

Phase I Environmental Site Assessment

Former Lehigh Structural Steel
Tilghman Street and North Brick Street
City of Allentown, PA 18018

20 April 2012

EPA SITE ID # G3-FR-NY00
GRANT NUMBER # BF-97396901

Prepared for:

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Bethlehem, PA 18017



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Helping business thrive.*

EXECUTIVE SUMMARY

This Phase I Environmental Site Assessment (ESA) was completed in an attempt to identify environmental conditions for the property located at the 26-acre former Lehigh Structural Steel property in the City of Allentown, Lehigh County, Pennsylvania (the "Site"). The Site is located north and south of the Tilghman Street Bridge between North Brick Street and the Lehigh River. The Site is situated in a commercially developed urban setting and has been developed since the late 1800s as an industrial property. The Site was inspected on 30 March 2012.

The Phase I ESA was completed in accordance with the American Society for Testing and Materials (ASTM) document "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (ASTM E1527-05), which complies with the United States Environmental Protection Agency's (USEPA's) Final Rule on Standard Practices for All Appropriate Inquiry.

This assessment identified the following Recognized Environmental Conditions (RECs) in connection with the subject Site:

- **Off-Site Sources of Contamination**

The PADEP conducted an inspection in April 2009 based on a complaint reference Parcel ID 640747079685, which is west and adjacent to Site parcel A. During the inspection, composite samples from the adjacent parcel were taken and analyzed for PCB, SVOA, VOA, and metals. Analysis of the samples showed concentrations of lead, arsenic, iron, and benzo(a)pyrene in amounts greater than the PADEP direct contact limits. Cadmium and PCB Aroclor-1016 were also detected at levels of concern. As discussed in Section 4.2.4, a resolution to these issues was not reached until June 2010. There is no evidence that the property owner instituted any of the recommendations discussed during resolution. Therefore, it is likely that the conditions on the adjacent property have an impact on the Site property.

- **Releases from Former On-Site USTs**

Although the PADEP files indicate that all USTs were removed from the site in 1989, subsequent environmental assessments performed by Moonstone and Tetra Tech indicate that two 3,000-gallon gasoline USTs had leaked prior to their removal.

Petroleum-related compounds were detected in soil and groundwater in this area at concentrations exceeding the PADEP MSCs, as discussed in Section 4.2.7 of this report.

- **Releases from On-Site ASTs**

As discussed in Sections 5.3.2 and 5.4.2 of this report, a 275-gallon diesel AST, a 100-gallon diesel AST, and a 275-gallon waste oil AST all located in Building #2 are not in secondary containment. Also, the waste oil container in the Replacement Parts building was cited for not meeting design standards (Section 4.2.2). All the ASTs showed staining and signs of spills. Based on general maintenance and housekeeping in these areas, these ASTs are considered a material threat of a release from spills.

- **Impacts to Groundwater**

As discussed in Section 4.2.7 of this report, groundwater collected by Moonstone and Tetra Tech in the vicinity of two former 3,000-gallon USTs contained petroleum-related compounds at concentrations exceeding the PADEP MSCs. Moonstone also found several SVOCs exceeding the PADEP MSCs for groundwater at a separate location (MW-2), and Tetra Tech found manganese and iron at concentrations exceeding the EPA SL for tap water and/or groundwater. Benzene, ethylbenzene, m,p-xylene, and naphthalene are compounds associated with gasoline.

- **Impacts from Historical Sludge Lagoon**

Drawings for the Acid Waste Treatment Plant for the Lehigh Structural Steel Company, dated 4 December 1947, indicate (in the notes section) that a sludge lagoon was located on the northwest section of the plant property. The exact location is not identified on the drawing, and it is unclear whether the lagoon was within the current Site boundaries. If the former lagoon is on-Site, it represents a potential pathway for regulated substances to enter the ground.

- **Impacts from Historical Use of Acids and Chlorides**

Historical galvanizing operations at the Site, which ceased in 1978, reportedly used sulfuric acid, hydrofluoric acid, zinc ammonium chloride, and potassium chloride. As discussed in Section 4.2.7, a total of twenty soil samples were collected from the galvanizing operations vicinity. The samples were analyzed for PPL metals, sulfide, sulfate, chloride, and corrosivity (pH). Two shallow zone soil samples contained cadmium and lead at concentrations exceeding applicable PADEP MSCs, which may be associated with fill material.

- **Heavy Metals in Soil**

As discussed in Section 4.2.7, Moonstone collected soil samples from across the Site. Heavy metals that included antimony, arsenic, copper, and lead were found at concentrations exceeding the NR-SHS. In addition, Tetra Tech collected a total of forty-one soil samples across the Site in November 2008. Five of the forty-one soil samples contained inorganic compounds at concentrations exceeding applicable the PADEP MSCs. The inorganic compounds detected include lead, cadmium, and zinc.

- **Releases to the Storm Water Drainage System**

Intake grates for the storm water system are located throughout the Site, indoors and outdoors, frequently in the middle of active areas (e.g., scrap yard, maintenance areas). In November 2008, Tetra Tech selected five storm drains for sampling based on their current accessibility and proximity to current or historical industrial activities. Two of the eleven soil samples contained VOCs at concentrations exceeding the applicable PADEP MSC. The VOCs detected included 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene.

The following business environmental risks were identified in connection with the subject Site:

- **Asbestos**

Asbestos is specifically excluded from the scope of an ASTM-standard Phase I ESA. However, asbestos can generate significant project costs if abatement is necessary. Friable and non-friable asbestos have been identified at the Site, as documented in previous reports (Section 4.2.7 of this report). Asbestos-containing materials identified included flooring, thermal system insulation, transite panels, and a coating applied to corrugated tin sheeting throughout the site. Asbestos-containing materials must be addressed in accordance with applicable regulations regarding handling of the material during any future demolition or renovation.

- **Presence of Electrical Switches/Ballasts (possible asbestos, PCBs, metals)**

Based on previous reports (Section 4.2.7, Phase I ESA 2007), transformers at the Site are classified as non-PCB transformers. However, other electrical equipment exists throughout the Site. Electrical switch boxes, fluorescent light ballasts, fluorescent light tubes, and other electrical equipment may contain asbestos, PCBs, mercury, and/or other heavy metals. These materials should be handled accordingly during any demolition/renovation activities.

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1 INTRODUCTION

1.1 Purpose

Environmental impairments create potential financial and/or legal liabilities resulting from possible site remediation costs and civil or criminal penalties. The objectives of this Phase I Environmental Site Assessment (“ESA”) are to provide appropriate inquiry into the previous ownership and uses of the property consistent with the United States Environmental Protection Agency’s (USEPA’s) Final Rule on Standard Practices for All Appropriate Inquiry, which went into effect on 1 November 2006, and to provide information relating to the Site’s environmental integrity so that business-related environmental risk may be evaluated.

The tasks comprising this ESA were conducted as an initial screening, to provide a reasonable level of investigation for identifying Recognized Environmental Conditions (RECs) within the scope, time constraints, and budgetary considerations of an ESA. The ESA is both less rigorous than, and different from, an environmental audit and is not intended to address regulatory compliance. The scope of this assessment is intended to aid in evaluating whether additional investigation, such as qualitative or quantitative contamination studies, would be prudent. As such, this assessment does not incorporate exhaustive records searches or definitive sampling and analytical schemes. The findings of the assessment are based on information that became available over the period of study and on site conditions existing at the time of the investigation.

This ESA report was prepared as a result of a contractual agreement that defined the approach and scope of services to be employed during the course of the investigation. The opinions and conclusions expressed in this study have been based strictly on the results of these contracted services. The services provided by Moonstone Environmental, LLC (referred to herein as Moonstone) should not be construed to be a warranty or guarantee that no environmental impairments exist at this site or that all environmental impairments have been uncovered. No conclusions are stated or implied concerning the suitability of the site for its eventual use. This document is not intended for purposes other than those expressly set forth herein or for use by parties other than the client, unless stipulated otherwise in the Services Agreement between Moonstone and the client.

1.2 Detailed Scope-of-Services

This Phase I ESA was completed in accordance with the American Society for Testing and Materials (“ASTM”) document "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (ASTM E 1527-05), which complies with the USEPA All Appropriate Inquiry rule. In accordance with ASTM E 1527-05, this Phase I ESA identifies Recognized Environmental Conditions (RECs) at the Site. ASTM E 1527-05 defines RECs as:

... the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include de minimis conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

This Phase I ESA also identifies environmental conditions which may not satisfy the definition of a REC but which may create business-related environmental risk.

Environmental conditions related to the property that are beyond of the scope of an ASTM E 1527-05 Phase I include asbestos-containing materials, radon, lead-based paints, lead in drinking water, wetlands, regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, biological agents, and mold.

The Findings and Opinions provided in this report rely on information gathered through:

- A review of records relating to the physical setting and historical use of the subject property and adjoining properties;
- A Site inspection completed on 30 March 2012;
- Interviews with government officials; and
- Interviews with those familiar with historical and current use of the Site.

Moonstone represents that this assessment has been carried out diligently by qualified environmental professionals.

1.3 Significant Assumptions

Information for this ESA assessment was obtained from sources identified in the report. This information, to the extent it was relied upon to form our opinion, is assumed to be correct and complete. Moonstone cannot be responsible for any errors or omissions in this investigation resulting from incomplete or inaccurate disclosures by the client or other information sources.

1.4 Limitations and Exceptions

During the site walkthrough portion of the assessment, Moonstone encountered the following limitations:

- A vacant two-story cinder block building attached to the east side of Building #1 (the former Site Manager's Office; yellow "MSDS" placard) was locked and Mr. Bob Kinigus, Property Manager, did not have keys to it. Mr. Kinigus indicated that the building is empty. Based on a limited view of the building's interior through the windows, it appears to be vacant. However, the inability to inspect this building is considered a significant data gap.
- A vacant building attached to the east side of Building #1 was locked and Mr. Bob Kinigus, Property Manager, did not have keys to it. Mr. Kinigus indicated that the building is empty and it was not safe due to a collapsing roof. Based on a limited view of the building's interior through the windows, it appears to be vacant. However, the inability to inspect this building is considered a significant data gap.
- At the direction of Mr. Kinigus, Moonstone was told not to enter a descending concrete stairway on the exterior east side of Building #1. This area beyond the bottom of the stairs appeared to lead under the Gardner Cryogenics portion of the building. The inability to inspect this area further than the bottom of the stairway is considered a significant data gap.

- The space on the east side of Building #2 was locked and could not be accessed. Mr. Kinigus indicated that the space is used by Creative Fence for storage of fencing materials. The inability to inspect this building is considered a significant data gap.
- Building #2 contained heavy metal plates in the floor that were too heavy to be removed for inspection. Mr. Kinigus was unaware of their purpose. Although the ASTM standard does not require inspections to include areas under floors, the nature and location of these plates suggest that they may cover hydraulic equipment, pits, or other features that may be of environmental concern. The inability to inspect underneath the metal plates is therefore considered a significant data gap.
- The second floor of the Schneider Maintenance Building was closed off because it was not considered safe, therefore Moonstone did not inspect this area. The inability to inspect this area of the building is not considered a significant data gap because the area is not used.
- At the request of certain tenants, Moonstone was not permitted to take photographs inside all of the facilities at the Site (Acme Cryogenics, Gardner Cryogenics, and Banner Tire). This is not considered a significant data gap as Moonstone was permitted to inspect the site visually and to interview a representative from each facility.
- Moonstone did not locate two historical sources that pre-date development of the Site. Moonstone reviewed historical documentation for the Site from at least two sources dating back to the late 1800s: topographic maps back to 1893, and fire insurance maps back to 1885. In both cases, the earliest sources indicated that the Site was already developed. Based on the continuous industrial use of the Site since the late 1800s, environmental impacts that pre-date development are not expected to have a significant impact on environmental conditions at the Site. This is not considered a significant data gap.

Changes in the condition of the site may occur with time due to either natural processes or human activities. The findings presented in this report are based on site conditions existing at the time of the investigation. Also, Moonstone has relied, in part, on representations made to Moonstone regarding conditions at the site or adjoining properties. Moonstone cannot be responsible for any errors or omissions in this investigation resulting from incomplete or inaccurate disclosures by the client or contacts.

This report has been based only on information that became available over the period of study. Moonstone represents that the contracted services to assess the site for existing environmental impairments were carried out diligently by environmental professionals.

1.5 Special Terms and Conditions

This Phase I environmental site assessment is being completed on behalf of Dunn Twigg Company, LLC through the support of the Lehigh Valley Economic Development Corporation (LVEDC) and the United States Environmental Protection Agency's Brownfield Assessment Grant Program. Moonstone Environmental LLC is completing this Phase I under the terms of its contract to serve as an environmental consultant to LVEDC.

1.6 User Reliance

No ESA can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with a property. Use of this Phase I report is intended to reduce, not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with the subject site. The services provided by Moonstone in completing this project have been provided in a manner consistent with normal standards of the profession. No other warranty, expressed or implied, is made.

The information and opinions rendered in this report are exclusively for use by Dunn Twigg Company LLC, KNBT Bank, and LVEDC. Moonstone will not distribute or publish this report to parties other than these entities (and/or their representatives) without written consent except as required by law or court order.

2 SITE DESCRIPTION

Following is an overview of Site conditions as determined from a review of municipal files and a Site inspection. Figures and photographs of the Site are provided in Appendix A. Figure 1 shows the location of the Site on an aerial photograph. Figure 2 shows an aerial close-up of the Site. Figure 3 shows the Site location on a topographic map. Figure 4 identifies the Site parcels and the buildings located on the parcels. The photographs in Appendix A show conditions observed at the Site during the 30 March 2012 site inspection.

2.1 Location and Legal Description

The Site consists of eight parcels located in the City of Allentown, Lehigh County, Pennsylvania. The parcels included in the Site are listed in Table 1 below. The overall acreage of the Site is approximately 26 acres.

<p style="text-align: center;">TABLE 1 Tax Assessment Records for Properties Included in the Site Former Lehigh Structural Steel City of Allentown, Lehigh County, Pennsylvania</p>				
Parcel ID on Figures	Assessment Parcel ID No. (PIN)	Size	Property Address	Map Tile
A	640747392954-1	193'x390' irreg	Catawauqua Ave.	G09NE2C-003-013
B	640747522290-1	3.45 Ac.	N Brick St. Rear	G09NE3B-003-037
C	640746662165-1	4.13 Ac.	1 Furnace St.	G09NE3B-003-036
D	640746713805-1	4.5 Ac.	N Brick St.	G10NW4D-007-001
E	640745795680-1	1.26 Ac.	Furnace St.	G10NW4D-007-002
F	640745957064-1	9.83 Ac. (deed) 10.376 Ac. (tax)	W Sycamore St.	G10NW4D-001-001
G	640745538601-1	164' x 216' irreg	3 W Sycamore St.	G09NE3C-020-001
H	640745552838-1	96' x 220'	6 W Tilghman St.	G09NE3C-016-003

2.2 Site and Vicinity General Characteristics

The Site is located below the Tilghman Street Bridge on the west bank of the Lehigh River. The Site itself is nearly level, but the Site topography rises steeply to the west. The Site and surrounding properties are and historically have been used primarily for industrial activities. Rail lines access the site from the west side, with numerous spurs entering the property. Due to the presence of a cryogenic tank refurbishing company (Acme Cryogenics) occupying the property, there are large tank farms located on the north and south ends of the site. The tanks located in these staging and storage areas are empty. The Site is densely developed with large steel frame and/or concrete block buildings, many of which are in poor condition.

2.3 Current Use of the Property

The Site currently has multiple commercial and industrial occupants, including a cryogenic tank manufacturing company, a tire warehouse, a heavy metal burning and scrap facility, a fencing warehouse, two storage warehouses, a cryogenic tank refurbishing company, and two heavy vehicle maintenance shops. Four of the Site buildings are vacant.

2.4 Descriptions of Structures, Roads, Other Improvements on the Site

2.4.1 Structures

The Site is heavily developed with steel frame and/or concrete block buildings. The buildings are identified on Figure 4 and are described in Section 5.4 of this report. There is also a covered iron loading dock on the north portion of the Site.

2.4.2 Roads & Parking Areas

Roads and parking areas are located throughout the Site. Many roads and parking areas are unpaved. Paved areas consist of asphalt paving.

2.4.3 Heating & Cooling

Heating at the Site is provided by electrical and/or gas fired heaters. Cooling is provided by natural or fan assisted airflow. A few window-mounted or wall-mounted air conditioning units were observed in office areas in some buildings.

2.4.4 Electrical Power

Electrical power is provided by PPL, the local electric utility.

2.4.5 Telephone

Telephone service is not provided to all areas/buildings on the Site. If service is provided, it is up to the individual tenants to establish service with local providers, such as Verizon, RCN, Service Electric, etc.

2.4.6 Drinking Water

The property is connected to the City of Allentown's municipal water supply system. Moonstone identified no private water supply wells at the Site.

2.4.7 Sewer

The property is connected to the City of Allentown's municipal sanitary sewer system. The on-site storm water system is independent of the sanitary sewer system and drains to the Lehigh River.

2.4.8 Storm Water Management

Storm water management at the Site consists of multiple methods. Many buildings have rain gutters that discharge storm water from the structure rooftops to the ground surface or into pipes below the ground surface. Several of the Site buildings are surrounded by shallow concrete trenches into which the rooftop gutters drain. Also, there appears to be a network of storm grates on the Site. Some of the grates are located outside, while others are located inside buildings. According to previous environmental reports, the storm grates discharge storm water directly to the Lehigh River. Moonstone could not confirm with anyone interviewed during the inspection as to whether or not the storm water actually drained directly to the river. Mr. Kinigus was not aware of any Site utility plans or maps that showed storm drain locations or piping.

2.5 Current Uses of Adjoining Properties

The eastern side of the Site lies along the Lehigh River. South of the Site is industrial/commercial property. The southwestern portion of the Site is adjacent to a replacement parts business, with a large scrap yard and equipment graveyard. The middle portion of the west side abuts residential dwellings. The northwestern portion of the Site is adjacent to undeveloped property belonging to the City of Allentown. North of the Site is a vacant field also owned the City of Allentown.

3 USER PROVIDED INFORMATION

As defined by ASTM E 1527-05, the “User” of a Phase I assessment is the party requesting the Phase I assessment. For the purposes of this Phase I assessment, the “User” is Dunn Twigg Company, LLC. Mr. Andrew Twigg, one of the principals of Dunn Twigg Company LLC, provided the information in this section of the report.

3.1 Title Records

Mr. Twigg indicated that a thorough title search had been performed for the Site. Moonstone did not receive a copy of the title search for review. Based on the large amount of environmental information available for the Site from other sources, the title search was not considered likely to contribute to knowledge of the Site’s environmental history or current conditions.

3.2 Environmental Liens or Activity and Use Limitations

Mr. Twigg is unaware of any environmental liens or activity use limitations for the property. He indicated that the title search performed for the property was comprehensive, and would likely have identified environmental liens or activity use limitations if any were recorded in the chain of title.

3.3 Specialized Knowledge

Mr. Twigg indicated that he has no specialized knowledge of the property or the businesses that are operating or have operated there.

3.4 Commonly Known or Reasonably Ascertainable Information

Previous environmental studies have been performed at the site. Mr. Twigg provided copies of these reports to Moonstone for review and evaluation. Aside from the documents provided to Moonstone, Mr. Twigg indicated that he does not know of any commonly known or reasonably ascertainable information about the property.

3.5 Valuation Reduction for Environmental Issues

Mr. Twigg is unaware of any environmental issues that would reduce the value of the property.

3.6 Owner, Property Manager, and Occupant Information

The owner of all site parcels is LSS Realty Corporation, Inc., represented by Mr. John Schneider, Allentown, Pennsylvania. The property manager is Mr. Bob Kinigus. Mr. Andrew Twigg, a principal from Dunn Twigg Company, provided occupant/tenant information prior to site walkthrough on 30 March 2012. The following tenants are currently operating at the property:

- Acme Cryogenics (pressure tank refurbishing);
- Banner Tire (tire warehouse);
- Creative Fence (locked);
- E. Schneider & Sons, Inc. (scrap storage and handling; equipment maintenance);
- Gardner Cryogenics/Air Products (pressure tank manufacturing);
- Lutheran Church (non-food, dry goods storage and distribution); and
- Replacement Parts, Inc. (mechanic shop).

3.7 Reason for Performing Phase I

This Phase I ESA is being performed for a prospective purchaser of the property, Dunn Twigg Company LLC, as part of the environmental due diligence process.

4 RECORDS REVIEW

Moonstone conducted a review of state and federal environmental databases for the property, which are considered standard environmental resources. In addition, Moonstone contacted the Pennsylvania Department of Environmental Protection (PADEP) to request files for the property under various tenant names, and contacted the City of Allentown Right-To-Know office to request files for the multiple Site addresses (see Table 1). The results of the records review are presented in this section.

4.1 Standard Environmental Record Sources

To review standard environmental records, Moonstone ordered an environmental database report from Environmental Data Resources, Inc. (EDR). EDR searched several federal, tribal, state, and local environmental databases for the subject property, as well as for listings of sites within the ASTM-designated radius of the subject site. EDR also reports findings from supplemental (non-standard) databases such as manufactured gas plants, oil/gas pipelines, and electric power transmission lines. A copy of the EDR database report, including detailed descriptions of all databases searched is included in Appendix B.

4.1.1 Unmappable Sites

EDR reports facilities/properties that may fall within the ASTM-recommended radii of the Site, but lack adequate address information to be definitively mapped (“orphan sites”). Based on a review of the addresses provided by EDR and on local knowledge of the area, Moonstone determined that all but five (5) of the orphan sites may be disregarded. Fifty-four (54) of the fifty-nine (59) orphan sites listed by EDR fall outside the requisite search distances and/or are located in such a direction or at such a distance that they are not considered likely to have an adverse effect on environmental conditions at the Site. Accordingly, these orphan sites are not included in the database results in Section 4.1.2. The five (5) remaining orphan sites are discussed under the appropriate database section below.

4.1.2 Database Search Results

Environmental Data Resources, Inc. (EDR) searched several federal, state, local, and tribal environmental databases for the subject property, as well as for listings of sites in proximity to the subject Site. The results of the search are detailed in Appendix B.

Subject Site

The subject Site (listed as the Target Property in the EDR report) consists of the facilities listed at Cluster A on the EDR Overview map. These include the following database listings:

- **Acme Cryogenics Tank Rehab:** RCRA-LQG, FINDS, NJ Manifest
- **Gardner Cryogenics:** RCRA-CESQG, FINDS, PA Manifest
- **Kwik Strip of Lehigh Valley:** RCRA-CESQG
- **Vanchlor Catalysts LLC:** RCRA-Non-Gen

The EDR report also lists the following facilities within the ASTM-designated radii of the Site.

Database: CERC-NFRAP

Description: Contains sites that have been removed and archived from the inventory of CERCLIS sites.

Search Radius: 0.5 miles

Sites Located: Bottling House & Brewery Site (451 N. Front St.)

This site is located a little more than 0.25 miles from the Site and is not listed on the NPL. The site was archived March 2008 after a preliminary assessment, which was started in August 2004 and completed in August 2008. There was not enough information to qualify this site for the NPL. This site is located downstream from the subject Site and is not expected to have an adverse effect on environmental conditions at the subject Site.

Database: RCRA-TSDF

Description: Contains selective information on sites that treat, store, treat or dispose of hazardous waste as defined by RCRA.

Search Radius: 0.5 miles

Sites Located: LSI Corp (555 Union Blvd)

Inclusion in the database does not necessarily indicate that a release has occurred. No violations were noted in the September 2004 inspection. In the absence of identified releases of regulated substances and given that this site is located on the opposite side of a hydrogeological divide, this site is not expected to adversely affect the environmental conditions at the subject Site.

Database: Federal RCRA Generators List

Description: EPA's comprehensive information system providing access to data supporting RCRA of 1976 and the Hazardous and Solid Waste Amendments of 1984. TSDs are entities that treat, store, or dispose of waste, SQGs are small quantity generators of hazardous waste (100kg to 1,000kg per month) and LQGs are large quantity generators of hazardous waste (over 1,000kg of hazardous waste or over 1 kg or acutely hazardous waste per month).

Search Radius: 0.25 miles

*Sites Located: Acme Cryogenics Tank Rehab (1 W. Allen St., Bldg 3) – LQG
Durabond Protective Coating Co (Bldg 3 Bridge St.) – SQG*

Gardner Cryogenics S (1 W. Allen St., Unit 8) – CESQG
Kwik Strip of Lehigh Valley (1 Allen St) – CESQG

This is a compliance database listing facilities that generate hazardous waste. Inclusion in the database does not necessarily indicate that a release has occurred. No violations were noted at Acme Cryogenics, Durabond Protective Coating, or Gardner Cryogenics. In the absence of identified releases of regulated substances, there is no indication that these sites adversely affect environmental conditions at the Site.

However, violations were noted at the Kwik Strip site on 7 February 2008. Violations concerning generation manifests and records/reporting were noted. Compliance was achieved on 3 September 2008. Compliance violations were noted during the 1993, 1994, and 1995 compliance evaluation inspections, but no detailed information was provided. No violations were noted on the 16 July 2009 inspection. Based on the administrative nature of the violations noted, this site is not expected to have an adverse effect on environmental conditions at the subject Site.

Database: Storage Tank Release Sites (LUST)

Description: Inventory of reported leaking underground storage tank incidents.

Search Radius: 0.50 miles

*Sites Located: Getty 69406 (634-646 N Front St.)
Ingersoll-Rand Co. (1 Pump Pl.)
Simpkins Prop (401 N Front St. Rear)
Auto Tune Ctr (191 Tilghman St.)
Lucent Technologies (555 Union Blvd.)
Harrison Morton Mid Sch (Second/Turner St.) (ORPHAN)*

Cleanup of LUST sites at the Getty, Ingersoll-Rand Co., Simpkins Property, Auto Tune Center, and Harrison Morton Middle School sites has been completed. Cleanup of one of the two LUST incidences at Lucent Technologies site has been completed, but the other is still listed as “Interim Remedial Actions Initiated or Completed,” as of February 2005. The incident concerned a leaking underground storage tank containing a hazardous substance that occurred on 20 October 2004.

The Ingersoll, Simpkins, and Harrison LUST sites are located in the presumed downgradient direction from the Site. Auto Tune is located in a position where flow is presumed to be towards the Jordan Creek, and Lucent is located on the opposite side of a hydrogeological divide. These sites are not likely to have an adverse effect on environmental conditions at the subject Site. The Getty site is within 0.15 miles of the subject Site and at equal elevation. Conditions at this site can have an adverse effect on the subject Site.

Database: Unregulated Tanks Cases (UNREG LTANKS)

Description: Included in the listing are leaking storage tank cases from unregulated storage tanks.

Search Radius: 0.50 miles

*Sites Located: St John the Baptist Parish (924 N. Front St.)
Lucent Technologies (555 Union Blvd.)*

Cleanup of fuel oil #2 at the St. John site was completed on 30 August 1991, and the cleanup associated with an above ground tank at the Lucent site was completed on 31 March 1999. Due to the age of the release at the St. John site and the location of the Lucent site (across a hydrogeological divide), these sites are not likely to have an adverse effect on environmental conditions at the subject Site.

Database: Leaking Above Ground Storage Tank List (LAST)

Description: Listing of leaking ASTs from DEP's Listing of Pennsylvania Regulated Aboveground Storage Tanks

Search Radius: 0.5 miles

*Sites Located: Lucent Technologies (555 Union Blvd.)
PPL Allentown Substation (Front St.)*

Cleanup associated with an above ground tank at the Lucent site was completed on 31 March 1999. The PPL Substation site is listed as Inactive as of April 2002, indicating that PADEP has received no information regarding this site for several years. The Lucent site is located on the opposite side of a hydrogeological divide, and the PPL Substation site is located in the presumed downgradient direction south of the subject Site. These sites are not likely to have an adverse effect on environmental conditions at the subject Site.

Database: Regulated Underground Storage Tanks (UST)

Description: Listing of underground storage tanks registered with the state under Subtitle I of RCRA.

Search Radius: 0.25 miles

Sites Located: Ganesh Gas & Grocery (634-646 N Front St.)

This is a compliance database listing facilities that have registered USTs. Inclusion in the database does not necessarily indicate that a release has occurred. In the absence of identified releases of regulated substances, there is no indication that this site adversely affects environmental conditions at the subject Site.

Database: Aboveground Storage Tanks Sites (AST)

Description: Contains registered ASTs from the Department of Environmental Protection's Listing of Pennsylvania Regulated Aboveground Storage Tanks.

Search Radius: 0.25 miles

Sites Located: MI Prod (404 View Union Blvd.)

This is a compliance database listing facilities that have registered ASTs. Inclusion in the database does not necessarily indicate that a release has occurred. In the absence of identified releases of regulated substances, there is no indication that this site adversely affects environmental conditions at the subject Site.

Database: Voluntary Cleanup Program Sites (VCP)

Description: Sites involved with the Voluntary Cleanup Program.

Search Radius: 0.50 miles

*Sites Located: Lucent Technologies (55 Union Blvd)
PPL Meadow Substation (Beneath Tilghman St.) (ORPHAN)*

The Lucent site is currently a “Site in Progress” for soil and water remediation as of September 2011. The Lucent site is located on the opposite side of a hydrogeological divide from the subject Site. The PPL Meadow Substation has been remediated to the satisfaction of the PADEP. Therefore, these sites are not likely to have an adverse effect on environmental conditions at the subject Site.

Database: BROWNFIELDS

Description: List includes Brownfields properties.

Search Radius: 0.5 mile

*Sites Located: Simpkins Prop (401 N Front St. Rear)
Lehigh Landing (Front St.) (ORPHAN)*

The Phase I report prepared by Moonstone for the former ABE Roofing and Siding / Simpkins Property (October 2011), indicates no evidence of a release of regulated substances at this location. However, the outfall points for the building floor drains and the open pipe outside of the Distribution Warehouse are not known. This site is approximately 0.32 miles downgradient from the subject Site.

Moonstone prepared the Final Report for the contamination removal and disposal and building demolition of the Calo building that is part of the Lehigh Landing. All abatement, demolition, removal, and environmental activities have been completed according to the Consent Order and Agreement Amendment, the Revised Site Remediation & Demolition Plan, the Cleanup Plan, and appropriate federal, state, and local regulations. Moonstone was not involved with other Lehigh Landing sites. This site is downgradient from the subject Site.

Both of these sites are located downgradient of the subject Site and are not likely to have an adverse effect on environmental conditions at the subject Site.

Database: US BROWNFIELDS

Description: EPA’s listing of Brownfields properties from the Cleanup in My Community program, as well as areas served by Brownfields grant programs.

Search Radius: 0.5 mile

*Sites Located: Former Neuweiler Brewery (401 N. Front St.)
Calo Building (97 N. Front St.) (ORPHAN)
Allentown Riverwalk Project (Front St.) (TP / ORPHAN)*

The Allentown Riverwalk Project is another name used for the former Lehigh Structural Steel site, the subject Site.

The Phase I Environmental Site Assessment report prepared by Moonstone for the Former Neuweiler Brewery (July 2010), indicated there are several recognized environmental conditions associated with this site. The site has numerous containers of unidentified and potentially hazardous materials, and piles of roofing materials that may contain asbestos. In addition, there are large quantities of fluorescent light tubes located at the site. The outfall point for the floor drains identified in the building basements is not known. Regulated materials may have been discharged to the drains historically, resulting in potential impacts to the subsurface. Coal storage and ash piles at the site may have impacted soil quality, and the site’s water supply is tainted with coal tar (or a similar material).

Moonstone prepared the Final Report for the contamination removal and disposal and building demolition of the Calo building. All abatement, demolition, removal, and environmental activities have been completed according to the Consent Order and Agreement Amendment, the Revised Site Remediation & Demolition Plan, the Cleanup Plan, and appropriate federal, state, and local regulations.

The Former Neuweiler Brewery and Calo sites are over 0.25-mile south and downgradient of the subject Site and are not likely to affect environmental conditions at the subject Site.

Database: Archived Registered Storage Tank List (ARCHIVE LUST)

Description: Includes tanks storing highly hazardous substances that were removed from DEP's Storage Tank Information database because of the Department's policy on sensitive information. Also may include tanks that are removed or permanently closed.

Search Radius: 0.25 miles

*Sites Located: Getty 69406 (638 N Front St.)
Egypt Star Bakery Inc (608 N Front St)
St. Mary's Ukrainian Parish (803 N Front St)*

This is a database listing facilities that were removed from the DEP Storage Tank Information database or that have tanks that were removed or permanently closed. If a release occurred at these sites, the release was very old and was archived.

Database: Manifest

Description: A review of the state MANIFEST lists, as provided by EDR.

Search Radius: 0.25 miles

*Sites Located: **Gardner Cryogenics (1 W Allen St, Unit 8)**
MI Products Inc. (404 Union Blvd)*

This database lists manifested shipments in Pennsylvania. The shipments generated by the Gardner Cryogenics site address consist primarily of liquid waste. Shipments generated by MI Products consist primarily of waste in metal drums, barrels, and kegs. Inclusion in the database does not necessarily indicate that a release has occurred. In the absence of identified releases of regulated substances, there is no indication that these shipments adversely affect environmental conditions at the subject Site.

Database: Manufactured Gas Plants (MGP)

Description: Includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers.

Search Radius: 1.00 mile

Sites Located: UGI Corp Gas MFG Plt-Allentown (2nd and Union St.)

Alternate names for this site are the Allentown Gaslight Co., the Allentown Gas Co., and the Allentown-Bethlehem Gas Co. This site is located at a lower elevation than the subject Site. Based on its location, the site is not likely to have an adverse effect on environmental conditions at the subject Site.

4.2 Additional Environmental Record Sources

4.2.1 EDR Supplemental Databases

EDR's database report includes information from supplemental databases not required by ASTM, such as information regarding Manufactured Gas Plants. Information from the supplemental databases is included in Section 4.1.2.

4.2.2 PADEP Databases

Moonstone searched the Pennsylvania Department of Environmental Protection's (PADEP's) eFACTS and eMapPA databases for information pertaining to the Site.

The eMapPA search produced four records based on the Site's location and using the Tank Facility overlay. Two of the records are for Sussman Bros & Co., located southwest and adjacent to the Site. The two records are inactive and concern two USTs that were closed without a permit. The closed USTs at Sussman Bros are considered equivalent to archived USTs. The other two records are for Lehigh Structural Steel Co. and both are inactive. There was one UST closed without a permit, which is also considered equivalent to an archived UST.

The eFacts search produced five postings regarding the Site. One posting is for Lehigh Structural Steel that is active, but the only associated record is inactive and contains no details. The second posting is for Gardner Cryogenics. This facility is active and is listed under the Land Recycling & Waste Management program. The facility is a "hazardous waste captive" and no other information is available. The third posting is for Acme Cryogenics Tank Rehab. This facility is also active, listed under the Land Recycling & Waste Management program, and a "hazardous waste captive." Two violations are noted; one dated May 2003 and one dated March 2010. Both violations are administrative in nature. Compliance was achieved and they were closed out. The fourth posting is for Kwik Strip of Lehigh Valley (formerly RediStrip). This facility is active and is listed under the Land Recycling & Waste Management program. Administrative violations were noted during a compliance evaluation in February 2008. All the violations concerned manifests and record retention and were all "unresolvable." The same violations were noted during a follow-up inspection in September 2008, but compliance was achieved and the violations were closed out. The fifth posting is for Replacement Parts, Inc. This facility is active and there is a complaint inspection record dated 1 June 2011 for this facility. The violations noted in the inspection are all administrative in nature and pertain to waste oil containers not labeled correctly and not designed to standards. Also, a copy of the PPC plan was not maintained and readily available.

Additionally, the eFacts database contained information about two properties adjacent to the subject Site. The PPL Meadow Substation is listed by EDR under the LAST and VCP databases (See section 4.1.2.) The Sussman Bros. record is inactive and the company is under the DEP Land Recycling & Waste Management program. No other information was available except for the information found in eMaps (see above).

4.2.3 City of Allentown Office of the City Solicitor

Moonstone submitted a Right-To-Know Request to the City of Allentown on 14 February 2012. On 22 March 2012, a letter from the Office of the City Solicitor stated that the request was forwarded to the Zoning, Building Standards & Safety, Environmental Services (Health), Water Distribution, Recycling & Solid Waste, and Fire Departments for a response. The only files concerning the Site properties were from the Allentown Fire Department (AFD).

On 2 April 2012, Moonstone reviewed AFD records associated with Site, which included fires, complaints, permits, violations, USTs, and/or ASTs. Most reports were for incidents that were deemed unlikely to create environmental issues at the Site, such as releases of compressed/liquefied gases (nitrogen and oxygen from the cryogenic facilities at the Site) and small fires from burning/welding metal and hot equipment. There were also tank records that included the following: a 250-gallon AST #2 fuel oil tank for the former Elementis Catalyst, Inc. (permit #TP01208) dated August 1999; fuel oil and gasoline UST tank permit (#671) for two 500-gallon, two 1,000-gallon, two 2,000-gallon, and one 5,000-gallon tanks for the former Hanover Lines company dated August 1989; and removal of the seven tanks at the former Hanover Lines company, five of which were completed at the time of the inspection, August 1999. “No leaks or contamination” was noted on the inspection form.

Several of the AFD records were the same records reviewed in the previous Phase I ESA (2007) report and concerned the Sussman Brothers & Co., a property located adjacent to the Site to the southwest. These records concerned the tank permit, tank removals, and the February and March 2002 fires. New records for the Sussman Bros. property included a fire in the scrap yard from burning insulation off of electrical wire (September 2007).

4.2.4 PADEP Wilkes-Barre Office File Review

Moonstone conducted a file review on 12 March 2012 at the PADEP Northeast Regional Office in Wilkes-Barre, Pennsylvania. In addition to the same information that was included in the previous Phase I ESA, dated April 2007, (see Section 4.2.7) other pertinent information was reviewed and is summarized below.

Several PADEP inspection reports and notices of violation are on file concerning RediStrip of Allentown, also known as Kwik Strip, a company that was formerly located on the Site. On 7 February 2008, a hazardous waste inspection was conducted at RediStrip. RediStrip failed to retain copies of manifests for a period of three years, so the inspector could not verify that proper manifests for the removal and disposal of spent acid solution used at the facility were filled out and routed correctly. Also, there was no documentation showing the approval and proper disposal of the oven bottoms and pit bottoms available. A Notice of Violation was formally issued on 16 May 2008 when RediStrip could not produce documentation to correct the inspection violations. The same violations were noted again during a 3 September 2008 hazardous waste inspection. The report did note that the two 6,000-gallon tanks containing the acid bath were not changed since the last inspection. The acid baths are changed out once every two to three years. The last time the acid baths were changed was approximately two years prior to the September 2008 inspection, but no paperwork was available. Another Notice of Violation, dated 24 September 2008, was issued to RediStrip with an additional requirement to provide documentation regarding the change in ownership of the business (the facility changed from RediStrip of Allentown to Kwik Strip). A letter from the Kwik Strip owner to PADEP stated that all process wastewater and chemicals were disposed of in-house since late 1998/early 1999, by using the bake off process described in the letter. The letter also explained the change of ownership and a copy of the wastewater test results from Clean Harbor Environmental Service that was hired to remove and dispose of the facility's wastewater and chemicals. The RediStrip/Kwik Strip file also included letters coordinating a meeting to discuss the Notices of Violation, and a Hazardous Waste Inspection Report, dated 16 July 2009, that stated no waste management violations were observed during the inspection. Copies of these documents are included in Appendix C.

A PADEP file concerning the Gardner Cryogenics South facility (a department of Air Products) included several of the Annual Chemical Analysis of Residual Waste Reports. The forms listed all facility waste streams, the volume of waste, and the disposal facilities. The waste streams did not change from report to report. A copy of the report for calendar year 2005 is included in Appendix C.

Multiple records were in the PADEP files concerning a parcel adjacent to the subject Site (Parcel ID 640747079685). The parcel is north of the Tilghman Street Bridge to the west of Parcel A. A General Inspection Report and email, both dated 20 April 2009, stated that E. Schneider & Sons, Inc. was illegally dumping municipal waste (demolition waste) and residual waste (soils with petroleum odor and visible staining that are mixed with metals, plastics, glass, circuit boards, slag, insulation, wood, demolition waste, etc.). Piles of screened contaminated soils were also on the site, as well more than 32 covered and uncovered roll-away containers that were empty or contained residuals, tires, contaminated screened soil. Composite samples were submitted to a lab to be

analyzed for PCB, SVOA, VOA, and Metals. A follow-up inspection was conducted on 15 June 2009. Some of the soil piles appeared to be removed, as well as many of the roll-off containers. Analysis of the samples taken during the April 2009 inspection showed concentrations of lead, arsenic, iron, and benzo(a)pyrene in amounts greater than the PADEP direct contact limits. Cadmium and PCB Aroclor-1016 were also detected at levels of concern. Another follow-up inspection was conducted on 23 October 2009. All of the same violations were still outstanding. A Notice of Violation was issued to Mr. Schneider on 18 November 2009. Mr. Schneider requested (second request, dated 27 November 2009) a meeting to understand and discuss the violations and attempt a resolution. A memo dated 14 July 2010 documented the results of an 18 June 2010 meeting. The memo states that a permit for the processing of byproduct, as processing results in the beneficial use of scrap metal, is not required (therefore, there is no "illegal dumping."). However, soils were to be characterized according to PADEP policy for proper management as solid waste, regulated fill or clean fill; best management practices were to be employed to reduce the amount of solid waste generated; storage and transportation of solid waste generated must follow PADEP requirements; run-on and run-off of storm water should be prevented (berms, tarps, containers); solid waste was not to be stored in excess of one year; and processing should not create odors, fugitive dust or emissions at or beyond property limits.

Four drawings (C-18952-55), dated 4 December 1947, were reviewed. The drawings were for the Acid Waste Treatment Plant for the Lehigh Structural Steel Company. The drawings were of very poor quality and could not be printed legibly, so the subject Site area/boundaries could not be adequately identified. However, it should be noted that a sludge lagoon located on the northwest section of the plant property was indicated in the drawing notes.

4.2.5 PADEP Bethlehem Office File Review

Moonstone contacted the PADEP local Regional Office in Bethlehem, Pennsylvania to request a file search. The only files on record at this office concerned Acme Cryogenics, Inc. The files included an air quality program permit, a state-only permit application, and the annual operating permits for the fabric collector/steel shot blast booth and the paint spray booths (2) with panel filters. The other files consisted of various full compliance inspection reports and follow-up inspection reports, dating from 8 February 2012 back to 12 December 2000. Based on the inspection reports, a notice of violation was issued on 18 October 2002 for operating the paint spray booth with a clogged filter and having no spare filters on site. These issues potentially affected air quality. These issues were highlighted again in a 4 March 2003 PADEP memo to Acme, which were then corrected and later satisfactorily addressed during a 3 March 2005 follow-up inspection. Additionally, a paint sample taken during a July 2005 inspection failed the compliance

standard. The sample analysis showed 7.26 lb. VOC / gal. coating solid that exceeded the < 6.67 lb. VOC / gal. coating solid standard.

4.2.6 EDR Supplemental Databases

EDR's search of state and federal groundwater well databases noted several wells within 0.25 mile of the subject property, including a public water supply well and a domestic supply well located on the east side of the Lehigh River. Based on the presence of a presumed hydrogeological divide (Lehigh River) separating the Site from these two potable wells, it is not likely that releases at the Site would have a detrimental effect on the wells.

4.2.7 Previous Environmental Reports

Moonstone reviewed previous environmental reports concerning the Site. The reports are summarized below. The report *Phase I Environmental Site Assessment, Former Lehigh Structural Steel, Front Street & Tilghman Street, City of Allentown, Lehigh County, Pennsylvania*, dated 25 April 2007, was prepared by Moonstone Properties, LLC (Moonstone). The *Report of Findings, Former Lehigh Structural Steel Site, City of Allentown, Lehigh County, Pennsylvania*, dated 5 July 2007, was also prepared by Moonstone. The report *Final Trip Report for the Former Lehigh Structural Steel Site, Groundwater and Soil Investigation*, dated 29 May 2009, was prepared by Tetra Tech, Inc. Copies of the reports are provided in Appendix D.

Phase I ESA (2007)

Moonstone completed a Phase I Environmental Site Assessment (ESA) report for the subject Site dated 25 April 2007. Moonstone's assessment identified the following in connection with the Site:

Recognized Environmental Conditions (RECs)

- **Releases from on-Site USTs**

Although the PADEP files indicate that all USTs were removed from the site in 1989, subsequent environmental assessments performed by Environmental Resource Management (ERM) indicate that the USTs had leaked prior to their removal. Although the petroleum released by the USTs may have decreased over time due to natural attenuation, there is no current data to confirm that natural attenuation has occurred.

- **Releases from on-Site ASTs**

A 275-gallon diesel AST in Building #2 showed evidence of an existing release during the site inspection. A 275-gallon waste oil AST also located in Building #2 is not in secondary containment, and based on general maintenance and housekeeping in the area, is considered a material threat of a release from spills.

- **Solvents in Groundwater**

Groundwater collected from a monitoring well in the paint spray area in 1990 (MW-2) contained trichloroethylene (TCE) at a concentration exceeding the Maximum Contaminant Level (MCL), and contained detectable concentrations of tetrachloroethylene (PCE), trans 1,2-dichloroethene, and chromium (all below the MCLs). Although the solvent concentrations may have decreased over time due to natural attenuation, there is no current data to confirm that natural attenuation has occurred.

- **Localized Releases of Regulated Materials**

Historical field screening for organic vapors in soil in 1989 indicated that the site contains localized areas where solvents, petroleum products, and other regulated materials may have been released. Although the concentrations of these materials may have decreased over time due to natural attenuation, there is no current data to confirm that natural attenuation has occurred.

- **Heavy Metals in Soil**

Historical soil sampling in 1989 indicated that lead and zinc in background soil samples are elevated, presumably due to the presence of steel slag in the soil. Depending on the source and historical placement of the steel slag, this may be considered a release of regulated materials to the environment rather than a background condition. In addition, lead, chromium, zinc, and arsenic concentrations in soil were also elevated in the paint spray and sand blasting areas. Leachability test results for samples from the paint spray area indicated that the leachate contained significantly elevated concentrations of lead. This result may create soil/fill management issues if soil and/or fill are removed from the ground in this area.

Potential Business Environmental Risks

- **Potential Releases from the RediStrip Facility**

RediStrip has large, open, dip tanks containing acid and caustic materials. Although these tanks appear to be maintained in accordance with applicable regulations, the nature of the stripping process and the poor condition of the concrete floor provide potential for spills to enter the subsurface. In addition, the facility's bake-off oven discharges inside the building, possibly leading to the accumulation of heavy metals in the sediments and soil inside and just outside the building.

- **Potential Impacts from Sussman Bros. USTs**

There is no confirmed release from the Sussman Bros. USTs. However, the company that removed the USTs and filed the tank removal documents with the

PADEP has since been investigated for falsification of data. Based on the questionable reliability of the company that performed the tank removal, there is a possibility that a release occurred but was not reported. The Sussman Bros. facility is adjacent to the Site and presumably upgradient. A release from USTs at the Sussman Bros. site could potentially migrate onto Site property.

- **Asbestos**

Asbestos is specifically excluded from the scope of an ASTM-standard Phase I ESA. However, asbestos can generate significant project costs if abatement is necessary. Friable and non-friable asbestos have been identified at the Site, as documented in ERM's September 20, 1989 and October 20, 1989 environmental site assessments for the Lehigh Structural Steel property. Asbestos-containing materials identified by ERM included flooring, thermal system insulation, transit panels, and a coating applied to corrugated tin sheeting throughout the site. Asbestos-containing materials must be addressed in accordance with applicable regulations regarding handling of the material during any future demolition or renovation.

- **Potential Impacts from Historical Use of Acids and Chlorides**

Historical galvanizing operations at the Site, which ceased in 1978, reportedly used sulfuric acid, hydrofluoric acid, zinc ammonium chloride, and potassium chloride. No release of these substances has been documented, but spills, leaks, and/or discharges may have occurred. Anhydrous aluminum chloride was also manufactured at the Site. Moonstone is unaware of any previous environmental sampling performed to determine whether acids and/or chloride have been released at the Site.

- **Potential Releases to the Storm Water Drainage System**

Intake grates for the storm water system are located throughout the Site, indoors and outdoors, frequently in the middle of active areas (e.g., scrap yard, maintenance areas). The presence of the storm grates throughout the Site provides a conduit for regulated materials to enter the subsurface, whether due to accidental release or intentional disposal. Releases to the storm water system would primarily be expected to discharge into the Lehigh River. However, cracks or other breaks in the storm water system can create a pathway for regulated substances to enter the soil and groundwater. The ground surface around the intake grates is also potentially exposed to whatever materials may have entered the system.

- **Presence of Electrical Switches/Ballasts (possible asbestos, PCBs, metals)**

Based on a 1990 *PCB Analytical Results* report prepared by Crowder Jr. Company, transformers at the Site are classified as non-PCB transformers. However, other electrical equipment exists throughout the Site. Electrical switch boxes, fluorescent light ballasts, fluorescent light tubes, and other electrical equipment may contain asbestos, PCBs, mercury, and/or other heavy metals. These materials should be handled accordingly during any demolition/renovation activities.

Report of Findings (2007)

Moonstone conducted a Preliminary Phase II Site Characterization and documented the findings in a report dated 5 July 2007. The preliminary site characterization was based on the information obtained from the 2007 Phase I ESA. Several priority Areas of Potential Environmental Concern (APECs) were established. Soil samples from six former UST excavations were collected and analyzed to evaluate the level of impact in these areas (APEC-01). Soil samples from the areas around two ASTs without secondary containment were collected and analyzed to evaluate the extent of impacts in these areas (APEC-02). Soil samples from the RediStrip facility were collected and analyzed to evaluate whether the area has been affected by facility operations (APEC-03). Soil samples from five areas across the Site were collected to evaluate general Site-wide soil quality (APEC-04). Groundwater grab samples were collected from temporary well points installed in the Site-wide soil quality borings (APEC-05).

Based on the preliminary site characterization findings, the following areas warranted additional investigation:

APEC-01: Former Gasoline UST Excavation

Soil and groundwater in this area have been impacted by petroleum-related compounds. Benzene was detected in soil and groundwater at concentrations exceeding the Non-Residential Statewide Health Standard (NR-SHS) (for soil and ground water) and the USEPA-PA default screening value for Nonresidential volatilization to indoor air (for soil only). Groundwater also contained ethylbenzene, naphthalene, benzo(g,h,i)perylene, dibenzo(a,h)anthracene, and lead at concentrations exceeding the NR-SHS. Photoionization detector readings in the UST-G (a.k.a. MW-1) borehole exceeded the instrument's limits, and a strong petroleum odor was noted. Further investigation will be needed to fully characterize the extent of soil and groundwater affected by the release from this area, and to determine whether the volatile compounds present in soil may impact indoor air quality.

APEC-03: The RediStrip Facility

Surface soil in the southern end of the RediStrip facility contains cadmium at a concentration that slightly exceeds the NR-SHS, and has an elevated pH. Of greater concern is the soil interval below 14 feet bgs (below ground surface), where PID readings exceeded the instrument's limits and a strong odor and sheen were observed. This interval was not sampled as part of the preliminary site characterization, and should be further investigated to determine the nature and extent of the observed impact.

APEC-04: Site-Wide Soil

The following heavy metals were observed in site-wide soil samples at concentrations exceeding the NR-SHS: antimony, arsenic, copper, and lead. Antimony and cadmium each exceeded the NR-SHS by only a small margin, and only in one sample. Arsenic exceeded the NR-SHS in only one sample, but by a greater margin. Lead exceeded the NR-SHS in two samples, one only slightly above the NR-SHS. Heavy metals in site-wide soil appear to be wide spread but not consistently elevated across the areas that were sampled. Additional sampling and analysis for metals may be required to demonstrate a complete site characterization and obtain an Act 2 Release of Liability. However, remediation will most likely be limited to pathway elimination (i.e., covering the affected soil with impermeable asphalt, concrete, buildings, etc. to prevent direct contact and infiltration of storm water). Additional characterization may be warranted for areas that will not be covered by impermeable surfaces subsequent to redevelopment.

APEC-05: Site-wide Groundwater

The limited groundwater sampling performed as part of this preliminary characterization indicates that there is not a wide-spread groundwater contamination issue at the Site. However, pockets of affected groundwater are likely to exist throughout the Site in localized areas where releases have occurred, such as at MW-1. Groundwater from MW-1 contained the following compounds at concentrations exceeding the NR-SHS: benzene, ethylbenzene, naphthalene, benzo(g,h,i)perylene, dibenzo(a,h,)anthracene, and lead, all of which may be related to releases from the former gasoline USTs in that area. MW-2 contained several SVOCs at concentrations just slightly over the NR-SHS, and contained no VOCs or metals exceeding the NR-SHS, suggesting a different source for the impacts observed there.

The three remaining well points (MW-3, MW-4, and MW-5) contained no VOCs or SVOCs, and lead was the only metal identified above the NR-SHS (in MW-4). These three well points (MW-3, MW-4, and MW-5) were located along the bank of the Lehigh River and represented downgradient well locations. Although preliminary, this information suggested that there was not a large-scale plume of contaminated groundwater flowing off-site into the Lehigh River.

Tetra Tech Groundwater and Soil Investigation (2009)

Tetra Tech conducted a groundwater and soil investigation, as directed by the EPA, at the former Lehigh Structural Steel (LSS) site. As part of the investigation, Tetra Tech contracted and oversaw installation of eight permanent monitoring wells at the LSS site in June 2008 and performed two rounds of groundwater sampling in July 2008. During the soil investigation, Tetra Tech advanced fifty-one (51) soil borings and collected soil samples in November 2008 to evaluate seven site-specific APECs as identified in the Moonstone *Report of Findings* (see above). Below is the summary of the analytical results from each phase of the Tetra Tech investigation.

Groundwater Sampling

During the each round of groundwater sampling, 11 groundwater samples were collected for VOCs, SVOCs, pesticides, PCBs and metals analysis, including one field duplicate and one rinsate blank. In addition, one trip blank was collected for VOC analysis.

- **Volatile Organic Compounds**

During both sampling events, the sample collected from MW-2, contained ethylbenzene and m,p-xylene at concentrations above the EPA Region 3 Screening Level (SL) established for tap water but below the PADEP MSC. During the second event, benzene was detected above the EPA SL for tap water and above the PADEP MSC in the sample collected from MW-2. Benzene, ethylbenzene and m,p-xylene are compounds generally associated with gasoline.

- **Semi-volatile Organic Compounds**

During both sampling events, groundwater collected from MW-2, contained naphthalene above the EPA SL but below the PADEP MSC. Naphthalene is a compound generally associated with gasoline.

- **Inorganic Compounds**

During both sampling events, manganese was detected above the EPA SL for tap water in the samples collected from MW-3, MW-4, MW-7 and MW-8. Iron was also detected above the EPA SL for tap water samples collected from MW-5 and MW-7.

- **Pesticides/PCB Compounds**

No pesticides or PCBs were detected in samples collected during the first or second rounds of groundwater sampling.

Monitoring well MW-2 was installed in the vicinity of APEC-001 (two former 3,000-gallon gasoline USTs). The analytical results from the two rounds of groundwater samples collected indicate that groundwater in the vicinity of APEC-001 has been impacted by the historical presence and/or use of the two 3,000-gallon gasoline USTs.

Soil Investigation

This section summarizes analytical results from the soil sampling conducted in the seven APECs identified on site.

- **APEC-001: Former 3,000-gallon Gasoline USTs**

Eight soil borings (SB-01 through SB-08) were advanced around two former gasoline UST locations on the west side of the LSS site's manufacturing shop. From each boring, two subsurface soil samples were collected. A total of 16 soil samples were collected from APEC-001 for VOC and total lead analysis. Three of the 16 soil samples (FLSS-SB01-B, FLSS-SB05-B, and FLSS-SB08-B) contained VOCs at concentrations exceeding applicable PADEP MSCs. These VOCs included benzene; ethylbenzene; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; and 1,2-dibromo-3-chloropropane. In addition, two of the 16 soil samples (FLSS-SB07-B and FLSS-SB08-A) collected contained lead at concentrations exceeding applicable PADEP MSCs. Based on a review of the soil analytical results, it appears that the historic presence and/or operation of the two former 3,000-gallon gasoline USTs has impacted site soils in the vicinity of APEC-001.

- **APEC-002: Sussman Brothers UST Removals**

Two soil borings (SB-09 and SB-10) were advanced along the upgradient property boundary adjacent to the Sussman Brothers property. A total of three soil samples (including a duplicate soil sample) were collected from APEC-002 for VOCs, SVOCs, PCBs, and metals analysis. The three soil samples contained no VOCs, SVOCs, PCBs or metals at concentrations exceeding applicable PADEP MSCs. Based on a review of the analytical results of the soil samples collected from APEC-002, soils in this area appear to have been impacted by low levels of VOCs and SVOCs.

- **APEC-003: Existing AST Outside Acme Cryogenics**

Two soil borings (SB-11 and SB-12) were advanced around the diesel fuel AST located outside and adjacent to the Acme Cryogenics building. From each boring, two soil samples, one shallow zone sample and one deep zone sample, were collected. A total of four soil samples were collected from APEC-003 for VOC analysis. No VOCs were detected above applicable PADEP MSCs in the four soil samples collected from this area.

- **APEC-004: Historical Acid/Chloride Use**

Ten soil borings (SB-13 through SB-22) were advanced in areas historically associated with galvanizing operations and/or anhydrous aluminum chloride manufacturing including building #2 and buildings east of building #2, along the Lehigh River. From each boring, a shallow zone sample and a deep zone sample were collected. A total of 20 soil samples were collected from APEC-004 for PPL metals, sulfide, sulfate, chloride, and corrosivity (pH) analysis. Two shallow zone soil samples (FLSS-SB13-A and FLSSSB22-A) contained cadmium and lead at concentrations exceeding applicable PADEP MSCs (soil to groundwater numeric value, used aquifer, TDS < 2,500 mg/L, nonresidential). Chloride, detected in all 20 soil samples, ranged in concentration from 1.63 mg/kg to 2,540 mg/kg. Sulfate, detected in all 20 soil

samples, ranged in concentration from 75.8 mg/kg to 5,420 mg/kg. Sulfide was detected in 16 of the 20 soil samples with concentrations ranging from 106 mg/kg to 1,230 mg/kg. Analytical results for soil pH within boring SB-21 showed pH levels of 10.3 at 1 to 2 feet bgs (below ground surface) and pH levels of 7.1 at 14 to 15 feet bgs, indicating that pH of the surface soil has been elevated.

- **APEC-005: RediStrip Facility**

Four soil borings (SB-23, SB-24, SB-25 and SB-26) were advanced outside and adjacent to the southern end of the RediStrip building. One shallow zone soil sample and one deep zone soil sample were collected from each boring. A total of eight soil samples were collected from APEC-005 for corrosivity (pH) analysis. In addition, the four deep zone soil samples were analyzed for VOCs and SVOCs. The VOC and SVOC concentrations detected in the soil samples were below applicable PADEP MSCs.

- **APEC-006: Storm Drains**

Five storm drains (SB-27, SB-28, SB-29, SB-30 and SB-31) were selected for sampling based on their current accessibility and proximity to current or historical industrial activities. From each boring, one shallow zone sample and one deep zone sample were collected. A total of 11 soil samples were collected from APEC-006 for VOCs, SVOCs, PCBs, and PPL metals analysis. Two of the 11 soil samples (FLSS-SB27-B and FLSS-SB54) contained VOCs at concentrations exceeding the applicable PADEP MSC (soil to groundwater numeric value, used aquifer, TDS < 2,500 mg/L, nonresidential). The VOCs detected included 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene.

- **APEC-007: Site-Wide Soil**

Twenty soil sampling locations (SB-32 through SB-51) were selected across the LSS site to assess the general soil quality at the site. One shallow zone soil sample and one deep zone soil sample were collected from each boring. A total of 41 soil samples were collected for VOCs, SVOCs, PCBs, and PPL metals analysis. No VOCs, SVOCs or PCBs were detected above PADEP MSCs. Five of the 41 soil samples (FLSS-SB37-A, FLSS-SB39-A, FLSS-SB44-A, FLSS-SB45-B, and FLSS-SB50-B) contained inorganic compounds at concentrations exceeding applicable PADEP MSCs. The inorganic compounds detected include lead, cadmium, and zinc.

4.3 Physical Setting Sources

4.3.1 Topography

According to the U.S. Geological Survey (“USGS”) topographic map of the Site and surrounding area (Allentown East Quadrangle, 7.5-minute series, 2001), the elevation of the Site is approximately 261 feet above mean sea level. The Site is nearly level, with a slight increase in elevation west of the Lehigh Valley Railroad (LVRR) tracks, which run

north-south and are located between Brick Street and the main portion of the Site (Parcels A-F).

4.3.2 Soils

According to the *Web Soil Survey 2.2, USDA Natural Resources Conservation Service*, (<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>), the majority of the soil at the Site is classified Urban land, 0-8% slopes (mapped as UgB). This type of soil covers over 68% of the of the Site. Urban land consists of large areas where a soil has been covered by or mixed with other materials in the process of building or land filling. The remaining soil is classified as Urban land, 8-15% slopes (mapped as UgC).

4.3.3 Geology

According to the Allentown East Quadrangle presented in *Map 61 – Atlas of Preliminary Geologic Quadrangle Map of Pennsylvania* (PA Geologic Survey, 1981), the Site is located on bedrock of the Allentown formation. The Allentown formation consists of dolomite and impure limestone, and the bedrock tends to form pinnacles. Cut-slope stability is rated as good, while ease of excavation is rated as difficult. Foundation stability is rated as good, although a thorough sinkhole investigation is recommended (*Engineering Characteristics of the Rocks of Pennsylvania*, (Geyer and Wilshusen, 1982).

4.3.4 Hydrology

4.3.4.1 Surface Water

The Site is located along the western bank of the Lehigh River. As noted in Section 4.4.1 (below) there was a canal-like feature that crossed the northern portion of the Site circa 1893. Currently, there are no surface water bodies on-site.

4.3.4.2 Wetlands

According to National Wetland Inventory information provided by EDR, the Site contains small portions of federal wetland areas along the northern section of the Site (north of the Tilghman Street Bridge) along the Lehigh River (Appendix B).

4.3.4.3 Flood Zones

According to Federal Emergency Management Act (“FEMA”) flood information provided by EDR, the majority of the Site (east of the LVRR) is located within the 500-year flood zone. Portions of the Site located directly along the Lehigh River are within the 100-year flood zone (Appendix B).

4.3.4.4 Groundwater

Based on surface topography, groundwater at the Site is expected to flow east, towards the Lehigh River. Based on the Tetra Tech report (see Section 4.2.7), depth to waster is

approximately 18-20 feet bgs. There is one well on the Site (Cluster A) listed in the PA Well and Fed USGS databases. The well was drilled in 1946 and is 164 feet deep (Appendix B).

4.4 Historical Use Information on the Property and Adjoining Properties

As required by ASTM E 1527-05, a minimum of two historical use sources for the site were researched back to at least 1940 (or earlier if the site was developed prior to 1940).

4.4.1 Historical Topographic Maps

Topographic maps show structures, roads, water bodies, topographic conditions, etc. and can therefore be a valuable source of information about the historical use of a given site. Moonstone reviewed historical topographic maps provided by EDR for the years 1893, 1947, 1957, 1964, 1972, 1983, 1992, and 1999. Copies of the maps are provided in Appendix E. The following is a summary of the maps reviewed.

1893 Topographic Map (scale: 1:62,500; 15 minute series; Allentown Quadrangle)

The overall topography of the Site has changed very little since 1893. The 1893 map shows the existing north-south rail line along the west side of the Site, and another rail line crossing the Lehigh River at the northern tip of the Site (where the existing train trestle is located). The map also shows a small waterway extending southwest from the north-south rail line across the northern tip of the Site and into the Lehigh River. Based on the surrounding topography, this feature appears to be a canal and not a natural drainage. No buildings are indicated on this map.

1947 Topographic Map (scale: 1:50,000; 15 minute series; Allentown Quadrangle)

The canal shown on the 1893 map is no longer shown on the 1947 map. A large rectangular building is shown between the north-south rail line and the river at the southern end of the Site. There are no buildings north of the Tilghman Street Bridge.

1957 Topographic Map (scale: 1:62,500; 15 minute series; Allentown Quadrangle)

The 1957 map shows an addition to the on-Site building that appeared on the 1947 map, and shows a new, linear building next to the existing building. There is also a very small structure indicated just south of the bridge, along the river. There are no buildings north of the bridge.

1964 Topographic Map (scale: 1:24,000; 7.5 minute series; Allentown East Quadrangle)

The 1964 is drawn to a larger scale than the previous maps and more detail is discernible. The 1964 map shows four buildings covering nearly all of the Site south of the bridge: the three previously indicated buildings, and a fourth building located near the river bank. There are also two new buildings north of the bridge: a long, linear

building near the river, and a small square building near the western property boundary. Several rail spurs enter the site from the north, crossing under the Tilghman Street bridge. A pond is shown northwest of the Site where the presumed canal previously terminated.

1972 Topographic Map (scale: 1:24,000; 7.5 minute series; Allentown East Quadrangle)

The 1972 map shows no change at the Site since 1964.

1983 Topographic Map (scale: 1:24,000; 7.5 minute series; Allentown East Quadrangle)

The 1983 map shows no change at the Site since 1972.

1992 Topographic Map (scale: 1:24,000; 7.5 minute series; Allentown East Quadrangle)

On the 1992 map, a third building has been added north of the Tilghman Street Bridge, and the rail line crossing the Lehigh River is no longer present. The two large buildings south of Tilghman Street have been connected, and they also appear to be connected to building now off-site to the south. The pond northwest of the Site appears to be empty, although it is still shown as a depression on the topographic map.

1999 Topographic Map (scale: 1:24,000; 7.5 minute series; Allentown East Quadrangle)

North of the Tilghman Street Bridge, the Site appears as it did in 1992. South of the bridge, the two small buildings along the river are no longer present; only the two large buildings remain.

4.4.2 Sanborn Fire Insurance Maps

Moonstone reviewed historical Sanborn fire insurance maps provided by EDR for the years 1885, 1891, 1897, 1911, 1932, 1950, 1957, 1964, 1968, 1971, and 1977. Copies of the maps are provided in Appendix F. The maps do not show portions of the site north of Furnace Street (Parcels A, B, and C). A brief description of the review of these maps is provided below.

1885 Sanborn Map

In 1885 the main portion of the site (east of the LVRR) was developed as the Allentown Rolling Mills facility. South of Tilghman Street in what is now Building #1 were “The Rail Mill” and “The Puddling Mill.” Two relatively small warehouses, an oil house, and a brick and sand building were located east of Building #1 where Building #2 is now located. Scales were located north of Building #1.

North of Tilghman Street was a large building labeled “The Lehigh Rolling Mill,” a smaller building labeled “Bolt, Spike & Nut Shop,” and several smaller buildings: a brick and sand building, a blacksmith shop, a cooper shop, a stave building, a shears building, a scrap building, and a pump house. Scales were located south of the large Lehigh

Rolling Mill building. North of the Bolt, Spike & Nut Shop was an area labeled “Back Water.” This appears to correspond to the canal-like feature indicated on the 1893 topographic map.

The mills north and south of Tilghman Street contained numerous engines and furnaces. Water tanks and pump houses were indicated east of the large mill buildings, and a water house was located in line with Tilghman Street. No other storage tanks were indicated on the map.

Two rail spurs leading to the water house, in line with Tilghman Street, are labeled “coal tracks.” Other rail spurs ran along the east side of the Site building, one of them terminating inside Building #1. Multiple tracks of the Lehigh Valley Rail Road (LVRR) ran along the west side of the main portion of the Site.

West of the LVRR, Parcel G contained dwellings along Tilghman Street where the Former Mechanic Shop is now located. The remainder of Parcel G was vacant. The northeast quarter of Parcel H was occupied by the “E. Gough Brass & Iron Foundry” and contained foundry buildings, a machine shop, and other related buildings. The northwest quarter was occupied by dwellings. The southeastern quarter of Parcel H was developed with a rolling mill office and scales, and the southwest quarter was developed with dwellings.

1891 Sanborn Map

The Site changed very little between 1885 and 1891. One of the rail spurs east of the Site buildings was extended north and transected the “Back Water” area. The cooper shop and stave house north of Tilghman Street were converted to a freight office. South of Tilghman Street, a small addition was added to the southern end of Building #1. Parcels G and H appear unchanged except for the addition of a circular feature (possibly a storage tank) located on Allen Street, south of the Rolling Mill offices on Parcel H.

1897 Sanborn Map

In 1897, the Rail Mill (still shown in the southern half of Building #1) was labeled as “Inactive” and in dilapidated condition. The scales north of the Puddling Mill (north end of Building #1) were no longer present, nor were the scales south of the Rolling Mill. The coal tracks in the middle of the Site were replaced by a single track leading to a coal trestle. The rail spur that formerly transected the “Back Water” north of the Site was terminated south of the water, and the water is not indicated on the 1897 map. However, the 1897 map extends farther east than previous maps, and shows what appears to be a canal between the Pump House north of Tilghman Street and the Lehigh River. Parcel G remained unchanged since 1891. Parcel H remained unchanged except that the foundry was labeled as a steam cock manufacturer in

addition to being a brass and iron foundry. A note next to the foundry building indicates that the fuel source is coal.

1911 Sanborn Map

In 1911, Building #1 was divided into two parts. The southern end, previously known as the Rail Mill, was labeled “Lehigh Valley Structural Steel Co.” The northern end of Building #1, previously known as the Puddling Mill, was labeled “Vacant & Dilapidated.” The small building connecting the two former mills was converted to a “J.M. Baker” fire bricks manufacturing facility. A former warehouse east of Building #1 was labeled as a storage shed. Scales were shown north of Building #1, along with a small coal bin. The former rail spur delivering coal to the Site (in line with Tilghman Street) was no longer present.

North of Tilghman Street, the large Rolling Mill building was no longer present. The smaller buildings to the north (Bolt, Spike & Nut Shop, freight office, and blacksmith shop) were converted and operating as part of the “Blanc Stainless Cement Co.” Two oil tanks are indicated along the west side of these building, along the LVRR. The Blanc Stainless Cement Co. is located on Parcel D of the Site.

Parcel G was still developed with dwellings along Tilghman Street, but a Machine Shop with a gasoline engine was added to the southern half of the parcel. The Machine Shop was part of the “John J Henry Hanlon Ornamental Iron Works” located on the southern half of Parcel G and the northeastern quarter of Parcel H. Notes on map indicate that the former foundry on Parcel H was used for storage only as of 1911. The northwestern and southwestern quarters of Parcel H remained relatively unchanged (developed as dwellings) and the building in the southeastern quarter of the parcel was labeled as an office.

1932 Sanborn Map

On the 1932 map, the Tilghman Street Bridge was indicated. Lehigh Structural Steel occupied the area south of Tilghman Street. The two large buildings south of Tilghman Street were combined into one building (Building #1), which included a machine shop and pattern shop. The floor in Building #1 was earth and concrete. A small single story building labeled Paints & Oils was added north of Building #1 and a second large building (Building #2) was added east of Building #1. The northern portion of Building #2 was labeled as a galvanizing plant. Building #2 contained a 30-gallon chemical engine and had an earthen floor. In addition to Buildings 1 and 2, there were several small outbuildings used for general storage, paint and oil storage, and an Erecting House. An unspecified oval feature is drawn along the Lehigh River. Several new rail spurs entered the site from the north. North of Tilghman Street were three small storage buildings.

The dwellings previously located on Parcel G along Tilghman Street were no longer present. The Machine Shop on the southern half of Parcel G was still present and was labeled as having an earthen floor. The eastern half of Parcel H was labeled as a junk yard and the former foundry and office building were labeled as storage. The western half of Parcel H contained dwellings as on previous maps.

1950 Sanborn Map

On the 1950 map, the areas north of Tilghman Street were completely vacant and undeveloped. South of Tilghman Street, Lehigh Structural Steel added a Galvanizing Plant east of Building #2, along the Lehigh River (over the oval feature shown on the 1932 map). The galvanizing plant that was formerly part of Building #2 is no longer present, and Building #2 is wider than in the previous map. A sulfuric acid tank is indicated on the west side of Building #2. A fuel oil tank is indicated on the west side of the new Galvanizing Plant. A warehouse was added to the Erecting House north of the Galvanizing Plant.

Parcel G was occupied by the J.J. Hanlen Iron Works, including the previously identified machine shop on the southern half of the parcel, and a new concrete block structure on the northern half of the parcel. The eastern half of Parcel H was completely vacant and undeveloped on the 1950 map, and the western half contained dwelling as before.

1957 Sanborn Map

The main portion of the Site does not appear to have changed significantly between 1950 and 1957. The area directly south of Building #1 and Building #2 was labeled as a crane way. The areas north Tilghman Street contained several unmarked ovals, three separate storage buildings (one contained an auto repair shop) and were labeled as an iron storage yard and parking.

1964 Sanborn Map

On the 1964 map, the north (north of Tilghman Street) main portions of the site (east of the LVRR) appear unchanged from the 1957 map. West of the LVRR, Parcel G was owned by Lehigh Structural Steel. The building on the northern half of Parcel G was still present, but the machine shop on the southern half of the parcel had been removed and the area was labeled as parking. On Parcel H, only one dwelling remained; no other structures were present.

1968 Sanborn Map

The Site does not appear to have changed significantly between 1964 and 1968.

1971 Sanborn Map

The Galvanizing Plant was extended northward to join the building previously identified as the Erecting House (labeled “M” on the 1971 map). Another small building, labeled “Facy Bldg” was constructed between the Galvanizing Plant and Building #2.

North of Tilghman Street, a large single story fabricating building was constructed on the east portion of the Site next to the Lehigh River (the current Acme Cryogenics building). The area is labeled as Lehigh Structural Steel Co.

1977 Sanborn Map

The main portions of the Site does not appear to have changed significantly between 1971 and 1977. The area north of Tilghman Street had minor changes. The auto repair/storage building was expanded south to include a warehouse section. Also, a scale was located west of the fabricating building.

4.4.3 City Directory

EDR completed a search of various business directories including city, cross reference and telephone directories, if available, at approximately five-year intervals for the years spanning 1964 through 2011. The search results are of limited usefulness due to the difficulty in identifying a single address for the Site. The city directory search results list properties located at 17-116 Tilghman Street/ West Tilghman Street, most of which are residential. However, several small businesses are listed, which include grocery/fresh produce markets, auto service centers/gas stations, a car wash, and restaurant. None of the businesses appeared in the EDR and local database searches except for the Getty-Mart, where the LUST release cleanup was completed in 2007 (see Section 4.1.2). (Note: mapping the difference addresses given for the Getty-Mart in the various sources provides the same physical location.) The small businesses located in the vicinity of the subject Site are not likely to have an adverse effect on the subject Site. A copy of the EDR City Directory Abstract is included in Appendix G.

4.4.4 Historical Aerial Photographs

Moonstone reviewed historical aerial photographs provided by EDR for the years 1938, 1948, 1955, 1957, 1962, 1971, 1972, 1981, 1987, 1992, 1999, 2005, and 2008. Copies of these photographs are included in Appendix H.

The following descriptions summarize the review of the aerial photographs:

1938 Aerial Photograph (scale: 1 inch = 500 feet)

In the 1938 photograph, the portion of the Site south of the Tilghman Street Bridge is developed with some of the same buildings that exist today – Building #1 and Building #2. The eastern half of this Site portion appears to be undeveloped with the exception of

one building in the northeast corner. The area south of the buildings appears to be a parking area. The area directly north of the Tilghman Street Bridge is undeveloped. The site parcels west of the LVRR (Parcels G and H) are both developed with various buildings. The area north of the Site and to the west of the rail line leading to the trestle contains a pond and there area around the pond is disturbed.

1948 Aerial Photograph (scale: 1 inch = 1,000 feet)

The 1948 photograph was taken at a higher elevation and is of very poor quality. It shows no discernible changes to the Site or immediate surrounding areas since 1938.

1955 Aerial Photograph (scale: 1 inch = 500 feet)

In the 1955 photograph, the portion of the Site south of the Tilghman Street Bridge is developed with many of the same buildings that exist today – Building #, Building #2, and several buildings on the eastern side adjacent to the Lehigh River. The area directly north of the Tilghman Street Bridge is developed with three buildings and the area appears disturbed (Parcels C and D). One site parcel west of the LVRR (Parcel G) is still developed on the west side, but the east side adjacent to the rail line is undeveloped and the area is disturbed. The area north of the Site and to the west of the rail line leading to the trestle contains a pond.

1957 Aerial Photograph (scale: 1 inch = 1,000 feet)

The 1957 photograph was taken at a higher elevation and shows no discernible changes to the Site or immediate surrounding areas since 1955.

1962 Aerial Photograph (scale: 1 inch = 250 feet)

In the 1962 photograph, the portion of the Site south of the Tilghman Street Bridge is unchanged. The area directly north of the Tilghman Street Bridge is developed with four major buildings and several small structures. The site parcels west of the LVRR (Parcels G and H) appeared as they are at present. The area north of the Site and to the west of the rail line leading to the trestle contains a pond.

1971 Aerial Photograph (scale: 1 inch = 500 feet)

In the 1971 photograph, the Site changed somewhat from 1962. The building north of the fabricating building (parcels C and D; along the Lehigh River) is gone, a road now crosses diagonally across parcel D, and there appear to be two structures on Parcel B along the Lehigh River. The area north of the Site and to the west of the rail line leading to the trestle is heavily disturbed and the pond no longer exists.

1972 Aerial Photograph (scale: 1 inch = 500 feet)

The Site and surrounding properties did not change significantly between 1971 and 1972.

1981 Aerial Photograph (scale: 1 inch = 1,000 feet)

The 1981 photograph was taken at a higher elevation and shows no discernible changes to the Site or immediate surrounding areas since 1972.

1987 Aerial Photograph (scale: 1 inch = 750 feet)

The 1987 photograph was taken at a higher elevation and shows no discernible changes to the Site or immediate surrounding areas since 1981. The Site is vegetated all along the Lehigh River.

1992 Aerial Photograph (scale: 1 inch = 750 feet)

The 1992 photograph was taken at a higher elevation, but still shows that the two conjoined buildings located directly south of the Tilghman Street Bridge along the Lehigh River are no longer present. There are no other discernible changes to the Site or immediate surrounding areas since 1987.

1999 Aerial Photograph (scale: 1 inch = 500 and 750 feet)

The Site and surrounding properties did not change significantly between 1992 and 1999.

2005 Aerial Photograph (scale: 1 inch = 500 feet)

In the 2005 photograph, two buildings along the Lehigh River, south of the bridge, were added to the Site between 1999 and 2005. The northern Site portion (Parcel B) contains multiple unknown features.

2008 Aerial Photograph (scale: 1 inch = 500 feet)

The Site and surrounding properties did not change significantly between 2005 and 2008. The unknown features in the 2005 photograph appear to be a tank farm located in parcel B. The Site is vegetated all along the Lehigh River.

4.4.5 Title Search & Environmental Lien Search

Mr. Twigg indicated that a thorough title search had been performed for the Site. Moonstone did not receive a copy of the title search for review. Based on the large amount of environmental information available for the Site from other sources, the title search was not considered likely to contribute to knowledge of the Site's environmental history or current conditions. Mr. Twigg is also unaware of any environmental liens or activity use limitations for the property. He indicated that the title search performed for the property was comprehensive, and would likely have identified environmental liens or activity use limitations if any were recorded in the chain of title

5 SITE INSPECTION

5.1 Methodology and Limiting Conditions

A visual inspection of the subject property was conducted on 30 March 2012. The objective of the inspection was to obtain information indicating the likelihood of Recognized Environmental Conditions in connection with the property. The site inspection was conducted by Ms. Jill A. Maurer and Ms. Danielle Elwell (both from Moonstone), escorted by Mr. Bob Kinigus, an E. Schneider & Sons employee. Also present during much of the inspection was Tracy Yenolevich (Coordinator LVLRI/LVEDC) and Mr. Andrew Twigg (Dunn & Twigg Company, LLC). As described in Section 1.4 of this report, certain areas of the Site were not accessible and therefore were not inspected.

5.2 General Site Setting

The Site is located below the Tilghman Street Bridge on the west bank of the Lehigh River and to the east of North Brick Street. The Site itself is nearly level, but topography rises steeply to the west of the site. The Site and surrounding properties are and historically have been primarily used for industrial activities. Rail lines access the Site from the west side, with numerous spurs entering the property. Due to the presence of a cryogenic tank refurbishing company on the property, there are large tank farms located north and south of the Site. The tanks located in these staging/storage areas are empty. The Site is densely developed with large steel frame and/or concrete block buildings, many of which are in poor condition. Photographs of the site are presented in Appendix A.

5.3 Exterior Observations

A chain link fence encloses much of the Site. The center portion of the Site is located directly below the Tilghman Street Bridge. The Site is developed with large steel frame and/or concrete block buildings, many of which are in poor condition. Roads and parking areas are located throughout the Site and most are unpaved. The paved areas consist of asphalt paving. Several of the rail lines crossing the Site have been covered over with asphalt paving or soil. Many buildings have rain gutters that discharge storm water from the building rooftops to the ground surface or into pipes below the ground surface. Shallow concrete trenches that capture storm water and channel it to drains surround several of the large buildings. Storm grates were observed throughout the Site, as well as municipal sewer covers. Electrical lines and poles with

transformers primarily run along the east and west sides of the Site. Large tank farms (empty tanks) are located on the far north and south ends of the Site. There is a crane rail on the extreme south end of the Site, on the north side of the Acme building, and also on the north side of Building #1. A stand-alone concrete loading dock with steel framing and corrugated metal roof is located east of the Lutheran Church Warehouse on the north portion of the Site. A covered walk-way connects the dock to the warehouse. The extreme north Site parcel (parcel A) is undeveloped and is covered with small trees and low growing vegetation. There is an empty tracker trailer on the parcel marked “No Trespassing.” Much of any open space around the Site structures contains large earth moving equipment, roll off containers, equipment and parts staging areas, piles of construction debris, tracker trailers, and tank trucks. There are two very large billboards on the Site. One is located on next to the bridge in parcel D and the other is located next to the bridge in parcel G.

5.3.1 *Underground Storage Tanks (USTs)*

Moonstone did not identify any USTs, nor evidence of USTs (e.g., fill pipes, vent pipes, etc.) at the Site during the Site inspection. The environmental database report provided by EDR (Appendix B) did not indicate any USTs registered at the Site. Based on information in the previous Phase I report (2007), all USTs were removed from the Site.

5.3.2 *Above Ground Storage Tanks (ASTs)*

The environmental database report provided by EDR (Appendix B) did not indicate any registered ASTs at the Site. However, Moonstone observed unregulated ASTs at the Site.

A 275-gallon waste oil AST, a 275-gallon diesel AST, and a 100-gallon diesel AST are located in the main area of Building #2. The ASTs have no secondary containment, and pumps connected to the diesel ASTs leaked diesel onto the concrete pad and earthen floor. The waste oil AST has stains indicating spillage. Efforts had been made to contain the spills with absorbent material, but staining is visible on the floor around all three tanks. Acme Cryogenic has a 250-gallon waste oil AST inside their building that is located in secondary containment and shows no signs of leaking. Outside the building, Acme has a 300-gallon diesel AST that is located in secondary containment and shows no signs of leaking. A large blue waste oil container connected to a pump and an oiler burner is located in the southeast corner of Replacement Parts (parcel G). There are signs of spillage on the container and on the floor around the container.

Acme Cryogenics has a large exterior bulk liquid nitrogen tank, and Gardner Cryogenics has two exterior nitrogen tank – one high pressure and one low pressure. Both

cryogenic facilities and Building #2 contain numerous pressurized/liquefied gas dewars and tanks. There are expansive outdoor storage areas at the north and south end of the Site for empty pressure tanks that are going to be or have been refurbished.

5.3.3 Hazardous Substances

Hazardous, potentially hazardous, and regulated/controlled materials are located throughout the Site, primarily in small quantities that are considered *de minimis*. At Acme Cryogenics and Gardner Cryogenics, hazardous materials are stored in small containers housed in metal “flammable” storage cabinets. At Acme, small amounts of used oil, used sand blast material, MEK, and methylene chloride waste are generated as part of the waste stream and are collected by an outside collection and disposal company. At Gardner, waste oil, used vacuum pump oil, and solder waste water are containerized and stored in secondary containment until they are collected by Safety Kleen. At the Site’s tool and dye shop, there are small containers of paint, oil, sealer, and four 5-gallon cans of roof coating. In a narrow courtyard near the shop there are three 55-gallon plastic drums: one empty drum labeled “NDT Neutra-Clor, Liquid Laundry (*illegible*)”, one empty unlabeled drum, and one nearly empty drum labeled “not sour/iron.” In the Schneider Maintenance Shop building, Moonstone identified a solvent parts cleaner that drains into a 55-gallon drum.

Although petroleum products are not listed hazardous materials, they may be characteristically hazardous. The following locations of the Site contain petroleum products in quantities that are not considered *de minimis*:

- Waste oil and used vacuum pump oil stored in secondary containment at Gardner Cryogenics (Building #1);
- A 275-gallon waste oil AST, a 275-gallon AST, and a 100-gallon diesel AST, various sized drums of hydraulic oil and grease, oil cans, a pallet of unopened 5-gallon tubs of Tak Coat, and four unopened 5-gallon containers of an unknown/unlabeled substance all at E. Schneider & Sons (Building #2);
- An interior 250-gallon waste oil AST in secondary containment and an exterior 300-gallon diesel AST in secondary containment at the Acme building; and
- Large metal cans of waste oil, numerous 55-gallon drums of motor oil, grease, hydraulic, and gear oil; and used oil filters at the Schneider Maintenance building.

In addition, four unopened containers of Oakite 32 (a rust and mineral scale remover) on a pallet and a leaking 55-gallon drum of an unknown substance were observed at the bottom of a descending cement stairway on the exterior east side of Building #1. The

area beyond the bottom of the stairs appeared to lead under the Gardner Cryogenics portion of the building. At the direction of Mr. Kinigus, Moonstone was told not to enter the area. Mr. Kinigus did not know what was further back beyond the bottom of the stairs. Also, several vehicle batteries were located under a truck parked at the south end of Building #1 close to the tank farm.

The conditions under which the identified hazardous materials and petroleum products were stored are discussed in the appropriate subsections of Section 5.4.

5.3.4 Electrical Equipment Potentially Containing Polychlorinated Biphenyls (PCBs)

Moonstone observed several pole-mounted electrical transformers at the Site. Based on a 1990 *PCB Analytical Results* report referenced in the previous Phase I ESA (2007), transformers at the Site are classified as non-PCB transformers.

Electrical switch boxes, fluorescent light ballasts, fluorescent light tubes, and other electrical equipment were observed throughout the Site in *de minimis* quantities. These materials can contain PCBs, mercury, and/or other heavy metals and should be handled accordingly during any future demolition activities.

5.3.5 Distressed Vegetation, Stained Soils, Other Evidence of a Possible Release

Moonstone observed stained soil in multiple areas of the Site, indicating possible releases of petroleum products or hazardous materials. Potential sources of a petroleum release are equipment that is stored on Site (which may be leaking gasoline, diesel, hydraulic oil, etc.) and/or overfills and spills from equipment, ASTs, and vehicles. Releases of hazardous materials are considered less likely, but could be related to accidental release of materials that are delivered to the Site as part of a scrap delivery, or related to improper disposal of hazardous materials on Site. Specific areas of concern with respect to the release of regulated substances are Parcel H, which is a large equipment storage and scrap yard with obvious staining beneath the equipment. Moonstone also observed a small stain on the asphalt was observed at the end of a black exhaust hose protruding from the east side of the Acme Cryogenics building. The small stain is caused by the discharge from a vacuum pump. Oil mist is used to internally lubricate the moving parts on a vacuum pump which runs approximately four hours a day.

Much of the staining observed by Moonstone was inside the Site buildings south of Tilghman Street, many of which have earthen floors or extremely damaged concrete floors. Localized staining inside the buildings appears to have resulted from storage of

vehicles, drums, ASTs, and other containers in these buildings. These areas are discussed in more detail in Section 5.4.

5.4 Interior Observations

5.4.1 Building #1

Building #1 is on a concrete slab and is constructed of concrete block, steel framing, and corrugated metal and fiberglass walls. It has sloped roofing. It houses Gardner Cryogenics, Banner Tire Warehouse, a tool and dye shop, and two vacant and locked buildings. As previously stated, Moonstone was not able to access the vacant locked buildings. One building is next to the tool and dye shop, in the southeastern portion of Building #1. Mr. Kinigus stated that the roof had fallen in and the building was unsafe. The other building is the former Site Manager's Office located on the east side of Building #1.

At Gardner Cryogenics, Moonstone interviewed Mr. Vaugh Nattress (Air Products Maintenance Supervisor), Ms. Jennifer Shaak (Environmental Specialist), and Mr. Kevin Snyder (Environmental Specialist) during a guided inspection of the facility. Gardner is located in the northern portion of Building #1. No photographs were allowed inside the facility. This portion of the building has concrete block, brick, and corrugated steel walls with cellulose insulation, a steel slanted roof, and concrete flooring with embedded steel rails. According to Mr. Nattress, the former building occupant was a steel beam builder. The embedded steel rails were used to hold in place via welding the manufactured beams. There are six operational electric overhead cranes used to move tank pieces. A large natural gas oven is located along the west wall used to heat tank parts. Covered floor drains were observed. No one interviewed knew to where the drains were connected. A steel caged area on the west side of the building contains machine parts and several compressed gas cylinders used during welding operations. A safety cabinet contains *de minimis* flammable materials. A wood shack on the north side of the building houses a large fire abatement system. Waste oil, used vacuum pump oil, and solder waste water are containerized and stored in secondary containment until they are collected by Safety Kleen. There is some minor staining on the concrete in the waste area. The building is heated by gas and uses natural air flow, vents, and fans for cooling. A small office area with window air conditioning units is located by the building entrance in the northeast corner.

At the Banner Tire warehouse, Moonstone interviewed Mr. Jay Donnelly, the manager. Mr. Donnelly did not allow photographs and stated the product was proprietary. Tom, an Banner Tire employee, escorted Moonstone through the warehouse. The tire warehouse is located in the southwest portion of Building #1, and has a concrete slab floor with no visible floor drains. The warehouse includes a small office, a bathroom, a

loading dock, and a large storage area equipped with shelves for tire storage. Two gas forklifts were parked in the warehouse area.

A small tool and dye shop is located next to the former Site Manager's office. The shop contains tools, a generator, small containers of paint and oil, *de minimis* sealer, and four 5-gallon cans of roof coating. The floor is concrete covered with nine-by-nine inch vinyl composite floor tile. The area has a drop tile ceiling and fluorescent bulb lighting. There is black staining on the south wall and floor originating from the ceiling.

5.4.2 Building #2

Building #2 is constructed of concrete block and steel and contains two overhead cranes. It houses the E. Schneider & Sons, Creative Fence, a small storage and workshop (former Woof World area), and a small office. No one from Creative Fence was available; therefore, the interior of this facility was not inspected because the building was locked. Creative Fence is located along the north and east side of Building #2.

The portion of the site occupied by E. Schneider & Sons includes an office area and a large, open bay extending the length of the building. The open bay area is used for cutting scrap and repairing equipment and vehicles. The floor of the open bay area is heavily stained concrete and earth with large metal plates that were too heavy to remove for inspection. A 275-gallon waste oil AST, a 275-gallon diesel AST, and a 100-gallon diesel AST are located in the open bay area of Building #2. The ASTs have no secondary containment. Staining was visible on the concrete floor and dirt and absorbent material was used to clean up any spills. Several pallets of "Dririte 50" bags (absorbent material) were observed. Other items located in the building include multiple 55-gallon drums of hydraulic oil, a pallet of 5-gallon tubs of Tack Coat, four 5-gallon unopened containers of an unmarked material, a stack of several very large tires, two enclosed metal roll away containers (contents were not available for inspection), several piles of dirt and scrap that are being screened, multiple compressed oxygen tanks used for cutting, and several large pieces of equipment being cut apart for scrap metal. Fluid puddles and staining are under each item of scrap equipment currently being cut up into smaller pieces.

A storage warehouse and small workshop now occupies the former Woof World area, which is located in the southeast corner of Building #2. E. Schneider & Sons operates this area. The building is two-story concrete block with a concrete slab on grade. The first floor contains workbench area, small bathroom, and a storage area. The workbench contains tools and parts along the east wall and along the west wall are several large cardboard containers of stainless steel helmet snaps and stainless steel shavings. The concrete floor in the storage area is cracked and in poor condition. This area houses

pallets of cardboard, multiple empty 55-gallon drums, stacks of plastic pallets and wood pallets, 55- and 20-gallon drums of miscellaneous scrap metal assorted according to grade. A small-motorized crane and gas forklift are operated in the area. There is staining in the location of the forklift. The second floor of this building is vacant except for file storage by E. Schneider & Sons.

The small and narrow office is located on the west side of Building #2. The office contained a time clock for employees and shelving that contained manuals and books.

5.4.3 Former Kwik Strip/RediStrip Building

The former Kwik Strip/RediStrip building is located on the east side of the Site, south of Tilghman Street, and is vacant. Kwik Strip (prior to Kwik Strip it was called RediStrip) was a paint stripping facility. The building is constructed of concrete block and brick, steel beams, corrugated fiberglass and has a concrete slab floor that is in very poor condition. A large uncovered metal roll-off dumpster is staged in the building. The floor is littered with corrugated metal, broken wood pallets, and pieces of cinder blocks. A pile of perlite (white in color) is located along the east wall toward the north part of the building. The perlite is used to absorb water. In the southwest corner of the building is a large containment area and a pit, which was the location of a pressure washing area and sump. The pit floor is wet and damp, and the sump contains debris and water.

5.4.4 Former Modern Steel Building

The former Modern Steel building is located along the Lehigh River, south of Tilghman Street, and is vacant. Modern Steel & Construction Corp (a.k.a. Modern Equipment) fabricated steel. The building is constructed of concrete block and brick, steel beams, corrugated fiberglass, and has a partial concrete slab floor in poor condition. Parts of the floor are bare earth. The floor is littered with dirt, pieces of corrugated metal sheets, empty metal and plastic drums, and building debris. The building is empty except for the seven racks of plastic parts recently staged in the north end. The east side of the building was used for offices, storage, and lunchroom. Insulated pipes were observed in these areas.

5.4.5 Acme Cryogenics Building

At Acme Cryogenics, Moonstone interviewed Mr. John Polcino during a guided inspection of the facility. No photographs were allowed inside the facility. The Acme building is located north of Tilghman Street. The building is constructed of concrete, steel, and corrugated fiberglass. It has an office and bathroom areas. The building is heated by gas and has no air conditioning except for a window-mounted unit in the office. No floor drains were observed, but manhole covers were observed inside the building. Mr. Polcino did not know the discharge point of the manholes. Four overhead cranes are located inside the building, only one being operational. The building has a

shot blast area, a repair and paint mixing area, and two paint booths. Cardboard covers the floor in both paint booths and is changed on a weekly basis. Several argon dewars are located throughout the building.

Acme has a 250-gallon waste oil AST inside the building that is located in secondary containment and shows no signs of leaking. An outside collection and disposal company collects the used oil, used sand blast material, and small amounts of methyl ethyl ketone (MEK) and methylene chloride waste generated by the facility. The waste is manifested.

5.4.6 Schneider Maintenance Building

The Schneider Maintenance Building is located in a small building north of Tilghman Street at the main entrance to the Site. Aim National Lease, a truck leasing company, previously occupied the building. The building is constructed of steel, with concrete slab on grade floors. The building has two floors. The first floor consists of the maintenance area, an office, and a bathroom. The second floor was closed off because it was not considered safe, therefore Moonstone did not inspect this area. Mr. Kinigus stated that the second floor is not being used. A floor drain was observed on the north end of the first floor. Mr. Kinigus presumed that the drain led to the storm water drainage system, but did not know for sure. In the maintenance area, large metal cans are used to collect waste oil. A parts cleaner in the truck repair area drains into a 55-gallon drum. Eleven drums of motor oil, grease, and gear oil were observed in the building. According to Mr. Kinigus, waste oil, antifreeze, and used oil filters are collected by an outside collection and disposal company. Several air compressors, two fork lift trucks, a bulldozer, and three snow plows were located throughout the building. Spills and stains were observed beneath the equipment and around the eleven 55-gallon drums. In the bathroom area, an air tank was observed. Mr. Kinigus stated that the air tank was no longer in service and was not operational.

5.4.7 Lutheran Church Warehouse

A warehouse is located directly north of the Schneider Maintenance Building. The warehouse is currently being used by a local Lutheran Church to store and distribute non-perishable bulk dry goods (liquid laundry detergents and softeners). Three people associated with the church were at the building waiting for a delivery, but not were interviewed. Mr. Kinigus escorted us through the building and answered questions because E. Schneider & Sons previously used the building to house vehicles. The building is single-story and is constructed with a steel frame, corrugated metal walls with a fiberboard lining, a sloped metal roof insulated with fiberglass, and a concrete slab on grade floor. Lighting is fluorescent bulb. A large overhead bay door is at each end of the building. One overhead bay door is located on the east side of the building that leads to a separate concrete loading dock next to the building. An operational scale is

located at the southwest corner. One floor drain was observed and presumably leads to the storm water drainage system. Small stains were observed in the areas where the pallets of liquid detergents and softeners are staged.

5.4.8 Replacement Parts

Replacement Parts, a business that rebuilds and provides parts for heavy machinery, is located on Parcel G, west of the LVRR. The building is single-story concrete block with corrugated fiberglass siding and partial glass-windowed wall (west side only), a concrete floor, a bathroom, small office, and a loading dock. There are no floor drains in the building. A metal ramp on the southwest side of the building leads to an exterior loading dock. A large square metal waste oil container and pump are located in the southeast corner next to the office. The waste oil container is connected to an oil burner located on the roof of the office area. Large pieces of equipment are staged around the building floor. *De minimis* containers of oil, grease, and other lubricants are located throughout the building. A blue unmarked 55-gallon drum is on the north side of the floor. There is staining over much of the concrete floor, around a metal grinder, and around the waste oil container.

5.4.9 Scrap Yard (Parcel H)

A large equipment storage area and scrap yard used by Replacement Parts is located on Parcel H, west of the LVRR. There is no building on the parcel, just large pieces of machinery and equipment on the open lot. See section 5.3.

6 INTERVIEWS

6.1 Interview with Owner

Moonstone interviewed Mr. John Schneider, President of LSS Realty Corp, via telephone on 19 March 2012 to discuss the Site. Mr. Schneider said that he owned the Site since June of 1990. The Site was formerly used for structural steel fabrication. He stated that each Site tenant used/use chemicals specific to their operations and that he is aware of each tenant operation. (Moonstone stated that specific chemical usage would be discussed with the tenants during the site inspection. See section 5.) Mr. Schneider is not aware of any spills or other chemical releases that have taken place on the Site. He did state that he removed several ASTs and USTs and performed a soil cleanup in 1990 before purchasing the Site. He is not aware of any previous Activity or Use Limitations (AULs) that are in place at the Site. He is aware of previous environmental reports, documents, correspondence related to environmental conditions of the property, which are discussed in section 4.2 of this report. Mr. Schneider commented on two specific tenant operations. A Lutheran church occupies a portion of the former AIM National Lease building, along with E. Schneider & Sons. The church periodically uses the building to store and distribute bulk charity substances, which are all non-perishable. Mr. Schneider stated that no one from the church organization would be at the Site during the site inspection. Also, Gardner Cryogenics' processes are confidential. No pictures or written process descriptions would be authorized during the site inspection.

6.2 Interview with Property Manager

Moonstone interviewed Mr. Bob Kinigus, Property Manager, during the Site inspection. The information obtained from these interviews is presented throughout this report.

6.3 Interviews with Occupants

A representative of each tenant company was interviewed during the inspection of their facility. The information obtained from these interviews is presented throughout this report.

6.4 Interviews with Local Government Officials

As part of this Phase I assessment, Moonstone contacted several representatives of the City of Allentown, as well as Pennsylvania Department of Environmental Protection to request

information about the site. Information provided by these officials is referenced in other sections of this report.

6.5 Interviews with Others

Mr. Ted Haase, the Senior Vice-President of Banner Tires, answered several questions in writing concerning the Banner Tire facility. Mr. Haase has worked for Banner Tires for thirty-one (31) years. There are no regulated substances on the property, nor does the company generate any waste streams. He is not aware of any ASTs, USTs, or floor drains associated with the facility. Any cleaning and maintenance supplies are used and stored on the premise. He is not aware of any spills or environmental cleanups on the property or adjacent properties.

7 FINDINGS & OPINION

This section provides an opinion as to whether the known or suspected environmental conditions identified at the Site meet the definition of RECs, historical RECs, or *de minimis* conditions based on the ASTM definition of these terms. Specifically, RECs are identified as conditions that present a material risk of harm to public health or the environment or which would generally be subject to an enforcement action if brought to the attention of appropriate government agencies. By definition, the term REC does not include conditions beyond the scope of the ASTM Phase I ESA standard, such as asbestos and lead-based paint.

Evaluation of Potential Recognized Environmental Conditions		
Potential REC	Opinion	REC? (yes/no)
Off-site sources of contamination from EDR database report	The off-site facilities listed by EDR do not constitute a REC. Of the database facilities listed by EDR, only those upgradient of the Site are likely to affect soil and groundwater quality at the Site. The facilities include the Getty Station (LUST site that was closed August 2005) and John the Baptist Parish (UNREG LTANK fuel oil spill from 1991). Of the two, the only site with a confirmed release that has not been closed out is St. John the Baptist Parish. Based on the distance of the spill from the Site, and on the time elapsed since the spill occurred, it is not likely that the spill has affected the Site.	NO
Off-site sources of contamination from PADEP file review	Composite soil samples from the property located west of and adjacent to Parcel A were analyzed for PCB, SVOA, VOA, and Metals in response to a complaint inspection in April 2009. Analysis of the samples showed concentrations of lead, arsenic, iron, and benzo(a)pyrene in amounts greater than the PADEP direct contact limits. Cadmium and PCB Aroclor-1016 were also detected at levels of concern. These issues were not resolved until June 2010. There is no evidence that the property owner instituted any of the recommendations discussed during resolution. Therefore, it is possible that the conditions on this property have affected the Site and constitute a REC.	YES
UST sites near the Site from eFACTS/eMaps	The UST sites located near the Site according to the eFACTS and eMaps databases have been closed and are listed as being in compliance. They are not considered RECs.	NO
Releases from former on-Site USTs	Although the PADEP files indicate that all USTs were removed from the site in 1989, subsequent environmental assessments performed by Moonstone and Tetra Tech indicate that the USTs had leaked prior to their removal. Petroleum-related compounds were detected in soil and groundwater in this area, at concentrations exceeding the PADEP MSCs. This is a past release and constitutes a REC.	YES

Evaluation of Potential Recognized Environmental Conditions		
Potential REC	Opinion	REC? (yes/no)
Releases from on-Site ASTs	<p>The historical files indicate that as of 1990, all regulated ASTs at the Site were removed, and the only ASTs remaining at the Site were for use on-Site as heating oil (unregulated). Moonstone observed several non-heating oil ASTs on Site during the site inspection process. A 275-gallon and a 100-gallon diesel ASTs in Building #2 were not in secondary containment and there were obvious spills. Moonstone observed an actual release during the previous Phase I ESA inspection. The 275-gallon waste oil AST also located in Building #2 was not in secondary containment. Also, the waste oil container at Replacement Parts showed signs of staining and the company is cited for the "waste oil container not being designed to standards". Based on general maintenance and housekeeping in Building #2 and Replacement Parts, ASTs in these areas pose a material threat of a release and are therefore considered RECs. The waste oil AST and diesel AST at Acme Cryogenics were in good condition and stored in secondary containment. They are not considered RECs.</p>	YES
Impacts to groundwater	<p>Groundwater collected by Moonstone from a temporary well in 2007 contained the several petroleum-related compounds at concentrations exceeding the NR-SHS, which may be related to releases from the former gasoline USTs in the area. Results from another temporary well contained several SVOCs at concentrations just slightly over the NR-SHS, and contained no VOCs or metals exceeding the NR-SHS, suggesting a different source for the impacts observed there.</p> <p>Tetra Tech collected groundwater samples from permanent monitoring wells in the vicinity of the former gasoline USTs in July 2008 and found several petroleum-related compounds detected above the EPA SL for tap water, with some also detected above the applicable PADEP MSC. In addition, manganese and iron were detected above the EPA SL for tap water and/or groundwater in multiple monitoring wells.</p> <p>These impacts to groundwater considered a REC.</p>	YES
Atmospheric Releases	<p>A notice of violation was issued to Acme Cryogenics on 18 October 2002 for operating the paint spray booth with a clogged filter and having no spare filters on site. These issues were corrected. Additionally, a paint sample taken during a July 2005 inspection failed the compliance standard. Releases to the atmosphere do not constitute a REC.</p>	NO

Evaluation of Potential Recognized Environmental Conditions		
Potential REC	Opinion	REC? (yes/no)
PCBs	Electrical transformers were sampled in 1989 and found to be non-PCB containing. Moonstone observed the transformers to be in reasonably good condition. Electrical switch boxes, fluorescent light ballasts, fluorescent light tubes, and other electrical equipment was observed throughout the Site in <i>de minimis</i> quantities. These materials may contain PCBs, mercury, and/or other heavy metals, but were not present in sufficient quantities to be considered RECs. However, they may be considered a business environmental risk in that they may require special handling/disposal during demolition.	NO
Asbestos	Friable and non-friable asbestos has been identified at the Site. Asbestos is not included in the scope of a Phase I ESA and does not constitute a REC, but it is considered a business environmental risk. Asbestos must be handled and disposed of in accordance with applicable regulations during demolition.	NO
Impacts from historical sludge lagoon	Drawings for the Acid Waste Treatment Plant for the Lehigh Structural Steel Company, dated 4 December 1947, indicate (in the notes section) that a sludge lagoon was located on the northwest section of the plant property. The exact location is not identified on the drawing, and it is unclear whether the lagoon was within the current Site boundaries. If the former lagoon is on-Site, it represents a potential pathway for regulated substances to enter the ground. Although the location is not specified, the presence of a former sludge pond on or near the Site is considered a REC.	YES
Impacts from historical use of acids and chlorides	Historical galvanizing operations at the Site, which ceased in 1978, reportedly used sulfuric acid, hydrofluoric acid, zinc ammonium chloride, and potassium chloride. A total of 20 soil samples were collected from the galvanizing operations vicinity. They were analyzed for PPL metals, sulfide, sulfate, chloride, and corrosivity (pH). Two shallow zone soil samples contained cadmium and lead at concentrations exceeding applicable PADEP MSCs. Soil analysis shows that there is an impact to soil in the area where historical galvanizing operations occurred, which constitutes a REC. The elevated lead and cadmium in soil may be due to the presence of fill material rather than galvanizing operations.	YES
Heavy metals in soil	In 2007, Moonstone reported that the following heavy metals were observed in site-wide soil samples at concentrations exceeding the NR-SHS: antimony, arsenic, copper, and lead. In November 2008, Tetra Tech collected a total of 41 soil samples across the Site. Five of the 41 soil samples contained inorganic compounds at concentrations exceeding applicable PADEP MSCs. The inorganic compounds detected include lead, cadmium, and zinc. Based on this information, metals in soil are considered a REC.	YES

Evaluation of Potential Recognized Environmental Conditions		
Potential REC	Opinion	REC? (yes/no)
Releases to the storm water drainage system	<p>Intake grates for the storm water system are located throughout the Site, indoors and outdoors, frequently in the middle of active areas (e.g., scrap yard, maintenance areas). In November 2008, Tetra Tech selected five storm drains for sampling based on their current accessibility and proximity to current or historical industrial activities. Two of the 11 soil samples contained VOCs at concentrations exceeding the applicable PADEP MSC. The VOCs detected included 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene.</p> <p>Based on this information, VOCs found in the Site storm drains are considered a REC.</p>	YES

7.1 Recognized Environmental Conditions

The following RECs were identified for the subject property:

7.1.1 *Off-Site Sources of Contamination*

The PADEP conducted an inspection in April 2009 based on a complaint reference Parcel ID 640747079685, which is west and adjacent to Site parcel A. During the inspection, composite samples from the adjacent parcel were taken and analyzed for PCB, SVOA, VOA, and metals. Analysis of the samples showed concentrations of lead, arsenic, iron, and benzo(a)pyrene in amounts greater than the PADEP direct contact limits. Cadmium and PCB Aroclor-1016 were also detected at levels of concern. As discussed in Section 4.2.4, a resolution to these issues was not reached until June 2010. There is no evidence that the property owner instituted any of the recommendations discussed during resolution. Therefore, it is likely that the conditions on the adjacent property have an impact on the Site property.

7.1.2 *Releases from Former On-Site USTs*

Although the PADEP files indicate that all USTs were removed from the site in 1989, subsequent environmental assessments performed by Moonstone and Tetra Tech indicate that two 3,000-gallon gasoline USTs had leaked prior to their removal. Petroleum-related compounds were detected in soil and groundwater in this area at concentrations exceeding the PADEP MSCs, as discussed in Section 4.2.7 of this report.

7.1.3 Releases from On-Site ASTs

As discussed in Sections 5.3.2 and 5.4.2 of this report, a 275-gallon diesel AST, a 100-gallon diesel AST, and a 275-gallon waste oil AST all located in Building #2 are not in secondary containment. Also, the waste oil container in the Replacement Parts building was cited for not meeting design standards (Section 4.2.2). All the ASTs showed staining and signs of spills. Based on general maintenance and housekeeping in these areas, these ASTs are considered a material threat of a release from spills.

7.1.4 Impacts to Groundwater

As discussed in Section 4.2.7 of this report, groundwater collected by Moonstone and Tetra Tech in the vicinity of two former 3,000-gallon USTs contained petroleum-related compounds at concentrations exceeding the PADEP MSCs. Moonstone also found several SVOCs exceeding the PADEP MSCs for groundwater at a separate location (MW-2), and Tetra Tech found manganese and iron at concentrations exceeding the EPA SL for tap water and/or groundwater. Benzene, ethylbenzene, m,p-xylene, and naphthalene are compounds associated with gasoline.

7.1.5 Impacts from Historical Sludge Lagoon

Drawings for the Acid Waste Treatment Plant for the Lehigh Structural Steel Company, dated 4 December 1947, indicate (in the notes section) that a sludge lagoon was located on the northwest section of the plant property. The exact location is not identified on the drawing, and it is unclear whether the lagoon was within the current Site boundaries. If the former lagoon is on-Site, it represents a potential pathway for regulated substances to enter the ground.

7.1.6 Impacts from Historical Use of Acids and Chlorides

Historical galvanizing operations at the Site, which ceased in 1978, reportedly used sulfuric acid, hydrofluoric acid, zinc ammonium chloride, and potassium chloride. As discussed in Section 4.2.7, a total of twenty soil samples were collected from the galvanizing operations vicinity. The samples were analyzed for PPL metals, sulfide, sulfate, chloride, and corrosivity (pH). Two shallow zone soil samples contained cadmium and lead at concentrations exceeding applicable PADEP MSCs, which may be associated with fill material.

7.1.7 Heavy Metals in Soil

As discussed in Section 4.2.7, Moonstone collected soil samples from across the Site. Heavy metals that included antimony, arsenic, copper, and lead were found at concentrations exceeding the NR-SHS. In addition, Tetra Tech collected a total of forty-one soil samples across the Site in November 2008. Five of the forty-one soil samples

contained inorganic compounds at concentrations exceeding applicable the PADEP MSCs. The inorganic compounds detected include lead, cadmium, and zinc.

7.1.8 Releases to the Storm Water Drainage System

Intake grates for the storm water system are located throughout the Site, indoors and outdoors, frequently in the middle of active areas (e.g., scrap yard, maintenance areas). In November 2008, Tetra Tech selected five storm drains for sampling based on their current accessibility and proximity to current or historical industrial activities. Two of the eleven soil samples contained VOCs at concentrations exceeding the applicable PADEP MSC. The VOCs detected included 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene.

7.2 Other Business Environmental Risks

The following environmental conditions are not current RECs, but may create business environmental risk.

7.2.1 Asbestos

Asbestos is specifically excluded from the scope of an ASTM-standard Phase I ESA. However, asbestos can generate significant project costs if abatement is necessary. Friable and non-friable asbestos have been identified at the Site, as documented in previous reports (Section 4.2.7 of this report). Asbestos-containing materials identified included flooring, thermal system insulation, transite panels, and a coating applied to corrugated tin sheeting throughout the site. Asbestos-containing materials must be addressed in accordance with applicable regulations regarding handling of the material during any future demolition or renovation.

7.2.2 Presence of Electrical Switches/Ballasts (possible PCBs, metals)

Based on previous reports (Section 4.2.7, Phase I ESA 2007), transformers at the Site are classified as non-PCB transformers. However, other electrical equipment exists throughout the Site. Electrical switch boxes, fluorescent light ballasts, fluorescent light tubes, and other electrical equipment may contain asbestos, PCBs, mercury, and/or other heavy metals. These materials should be handled accordingly during any demolition/renovation activities.

8 CONCLUSIONS

We have performed this Phase I environmental site assessment in conformance with the scope and limitations of ASTM Practice E 1527-05 for the subject property located north and south of the Tilghman Street Bridge between North Brick Street and the Lehigh River in the City of Allentown, Lehigh County, Pennsylvania. Any exceptions to or deletions from this practice are described in Section 1.4 of this report. This assessment has identified evidence of recognized environmental conditions in connection with the property, which include:

- **Off-Site Sources of Contamination**
- **Releases from Former On-Site USTs**
- **Releases from On-Site ASTs**
- **Impacts to Groundwater**
- **Impacts from Historical Sludge Lagoon**
- **Impacts from Historical Use of Acids and Chlorides**
- **Heavy Metals in Soil**
- **Releases to the Storm Water Drainage System**

In addition, the following business environmental risks were identified in connection with the property:

- **Asbestos**
- **Presence of Electrical Switches/Ballasts (possible asbestos, PCBs, metals)**

9 DEVIATIONS

Deviations from the ASTM E 1527-05 process in the completion of this Phase I environmental site assessment are as follows:

- A vacant two-story cinder block building attached to the east side of Building #1 (the former Site Manager's Office; yellow "MSDS" placard) was locked and Mr. Bob Kinigus, Property Manager, did not have keys to it. Mr. Kinigus indicated that the building is empty. Based on a limited view of the building's interior through the windows, it appears to be vacant. However, the inability to inspect this building is considered a significant data gap.
- A vacant building attached to the east side of Building #1 was locked and Mr. Bob Kinigus, Property Manager, did not have keys to it. Mr. Kinigus indicated that the building is empty and it was not safe due to a collapsing roof. Based on a limited view of the building's interior through the windows, it appears to be vacant. However, the inability to inspect this building is considered a significant data gap.
- At the direction of Mr. Kinigus, Moonstone was told not to enter a descending concrete stairway on the exterior east side of Building #1. This area at the bottom of the stairs appeared to be under the Gardner Cryogenics portion of the building. The inability to inspect this area further than the bottom of the stairway is considered a significant data gap.
- The space on the east side of Building #2 was locked and could not be accessed. Mr. Kinigus indicated that the space is used by Creative Fence for storage of fencing materials. The inability to inspect this building is considered a significant data gap.
- Building #2 contained heavy metal plates in the floor that were too heavy to be removed for inspection. Mr. Kinigus was unaware of their purpose. Although the ASTM standard does not require inspections to include areas under floors, the nature and location of these plates suggest that they may cover hydraulic equipment, pits, or other features that may be of environmental concern. The inability to inspect underneath the metal plates is therefore considered a significant data gap.
- The second floor of the Schneider Maintenance Building was closed off because it was not considered safe, therefore Moonstone did not inspect this area. The inability to inspect this area of the building is not considered a significant data gap because the area is not used.

- At the request of certain tenants, Moonstone was not permitted to take photographs inside all of the facilities at the Site (Acme Cryogenics, Gardner Cryogenics, and Banner Tire). This is not considered a significant data gap as Moonstone was permitted to inspect the site visually and to interview a representative from each facility.

10 ADDITIONAL SERVICES

No additional services were requested as part of the standard Phase I ESA scope of work required by the ASTM standard.

11 REFERENCES

Standard

ASTM International. *E 1527-05 - Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, 2005.

Interviews

Property Owner: Mr. John Schneider

Property Manager: Mr. Bob Kinigus

Other: Mr. Andrew Twigg, Dunn & Twigg Company, LLC

Mr. John Polcino, Acme Cryogenics Plant Manager

Mr. Vaughn Nattress, Air Products Maintenance Supervisor

Ms. Jennifer Shaak, Air Products Environmental Specialist

Mr. Kevin Snyder, Air Products Environmental Specialist

Mr. Jay Donnelly, Banner Tire Manager

Tom, Banner Tire Employee

Mr. Ted Haase, Senior Vice-President Banner Tire

Local & State Information Sources

eFacts and eMapPA – Pennsylvania’s Environmental Facility Application Compliance Tracking System (<http://www.ahs2.dep.state.pa.us/eFactsWeb/default.aspx>)

Maps and Databases

Environmental Data Resources, Inc. *The EDR Radius Map with GeoCheck (and assorted Historical Data)*.

Engineering Characteristics of the Rocks of Pennsylvania, Environmental Geology Report 1, Pennsylvania Geological Survey, Fourth Series, Harrisburg, Second Edition, Revised, 1982; Geyer, Alan R. and J. Peter Wilshusen.

Lehigh and Northampton Counties Digital Geographic Data, Lehigh Valley Planning Commission Release 4.3, September 2009

Lehigh and Northampton Counties 2005 Digital Orthophotography, Lehigh Valley Planning Commission, September 2006

Pennsylvania Bureau of Topographic and Geological Survey, Department of Conservation and Natural Resources, 2001, Bedrock Geology of Pennsylvania, edition : 1.0, digital map (<http://www.dcnr.state.pa.us/topogeo/groundwater/countyrocks.aspx>)

Web Soil Survey 2.2, USDA Natural Resources Conservation Service, <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

12 SIGNATURE(S) OF ENVIRONMENTAL PROFESSIONAL(S)

12.1 Environmental Professional

I declare that, to the best of my professional knowledge or belief, I meet the definition of Environmental Professional as defined in Section 312.10 of 40 CFR 312. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. Except as may be noted in Section 9.0 (Deviations) of this report, I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.



Elizabeth K.T. Schamberger, P.G.
(Reviewer)

12.2 Author



Jill A. Maurer
(Preparer)

13 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONAL(S)

Elizabeth K.T. Schamberger, P.G.

Ms. Schamberger is a licensed Professional Geologist and certified Asbestos Building Inspector with over 15 years of experience working in the environmental industry. Ms. Schamberger's technical experience includes Phase I/Phase II Environmental Site Assessments (ESAs), site remediation, groundwater modeling, hydrogeological investigations (including well installations, long-term pumping tests, slug testing, and fate and transport modeling), geological investigations (including geological mapping, geological sampling, and laboratory analysis of rock and mineral samples), mine waste management (primarily liner and cap design), and acid rock drainage research. Ms. Schamberger holds a Bachelor's degree in Geology from Princeton University (Honors) and dual Master's degrees in hydrogeology and geochemistry from Montana Tech.

Jill A. Maurer

Ms. Maurer was an officer in the U.S. Army for over twenty-four years and worked for Merck & Co., Inc. for more than thirteen years. At Merck, she held positions as quality control inspector, supervisor, validation engineer/scientist, and project manager. She has extensive experience in the areas of organization, supervision, quality control, environmental health and safety, and biological / contamination detection for air, surfaces & water systems. Since joining Moonstone in February 2009, Ms. Maurer has been involved with Phase I/Phase II Environmental Site Assessments (ESAs), groundwater and soil sampling, and well installations. Ms. Maurer has a Bachelor of Science in General Engineering from West Point and a Masters of Business Administration in Finance from DeSales University.