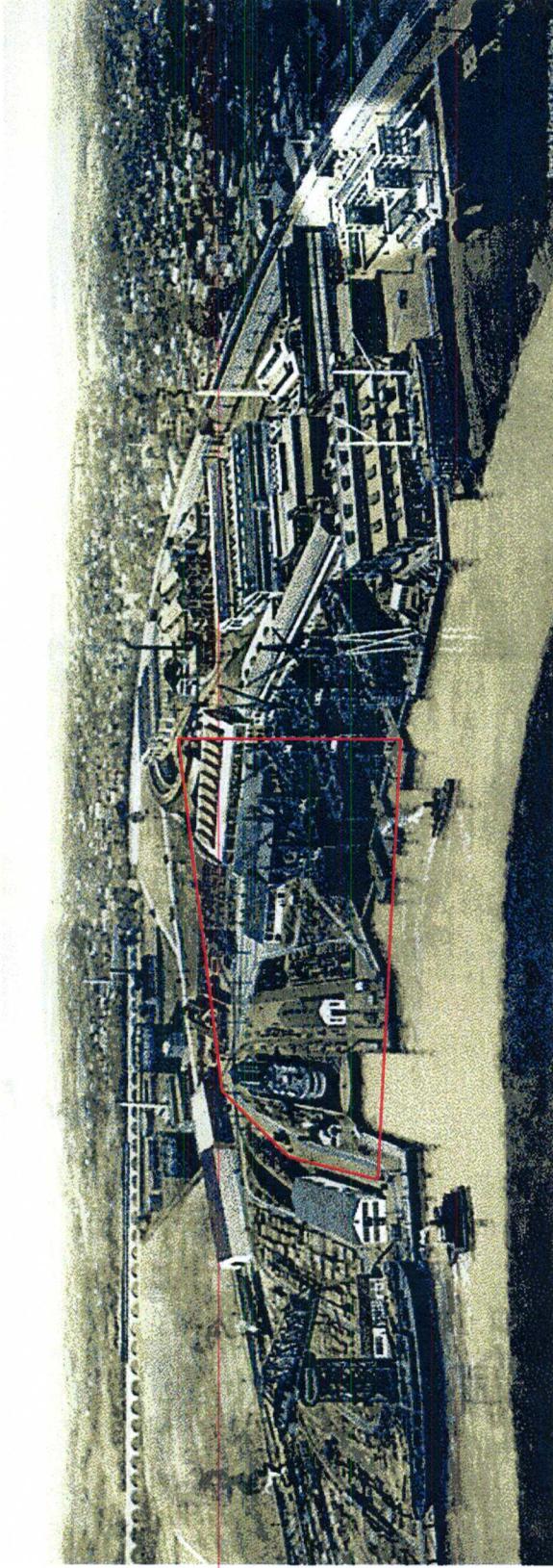
**BrightFields, Inc.**  
Environmental Evaluation,  
Investigation, and Remediation

801 Industrial Street, Suite 1  
Wilmington, Delaware 19801  
302 656-9600  
302 656-9700 fax

Planned Justison Landing Parcels  
(Phase I)

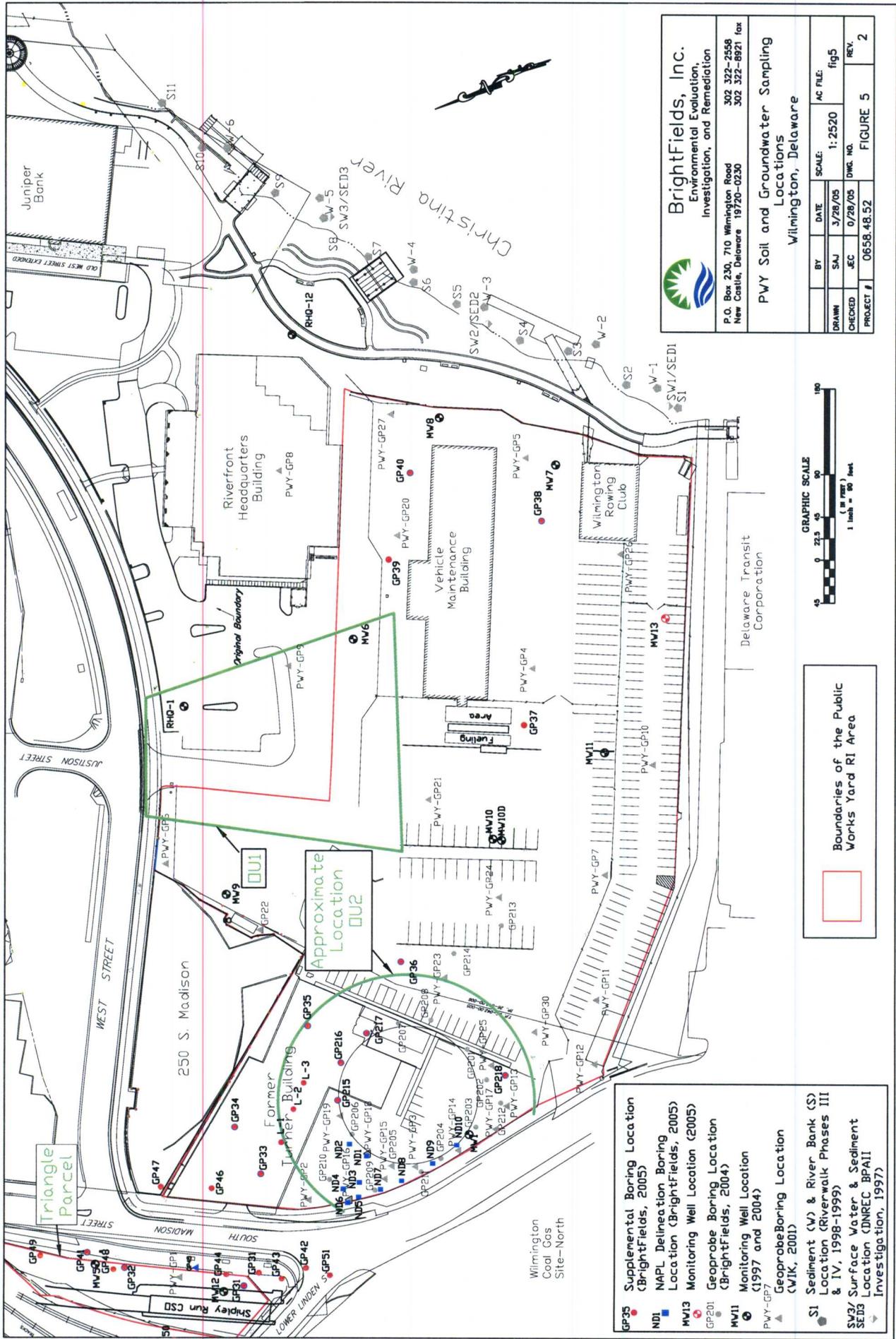
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JEC	3/2/06	0658.48.52	3
PROJECT #	FIGURE 2		

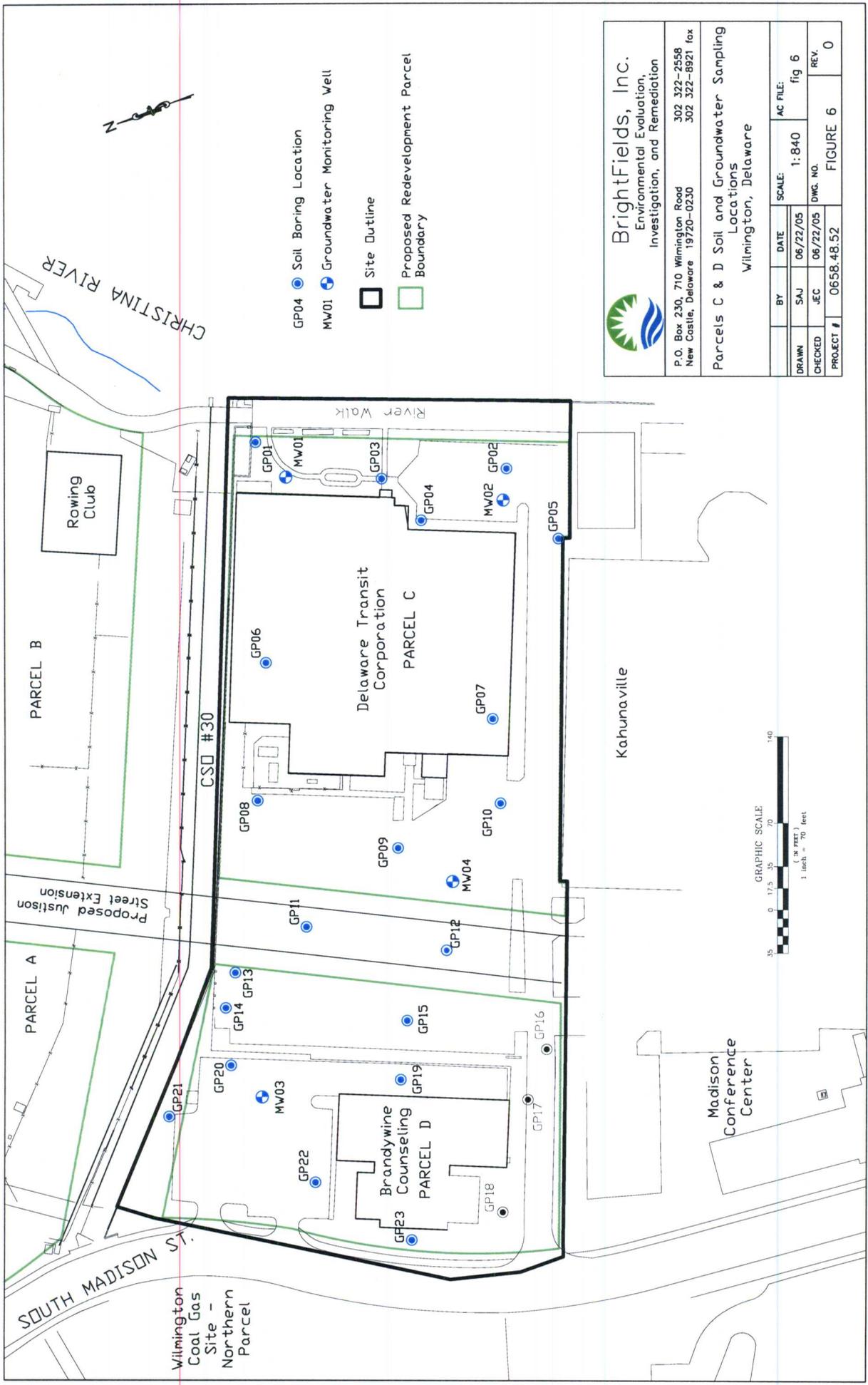




— Approximate boundary of Justison Landing

Figure 4  
Historic Shipbuilding and Railcar Factories and Shops  
Harlan and Hollingsworth Company  
Wilmington, Delaware  
(Approximately 1910)





- GP04 ● Soil Boring Location
- MW01 ● Groundwater Monitoring Well
- Site Outline
- Proposed Redevelopment Parcel Boundary



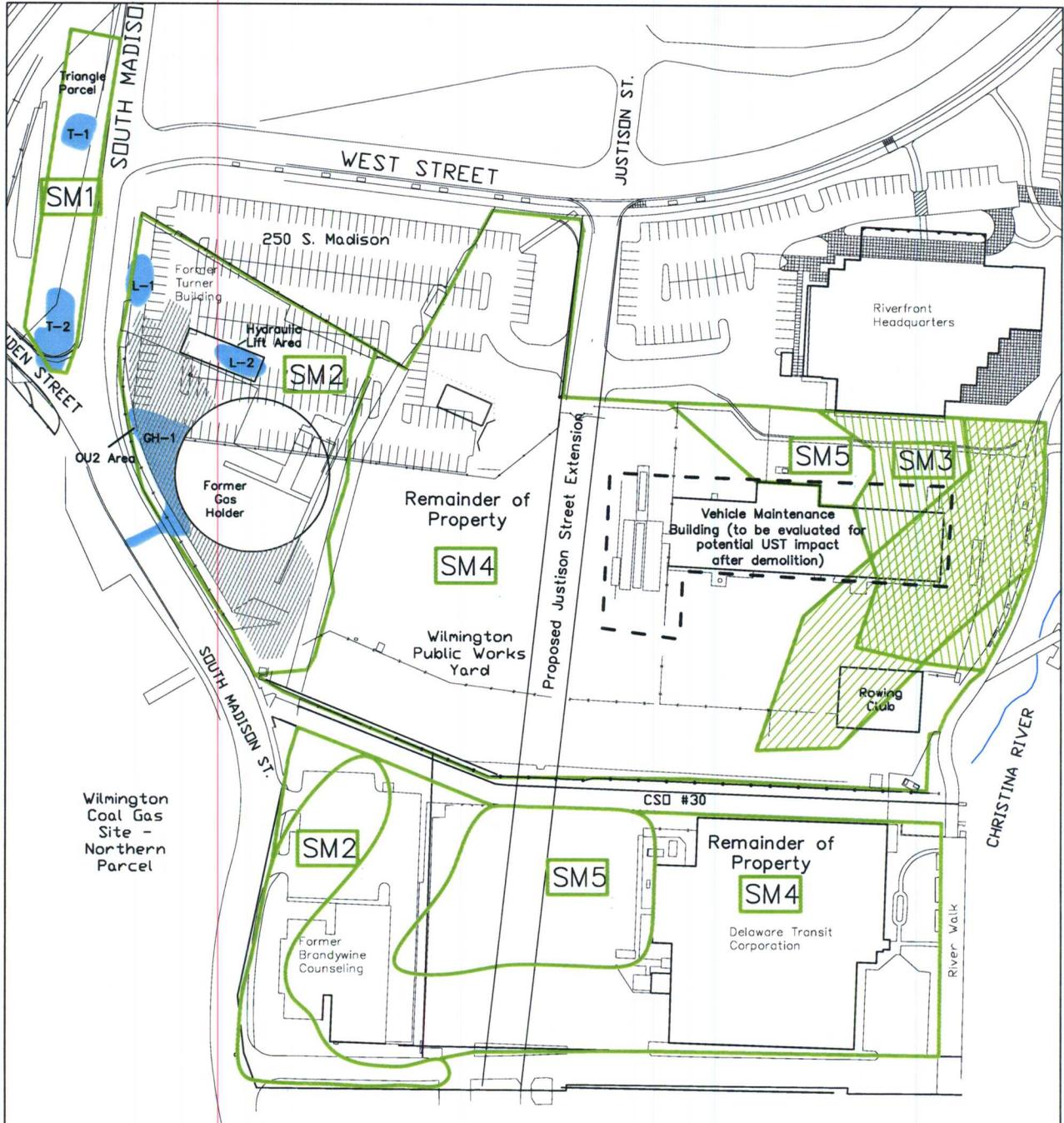
**BrightFields, Inc.**  
 Environmental Evaluation,  
 Investigation, and Remediation

P.O. Box 230, 710 Wilmington Road  
 New Castle, Delaware 19720-0230  
 302 322-2558  
 302 322-8921 fax

Parcels C & D Soil and Groundwater Sampling  
 Locations  
 Wilmington, Delaware

BY	DATE	SCALE	AC FILE:
SAJ	06/22/05	1:840	fig 6
CHECKED	JEC	06/22/05	DWG. NO.
PROJECT #	0658.48.52	FIGURE 6	REV.
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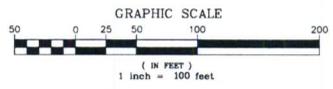


**SM4** Soil Management Area

-  Excavated Areas to 6 to 12 feet bgs
-  SM3 Shallow Area (0 to 2 ft bgs)
-  SM3 Deep Area (3 to 13 ft bgs)
-  NAPL Remediation Areas

**Contaminants Associated with each Area:**

- SM1 - Metals & PAHs
- SM2 - Metals & PAHs
- SM3 - Lead, Arsenic & PAHs
- SM4 - Metals, PAHs, PCBs
- SM5 - PCBs





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**Soil Management and  
NAPL Remediation Areas  
Wilmington, Delaware**

	BY	DATE	SCALE:	AC FILE:
DRAWN	SAJ	01/04/06	1:1200	oil SMAs
CHECKED	JEC	01/04/06	DWG. NO.	REV.
PROJECT #	0658.48.52	FIGURE 7		0