

STONEFIELD

ENVIRONMENT IMPACT STATEMENT ENCLAVE AT MILLINGTON

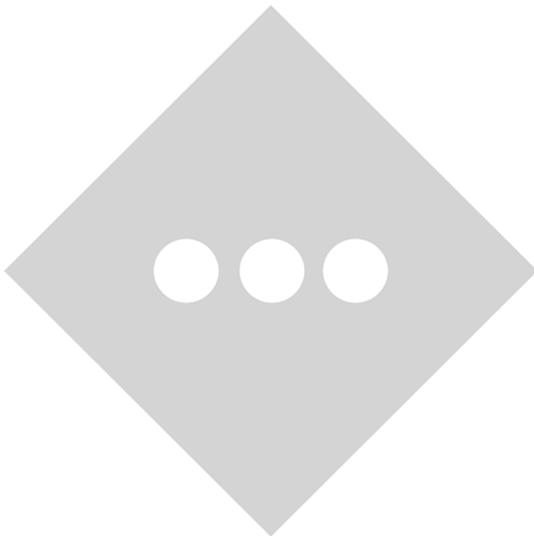
PROPOSED MIXED-USE RESIDENTIAL & COMMERCIAL DEVELOPMENT
BLOCK 12301, LOT 1 & BLOCK 10100, LOT 7.01
50 DIVISION AVENUE
MILLINGTON, TOWNSHIP OF LONG HILL
MORRIS COUNTY, NEW JERSEY

PREPARED FOR:
PRISM MILLINGTON, LLC

PREPARED BY:
STONEFIELD ENGINEERING & DESIGN, LLC
92 PARK AVENUE
RUTHERFORD, NEW JERSEY

REPORT DATE:
OCTOBER 25, 2019

LAST REVISED:
APRIL 03, 2020



A handwritten signature in black ink that reads "Chuck D. Olivo".

CHUCK D. OLIVO, PE, PP, PTOE
NJ PE LICENSE #46719

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED IN THIS DOCUMENT AND ALL ATTACHMENTS AND THAT, BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING AND PREPARING THE INFORMATION, I BELIEVE THAT THE INFORMATION IS TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR KNOWINGLY SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT.

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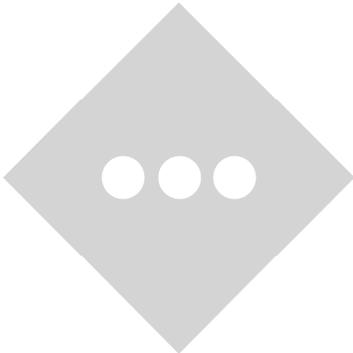
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I.0 SITE DESCRIPTION

Prism Millington LLC (hereinafter, “the Developer”) is proposing the construction of a mixed-use multi-family and commercial development. The subject property is designated Block 12301, Lot 1 & Block 10100, Lot 7.01, commonly known as 50 Division Avenue. The subject property is located within the Millington, Township of Long Hill, MU-O Zone and is bounded by Commerce Street to the north, Division Avenue to the east, Stone House Road to the south, and the Passaic River to the west (Figures 1 & 2).

The total project area is 518,322 SF (11.90 acres) and is divided into two areas: the “Restricted Area” and the “Developable Area”. The western portion of the property encompasses approximately 4.5 acres and is referred to as the Restricted Area and consists of a fenced-in closed asbestos landfill which is a delisted National Priorities List (NPL or Superfund) area. The landfill is capped and covered by soil and vegetation as an engineering control. The Developer is responsible for the implementation of an operation and maintenance plan under EPA and NJDEP oversight (Appendix D). There are no plans on redeveloping the Restricted Area. The eastern portion of the property encompasses approximately 7.5 acres and is referred to as the Developable Area. Remedial investigations have been conducted on, and in the vicinity of the Developable Area under the direction and oversight of a New Jersey Department of Environmental Protection (NJDEP) Licensed Site Remediation Professional (LSRP). The Developable Area is the portion of the property proposed for redevelopment. Project Figures can be found in Appendix A of this Report.

The Developable Area of the property has historically operated as an asbestos products manufacturer and a pesticide application equipment manufacturer and pesticide packaging distribution facility and currently is a multi-tenant industrial / business park. Improvements currently within the Developable Area include asphalt-paved parking / drive areas, grass-landscaped areas, two one-story buildings, one two-story building, and one three-story building, all of which are proposed to be demolished (Figure 3).

The proposed redevelopment includes the construction of fourteen 10-unit multi-family residences, a 1,800 SF community building, a 4,000 SF mixed use commercial building, and supporting improvements inclusive of parking facilities, landscaping, utilities, site lighting, and stormwater management measures (Figure 5).

This Environmental Impact Statement has been prepared per the Township of Long Hill requirements to investigate the existing conditions of the property, evaluate the potential impacts of the proposed redevelopment, and discuss the measures to mitigate environmental impacts, if any.

2.0 INVENTORY OF EXISTING ENVIRONMENTAL CONDITIONS

2.1 GEOLOGY AND SOILS

The site is underlain by the following soil classifications, based upon the County Soil Survey (Appendix B), the Geotechnical Report, and the site survey:

TABLE I: ON-SITE SOIL GROUPS

Soil Unit Code	Soil Description	Approximate Project Coverage	Hydrologic Soil Group
PeoC	Penn Channery Silt Loam, 8% to 15% Slopes	9.5%	B
USPENB	Urban Land-Penn Complex, 0% to 8% Slopes	87.5%	C
WATER	Passaic River	3.0%	N/A

***USPENB** does not have a pre-determined hydraulic soil group due to high variability in the historic fill material utilized. As such, these soils are analyzed as **HSG B** under pre-existing conditions and **HSG D** under post-development conditions.

A soil boring investigation performed in September 2013 within the Developable Area encountered subsurface characteristics somewhat consistent with that presented above. The Developable Area is covered by asphalt pavement or buildings and by a layer of granular soil / fill materials to depths ranging up to approximately five feet below ground surface. The fill is then underlain by reddish brown sandy silt and clay with little gravel extending to the top of bedrock which is reported to be red brown shale of the Towaco formation.

2.2 SURFACE AND GROUNDWATER

The high point of the subject site is at the northeast corner of the site abutting Commerce Street and Division Avenue. Commerce Street drains northwest towards current parking areas of adjacent lots, Division Avenue drains south towards Stone House Road and combines with the runoff of Stone House Road ultimately discharging into the Passaic River. On-site topography slopes toward low points within the site, collected by a stormwater system, and discharged to the Passaic River. Grades on the subject site average between 0% and 3.43% within the areas surrounding the buildings. However, steeper slopes are seen in the northern and southwestern corners of the subject site (in the range of 30%).

2.3 SURFACE AND SUBSURFACE GEOLOGY

Per review of NJDEP Geoweb mapping, the site is underlain by Towaco Formation sandstone, siltstone, and silty mudstone. Per the County Soil Survey (Appendix B), the depth to densic material is greater than 80 inches. There is no evidence onsite of bedrock within 2 feet of the surface.

2.4 TREES AND FLORA

Under existing conditions the Restricted Area on the western portion of the site is the only pervious area other than street trees and small grass areas along the project frontages (specifically along Division Avenue and Stone House Road). Per discussions with the municipality and its professionals the street trees along Division Avenue and Stone House Road will be removed and replaced with more suitable shade trees. The Restricted Area consists of a fenced-in closed asbestos landfill which is capped and covered by soil and vegetation as an engineering control. There are no plans to redevelop the Restricted Area.

2.5 WILDLIFE OR THREATENED & ENDANGERED SPECIES

Per the NJDEP's Natural Heritage Database (NHD), there are endangered or threatened fauna, flora, and habitats within the Restricted Area (generally along the bank of the river). No endangered or threatened instances exist within the Developable Area (currently developed industrial area). The habitats recorded on the Restricted Area are summarized in the following table:

TABLE II: RARE WILDLIFE SPECIES OR WILDLIFE HABITAT ON-SITE

<i>Scientific Name</i>	<i>Common Name</i>	<i>Federal Protection</i>	<i>State Protection</i>	<i>Global Rank</i>	<i>State Rank</i>
Haliaeetus leucocephalus	Bald Eagle	NA	State Endangered	G5	S1B,S2N
Ardea herodias	Great Blue Heron	NA	Special Concern	G5	S3B,S4N
Myotis sodalis	Indiana Bat	Federally Listed Endangered	State Endangered	G2	S1

A search for species within a one-mile radius of the site detected ecological records as summarized in the following table:

TABLE III: RARE WILDLIFE SPECIES OR WILDLIFE HABITAT WITHIN A ONE MILE RADIUS OF THE SITE

<i>Scientific Name</i>	<i>Common Name</i>	<i>Federal Protection</i>	<i>State Protection</i>	<i>Global Rank</i>	<i>State Rank</i>
Haliaeetus leucocephalus	Bald Eagle	NA	State Endangered	G5	S1B,S2N
Strix varia	Barred Owl	NA	State Threatened	G5	S2B,S2N
Toxostoma rufum	Brown Thrasher	NA	Special Concern	G5	S3B,S4N
Ardea herodias	Great Blue Heron	NA	Special Concern	G5	S3B,S4N
Buteo lineatus	Red-shouldered Hawk	NA	State Endangered	G5	S1B,S3N
Catharus fuscescens	Veery	NA	Special Concern	G5	S3B,S4N
Myotis sodalis	Indiana Bat	Federally Listed Endangered	State Endangered	G2	S1
Myotis septentrionalis	Northern Myotis	Federally Listed Threatened	NA	G1G2	S1
Glyptemys muhlenbergii	Bog Turtle	Federally Listed	Threatened State Endangered	G3	S1
Terrapene carolina carolina	Eastern Box Turtle	NA	Special Concern	G5T5	S3
Glyptemys insculpta	Wood Turtle	NA	State Threatened	G3	S2
Eptesicus fuscus	Big Brown Bat	NA	NA	G5	S3

2.6 PUBLIC INFRASTRUCTURE

Per the project description, the subject site is abutted by Commerce Street, Division Avenue, and Stone House Road. Will serve letters have been issued to the water provider (New Jersey American Water), the gas provider (PSE&G), the electric provider (JCP&L), the telecommunications provider (Verizon), and the sewer provider (Long Hill Department of Public Works). Electric, telecommunications, and gas services are available in Division Avenue and Stone House Road. Water and sewer infrastructure are discussed further below in this Statement.

2.7 SCENIC OR HISTORIC FEATURES

Under existing conditions, there are no portions of the site which would be considered to have unique, scenic and/or historic qualities as the subject site was occupied by industrial buildings and a large amount of impervious coverage.

Per NJDEP GeoWeb Mapping, the subject site abuts the Solomon Boyle House to the northwest, sits across Commerce Street from the Millington Railroad Station, and across Division Avenue from Runyon Feed Mill. All three of the aforementioned properties are listed in New Jersey Historic Sites Inventory, Morris County Cultural Resources Survey: Long Hill Township.

2.8 SEWERAGE FACILITIES

Based on information provided by the Township Department of Public Works, there is an 8" sewer main within Division Avenue and an 8" main starting at the corner of Stone House Road and River Road. Existing sewer service is provided to the site from the manhole at the corner of Stone House Road and River Road.

2.9 WATER SUPPLY

Based on information provided by New Jersey American Water, there is an 8-inch water main within Commerce Street, a 6-inch water main within Division Avenue, and an 8-inch water main within Stone House Road. Existing service is provided to the site from the Stone House Road and Division Avenue mains.

2.10 SOLID WASTE DISPOSAL

Solid waste disposal within Millington is under the jurisdiction of the Long Hill Township Department of Public Works.

2.11 TRAFFIC

Access to the eastern portion of the Property is from Division Avenue and access to the southern portion of the Property is from Stone House Road. The surrounding roadway network, including Long Hill Road, Division Avenue, Stone House Road and Commerce Street, has been studied and found to be operating at acceptable levels of service. Refer to the Traffic Impact Assessment Report prepared by our office for additional information.

2.12 NOISE

A study on the existing noise levels has not been performed for this site. There is minimal noise generated by the property. The source of any peripheral noise is most likely adjacent vehicle traffic and/or NJ Transit Railroad trains.

2.13 MONITORING WELLS

There are five (5) monitoring wells currently existing on the site.

3.0 ENVIRONMENTAL IMPACT ASSESSMENT

3.1 SOIL

The hydrologic soil group of the underlying soils onsite has been taken into consideration for the design of the stormwater facilities onsite. The shallow fill soils (0-5 feet) have shown some evidence of asbestos containing materials (ACM) during the advancement of soil borings in the Developable Area. Special precautions will be implemented to mitigate the risk of ACM impacts during construction and to the future redevelopment.

Slight impacts above NJDEP Ground Water Soil Screening Level (IGWSSL) were detected in the unsaturated soils at the site for several metals (aluminum, beryllium, manganese, and nickel) and PAHs (benzo(a)anthracene). These slight impacts were not detected above the NJDEP Direct Contact Soil Remediation Standard (SRS), indicating that the presence of these select compounds will not adversely affect the possible dermal contact with workers during construction activities. The March 2019 PA/SI details the findings of the site investigation (Appendix E).

The slight impacts discussed above can easily be mitigated through a remedial remedy of a Deed Notice with engineering controls. The proposed redevelopment is consistent with the required NJDEP engineering controls.

3.2 FLOODING AND/OR FLOOD PLAINS

There are no special flood hazard areas within the project area (Developable Area). A small section along the riverbank within the Restricted Area is located within the special flood hazard area as delineated by FEMA (Figure 4). The proposed redevelopment is not expected to have any negative effect on existing floodplains or exacerbate flooding downstream as the project will incorporate over two acres of new open space (vegetative areas) which will naturally reduce runoff rates and volumes leaving the site.

3.3 SURFACE AND GROUNDWATER

The proposed redevelopment will be graded to maintain the existing drainage pattern. The high point of the subject site is to remain at the northeast corner of the site abutting Commerce Street and Division Avenue. The drainage patterns of Commerce Street, Division Avenue, and Stone House Road will not be affected by the proposed redevelopment. On-site topography slopes toward low points within the site, collected by a stormwater system, and discharged to the Passaic River. Grades on the subject site average between 0% and 5% within the areas surrounding the buildings. However, steeper slopes (no greater than 33%) are seen in the northern and southwestern corners of the subject site. Based on the continuing remedial investigations for the Property, groundwater is not encountered in the overburden. However, according to the March 2019 PA/SI included as

Appendix E, a localized perched groundwater lens was noted in 2013 to be encountered between eight and nine feet below current grade north of Building I.

3.4 VEGETATION

Vegetation areas located in the Restricted Area portion of the site are to remain undisturbed throughout construction. Street trees along Division Avenue and Commerce Street will be removed and replaced with more suitable plantings as directed by the municipality's professionals.

The proposed redevelopment will be attractively landscaped with trees, ground cover, and shrubs, and includes buffer areas in accordance with Township requirements. A more formalized landscaping design suitable for a residential development will be put in place in comparison to the existing excess pavement with minimal grassed areas.

3.5 WILDLIFE OR THREATENED & ENDANGERED SPECIES

Although natural habitats of special concern are documented on-site per the NHD Report, the proposed development occurs outside of these areas (no disturbance is proposed within the fenced-in Restrictive Area where the records of documented species are located). As a result, native habitats will be minimally affected by the proposed development.

3.6 VAPOR INTRUSION

Since groundwater contamination exceeds NJDEP's Groundwater Screening Levels (GWSL) the proposed redevelopment will require a vapor barrier beneath the building(s) to prevent the possible migration of vapors into the subject building(s).

3.7 AIR QUALITY

A community air monitoring plan (CAMP), dust/ particulate monitoring or other controls identified by the LSRP, if required for the remedial action will be created and implemented during redevelopment activities. The purpose of the CAMP or similar controls is to provide a measure of protection for receptors both offsite and onsite including residents and workers as well as the downwind community from potential airborne contaminant releases as a result of remedial work activities performed at the Site.

3.8 OPEN SPACES

The proposed redevelopment will create over two additional acres of green space to the region. The project has been designed to create a comprehensive landscaping layout that emphasizes open space and communal areas. Three community patio areas have been proposed in areas that will promote use and are surrounded by aesthetically pleasing landscaping such as ornamental trees, shade trees, shrubbery, and ground cover.

3.9 CRITICAL AREAS

This EIS identified three critical areas on the subject property: (1) the Restricted Area, (2) a limited special flood hazard area and (3) steep slope in the northern and southwestern corners of the subject site. Below is how each of the critical areas will be addressed during redevelopment activities:

1. Restricted Area – The western portion of the property encompasses approximately 4.5 acres and is referred to as the Restricted Area. The Restricted Area consists of a fenced in closed asbestos landfill which is a delisted National Priorities List (NPL or Superfund) area. The landfill is capped and covered by soil and vegetation as an engineering control.

The Operations and Maintenance Plan summary for the Restricted Area includes the following tasks:

1. Inspections (2 times per year)
2. Groundwater, sediment and surface water sampling (2 times over a 5-year period)
3. Vegetative cap maintenance (2 times per year)

There are no plans to redevelop the Restricted Area.

2. A Limited Special Flood Hazard Area – The Passaic River is located along the western portion of the Property, adjacent to the Restricted Area portion of the property. No portion of the Developable Area is located within the special flood hazard area.

There are no plans to redevelop the special flood hazard area.

3. Steep Slope in the Northern and Southwestern Corners – The portions of the site categorized as steep slope critical areas will be mitigated as part of the proposed grading plan. No proposed slopes will exceed 33% within the Developable Area.

3.10 SCENIC VALUE

The proposed redevelopment seeks to improve on-site scenic values through aesthetic landscaping and architectural design. In contrast, under existing conditions, the site lacks landscaping and is occupied by outdated industrial buildings.

3.11 SCHOOLS

Based on the Rutgers Center for Real Estate White Paper “School-Age Children in Rental Units in New Jersey” published July 2018, the number of school-aged children per 100 units for two-bedroom apartments in low-rise buildings range from 28.2 to 126.4 depending on the average household income range, including the income ranges in the affordable apartments. The number of school-aged children per 100 units for three-bedroom apartments in low-rise buildings range from 61.8 to 137.9 depending on the average household income range, including the income ranges in the affordable apartments. For the proposed 140-unit redevelopment this would result in 44.2 to 178.6 school-aged children. There will only be 14 three-bedroom apartments and 15% of the apartments are affordable. It is anticipated that the balance of the homes in the community will be rented to tenants with incomes ranging from the high five figures to over \$100,000, based on the projected market rate rents. We , therefore ,anticipate the number of school aged children will trend towards the lower end of the range

3.12 COMMUNITY FACILITIES AND SERVICES

Will serve letters have been issued to all available utility providers to confirm that they can service the project site. Based on the estimates provided in the New Jersey Administrative Code, the anticipated water demand for the project is 27,890 gallons per day and the anticipated sanitary sewer flow is 35,200 gallons per day. Demand calculations for water and sewer usage are provided on the Utility Plan (Sheet C-8) that is included in the Preliminary & Final Major Site Plans prepared by our office.

As requested by the municipality, a sewer study will be performed by the Applicant to determine that adequate downstream capacity is available to accommodate the proposed development. The results of the study will be provided to the municipality and its professionals for review upon completion.

Additionally, the Developer is coordinating with the Fire Chief to ensure that adequate hydrant coverage and fire truck maneuverability is provided on site. Township emergency services are not expected to be negatively impacted by this redevelopment.

3.13 MONITORING WELLS

One (1) monitoring well is located in a proposed asphalt paving area and therefore will be properly abandoned and replaced after construction is completed. The remaining four (4) monitoring wells shall remain in place and be protected throughout construction.

4.0 ALTERNATIVE ANALYSIS

4.1 NO BUILD

Under existing conditions, the site is currently occupied with various industrial tenants. In the no build condition, the site would remain as-is. The property owner would continue to pay taxes on a lot that should be considered under-utilized for the parcel size and zone.

5.0 LICENSES, PERMITS, AND APPROVALS REQUIRED

The following licenses, permits, and approvals are anticipated in conjunction with this application:

- Township of Long Hill
 - Preliminary & Final Major Site Plan Approval
 - Local Sanitary & Water Connection Permitting
 - Building Permit
- Morris County Planning Board
 - County Exemption
- Morris County Soil Conservation District
 - Soil Erosion and Sediment Control Plan Certification
- New Jersey Department of Environmental Protection (NJDEP)
 - NJDEP Treatment Works Approval
 - NJDEP Water Main (BWSE) Approval
 - NJPDES General Permit for Construction Activities (5G3)

At the time of this Statement, all approvals are still pending.

6.0 STEPS TO MINIMIZE ENVIRONMENTAL IMPACTS

The redevelopment of the project and site plan design enhances the property and minimizes environmental damage by completing the following:

- Create over two acres of green space to naturally reduce stormwater runoff rates and volumes.
- Proposes landscape vegetation to enhance site aesthetics and provide necessary buffering.
- Utilizes LED lighting with proper shielding to mitigate energy consumption and light flooding.
- Meets township parking requirements and shows no decrease in level of service.
- Proposes proper stormwater management practices to safely capture and discharge run off.
- Implementation of soil erosion and sediment control measures during construction.

APPENDIX A

PROJECT FIGURES

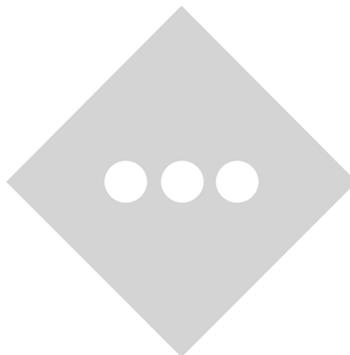
INVENTORY

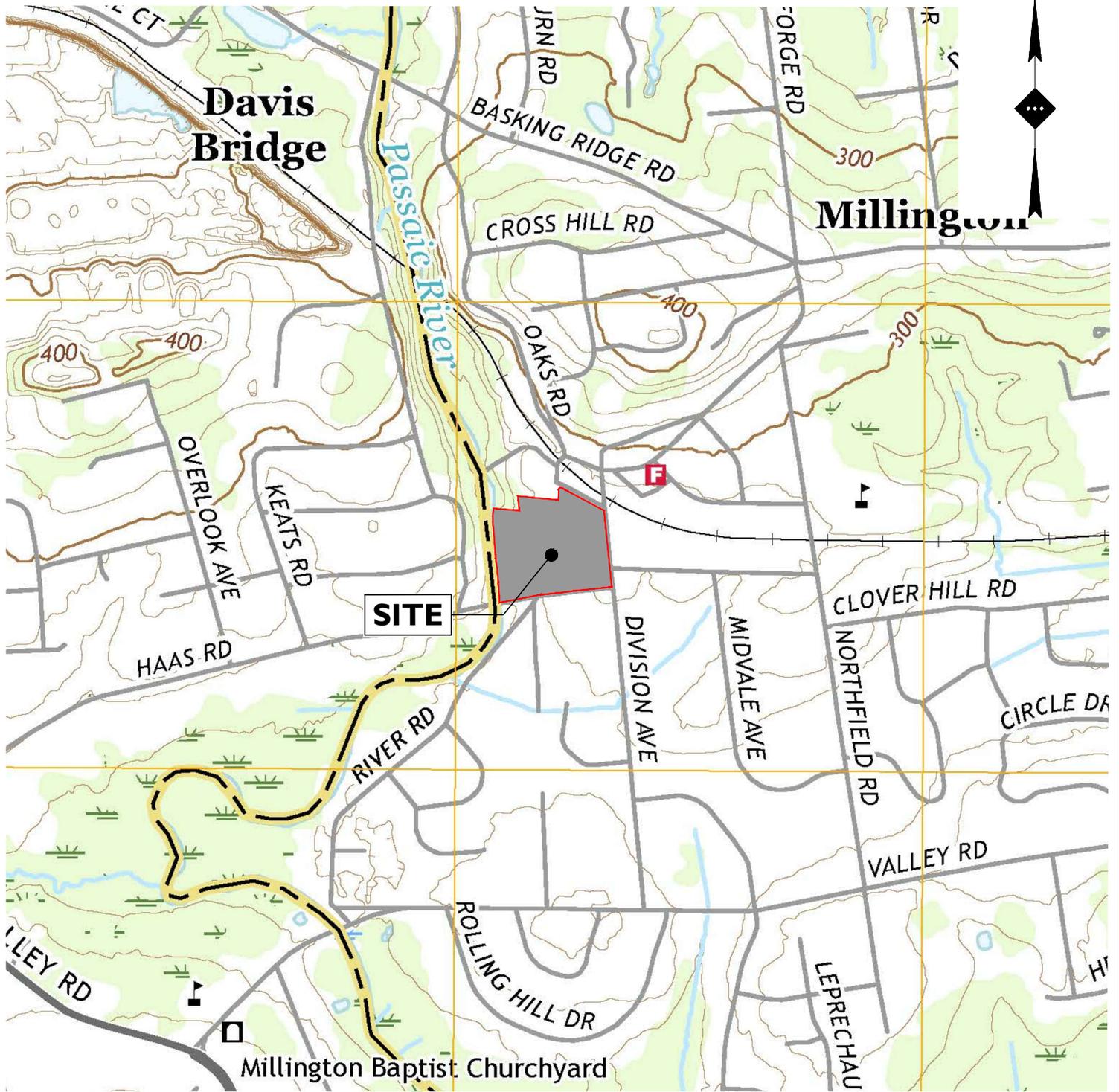
AERIAL MAP

TAX AND ZONING MAP

USGS LOCATION MAP

FEMA MAP





USGS QUADRANGLE MAP



GRAPHIC SCALE IN FEET

1" = 1000'

SOURCE: UNITED STATES GEOLOGICAL SURVEY QUADRANGLE MAP, BERNARDSVILLE, NEW JERSEY, 7.5 MINUTE SERIES, 2016.

ENCLAVE AT MILLINGTON PROPOSED MIXED USE MULTI-FAMILY AND COMMERCIAL DEVELOPMENT

BLOCK 12301, LOT 1 & BLOCK 10100, LOT 7.01
DIVISION AVENUE & STONE HOUSE ROAD
MILLINGTON, TOWNSHIP OF LONG HILL
MORRIS COUNTY, NEW JERSEY

DRAWN BY:	BVT
CHECKED BY:	SMO
DATE:	06/11/2019
SCALE:	1" = 1000'
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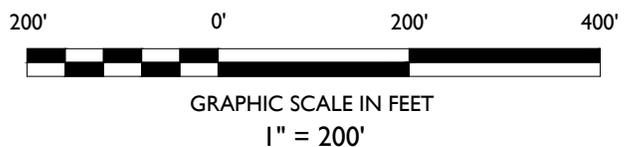
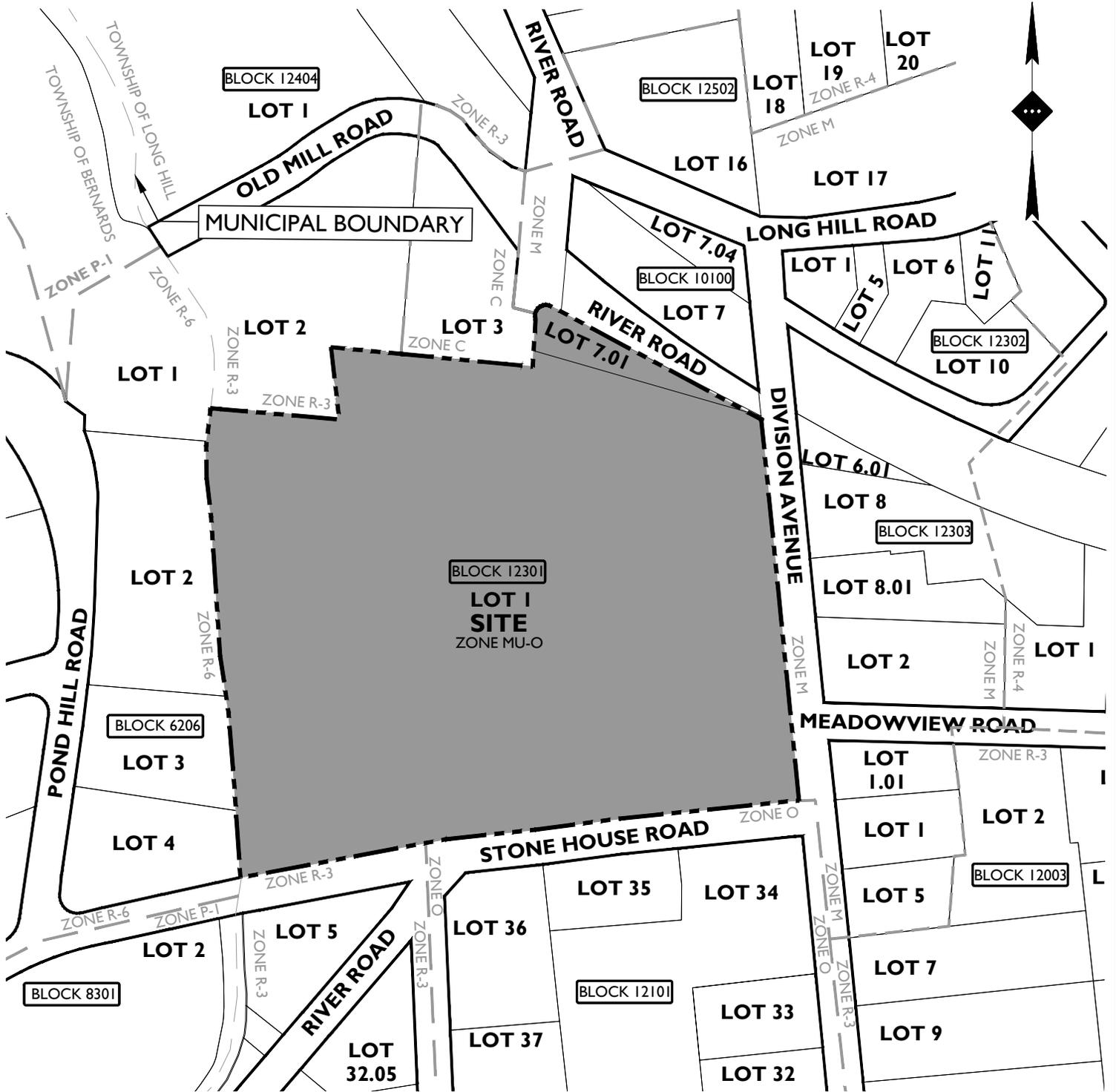


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TAX AND ZONING MAP

SOURCES: TOWNSHIP OF LONG HILL, NEW JERSEY - TAX MAP SHEETS 20-25 AND BERNARDS TOWNSHIP, NEW JERSEY - TAX MAP SHEETS 62 & 83. TOWNSHIP OF LONG HILL ZONING MAP, BERNARDS TOWNSHIP ZONING MAP

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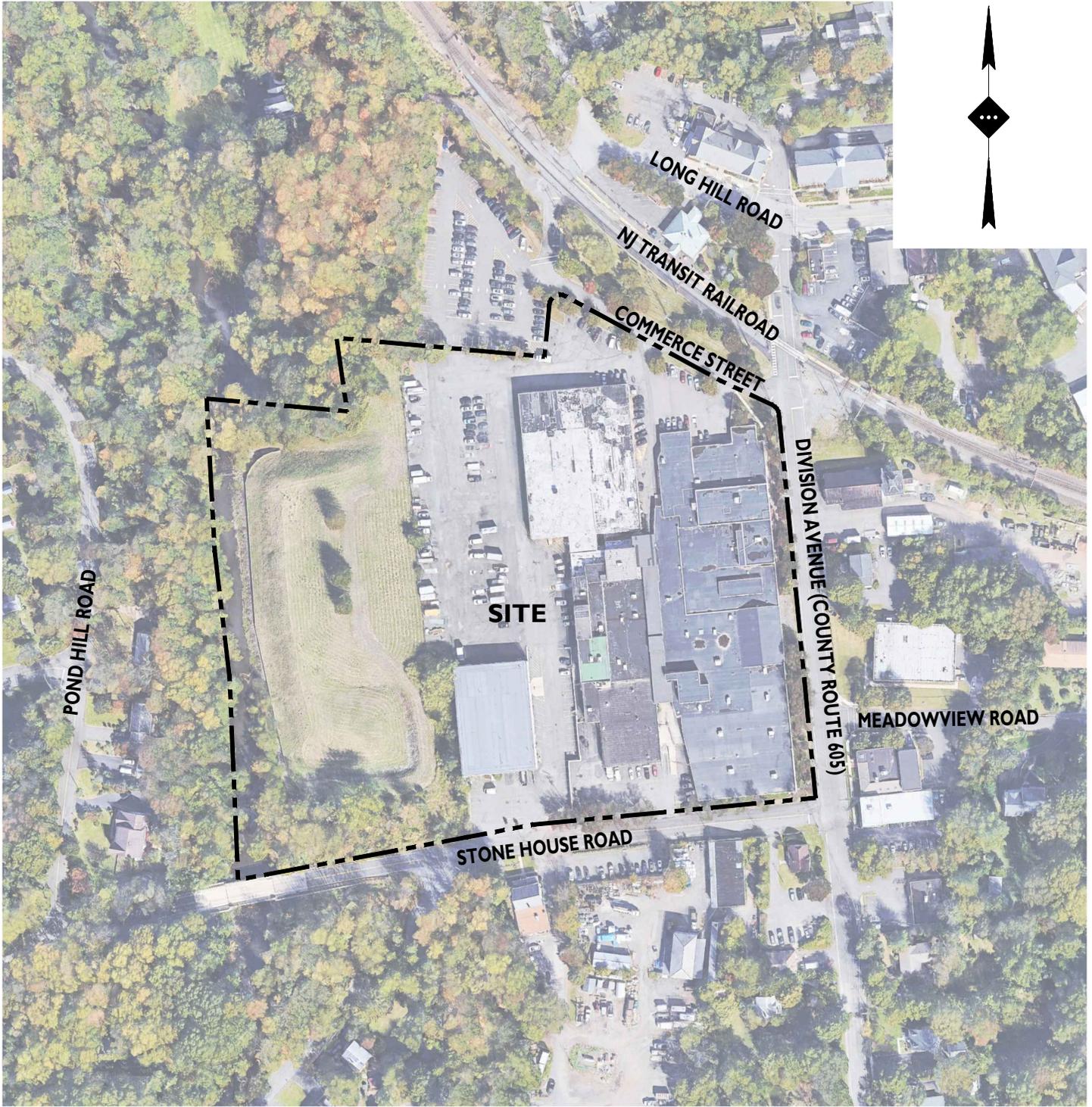


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GRAPHIC SCALE IN FEET

1" = 200'

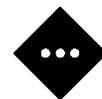
AERIAL MAP

SOURCE: GOOGLE EARTH PRO, DATED 2018

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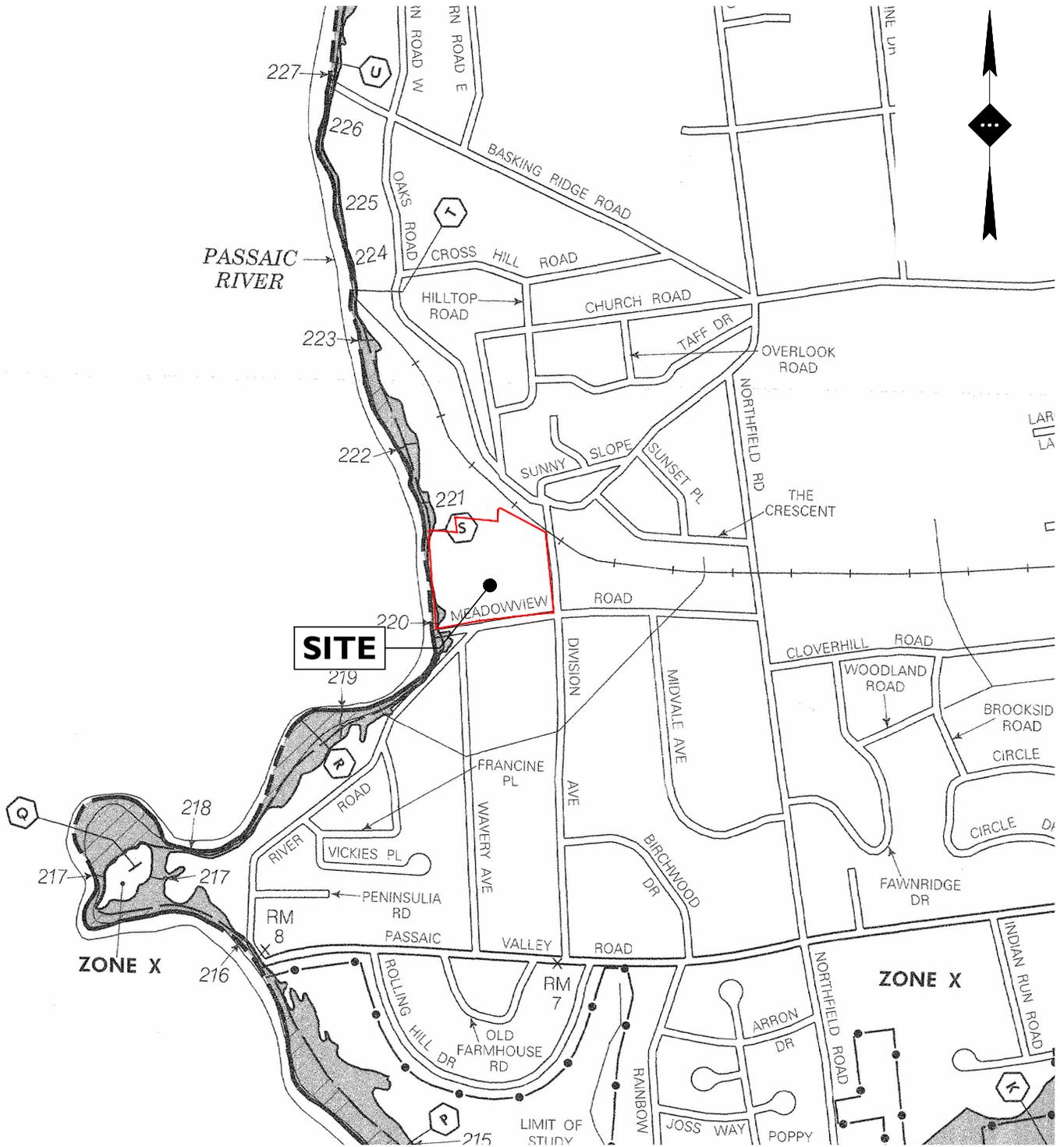
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EFFECTIVE FEMA FLOOD INSURANCE RATE MAP



GRAPHIC SCALE IN FEET

1" = 1000'

SOURCE: FLOOD INSURANCE RATE MAP, MORRIS COUNTY, NEW JERSEY, MAP NUMBER 3403560005B, DATED SEPTEMBER 21, 2001.

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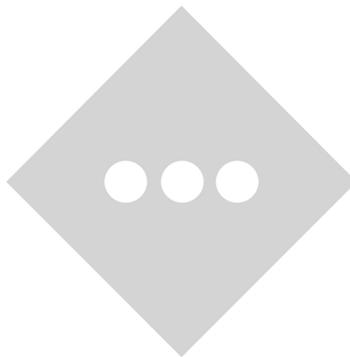
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APPENDIX B

NRCS COUNTY SOIL SURVEY





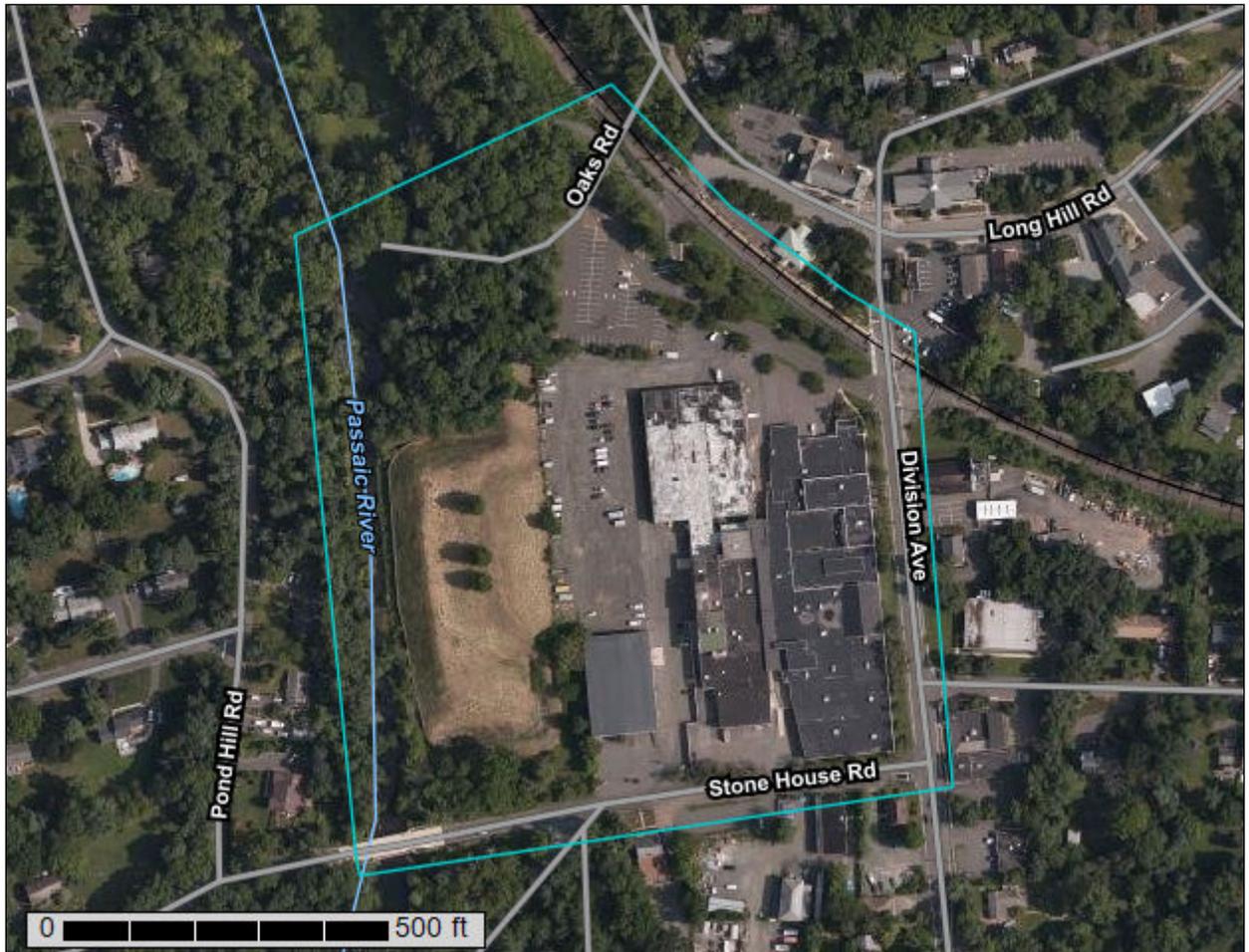
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Morris County, New Jersey, and Somerset County, New Jersey



Custom Soil Resource Report Soil Map



Map Scale: 1:2,390 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

Morris County, New Jersey

PbpAt—Parsippany silt loam, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 1kgmr
Elevation: 150 to 220 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Farmland of local importance

Map Unit Composition

Parsippany, frequently flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Parsippany, Frequently Flooded

Setting

Landform: Lake terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine glaciolacustrine deposits derived from basalt, shale and granitic gneiss material

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A1 - 1 to 4 inches: silt loam
A2 - 4 to 7 inches: silt loam
BAt - 7 to 11 inches: silty clay loam
Btg1 - 11 to 17 inches: silty clay loam
Btg2 - 17 to 22 inches: silty clay
Bt1 - 22 to 32 inches: silty clay
Bt2 - 32 to 36 inches: silty clay
BCg - 36 to 41 inches: fine sandy loam
Cg1 - 41 to 53 inches: loamy fine sand
Cg2 - 53 to 64 inches: loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: D

Custom Soil Resource Report

Hydric soil rating: Yes

Minor Components

Great piece

Percent of map unit: 10 percent
Landform: Outwash plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

PeoC—Penn channery silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2tt83
Elevation: 250 to 800 feet
Mean annual precipitation: 38 to 53 inches
Mean annual air temperature: 43 to 57 degrees F
Frost-free period: 170 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Penn and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Penn

Setting

Landform: Hills
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from shale and siltstone

Typical profile

Ap - 0 to 10 inches: channery silt loam
Bt1 - 10 to 15 inches: channery silt loam
Bt2 - 15 to 19 inches: channery silt loam
Bt3 - 19 to 22 inches: channery loam
C - 22 to 28 inches: very channery loam
R - 28 to 38 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Low

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.28 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Klinesville

Percent of map unit: 10 percent

Landform: Hills

Landform position (two-dimensional): Shoulder, backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Readington

Percent of map unit: 5 percent

Landform: Depressions

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear, concave

Across-slope shape: Linear, concave

Hydric soil rating: No

Croton

Percent of map unit: 5 percent

Landform: Depressions

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear, concave

Across-slope shape: Linear, concave

Hydric soil rating: Yes

PgmD—Penn-Klinesville channery silt loams, 12 to 18 percent slopes

Map Unit Setting

National map unit symbol: 1lphj

Elevation: 250 to 1,300 feet

Mean annual precipitation: 30 to 64 inches

Mean annual air temperature: 46 to 79 degrees F

Frost-free period: 131 to 178 days

Farmland classification: Not prime farmland

Map Unit Composition

Penn and similar soils: 60 percent

Klinesville and similar soils: 40 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Penn

Setting

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Fine-loamy residuum weathered from acid reddish shale, siltstone, and fine-grain sandstone

Typical profile

A - 0 to 8 inches: channery silt loam

BA - 8 to 14 inches: channery silt loam

B - 14 to 24 inches: channery silt loam

BC - 24 to 30 inches: channery silt loam

C - 30 to 36 inches: very channery silt loam

R - 36 to 80 inches: weathered bedrock

Properties and qualities

Slope: 12 to 18 percent

Depth to restrictive feature: 20 to 39 inches to lithic bedrock

Natural drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Hydric soil rating: No

Description of Klinesville

Setting

Landform: Hills

Landform position (two-dimensional): Summit

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Fine-loamy residuum weathered from acid reddish shale, siltstone, and fine-grain sandstone

Typical profile

A - 0 to 2 inches: channery silt loam

B - 2 to 14 inches: channery silt loam

R - 14 to 80 inches: weathered bedrock

Properties and qualities

Slope: 12 to 18 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Hydric soil rating: No

USNESB—Urban land-Neshaminy complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 13q09
Elevation: 250 to 950 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 45 percent
Neshaminy, stony, and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Hills
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Typical profile

C - 0 to 60 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Description of Neshaminy, Stony

Setting

Landform: Hills

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Dark colored basic rocks or loamy residuum weathered from diabase

Typical profile

A - 0 to 8 inches: silt loam

BA - 8 to 11 inches: gravelly clay loam

Bt1 - 11 to 23 inches: gravelly clay loam

Bt2 - 23 to 39 inches: cobbly clay loam

BC - 39 to 54 inches: cobbly clay loam

C - 54 to 60 inches: cobbly sandy loam

Properties and qualities

Slope: 3 to 8 percent

Percent of area covered with surface fragments: 0.1 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Penn

Percent of map unit: 10 percent

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Convex

Hydric soil rating: No

Ellington, moderately deep

Percent of map unit: 5 percent

Landform: Outwash terraces

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

USPENB—Urban land-Penn complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 13q0b
Elevation: 250 to 1,300 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Penn and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Hills
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Typical profile

C - 0 to 60 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Description of Penn

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Fine-loamy residuum weathered from acid reddish shale, siltstone, and fine-grain sandstone

Typical profile

A - 0 to 8 inches: channery silt loam
BA - 8 to 14 inches: channery silt loam
B - 14 to 24 inches: channery silt loam
BC - 24 to 30 inches: channery silt loam

Custom Soil Resource Report

C - 30 to 36 inches: very channery silt loam

R - 36 to 80 inches: weathered bedrock

Properties and qualities

Slope: 0 to 6 percent

Depth to restrictive feature: 20 to 39 inches to lithic bedrock

Natural drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Klinesville

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Shoulder

Down-slope shape: Linear

Across-slope shape: Convex

Hydric soil rating: No

Reaville

Percent of map unit: 5 percent

Landform: Interfluves

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

WATER—Water

Map Unit Setting

National map unit symbol: b0p9

Mean annual precipitation: 30 to 64 inches

Mean annual air temperature: 46 to 79 degrees F

Frost-free period: 131 to 178 days

Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Custom Soil Resource Report

Somerset County, New Jersey

BoyAt—Bowmansville silt loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 1j4zy

Elevation: 200 to 1,000 feet

Mean annual precipitation: 30 to 64 inches

Mean annual air temperature: 46 to 79 degrees F

Frost-free period: 131 to 178 days

Farmland classification: Farmland of statewide importance, if drained

Map Unit Composition

Bowmansville, frequently flooded, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bowmansville, Frequently Flooded

Setting

Landform: Flood plains

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Recent deposits of loamy alluvium

Typical profile

Ap - 0 to 9 inches: silt loam

Ag - 9 to 17 inches: silt loam

Bg1 - 17 to 26 inches: clay loam

Bg2 - 26 to 38 inches: sandy clay loam

Cg - 38 to 47 inches: fine sandy loam

2C - 47 to 60 inches: stratified gravel to sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Poorly drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)

Depth to water table: About 0 to 12 inches

Frequency of flooding: Frequent

Frequency of ponding: Frequent

Available water storage in profile: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6w

Hydrologic Soil Group: B/D

Hydric soil rating: Yes

Minor Components

Fluvaquents, loamy, frequently flooded

Percent of map unit: 5 percent

Landform: Flood plains

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: Yes

Raritan, rarely flooded

Percent of map unit: 5 percent

Landform: Stream terraces

Landform position (three-dimensional): Rise

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Rowland, frequently flooded

Percent of map unit: 5 percent

Landform: Flood plains

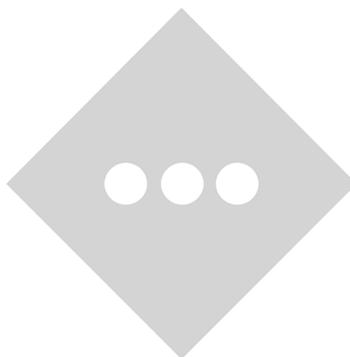
Landform position (three-dimensional): Rise

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

APPENDIX C
NATURAL HERITAGE DATABASE REPORT





State of New Jersey

MAIL CODE 501-04

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF PARKS & FORESTRY

NEW JERSEY FOREST SERVICE

OFFICE OF NATURAL LANDS MANAGEMENT

P.O. BOX 420

TRENTON, NJ 08625-0420

Tel. (609) 984-1339 Fax (609) 984-0427

PHILIP D. MURPHY

Governor

SHEILA Y. OLIVER

Lt. Governor

CATHERINE R. McCABE

Commissioner

August 27, 2019

Sheena Ishak
Stonefield Engineering & Design, LLC
92 Park Avenue
Rutherford, NJ 07070

Re: Proposed Mixed-Use Multi-Family and Commercial Development
Block(s) - 12301; 10100, Lot(s) - 1; 7.01
Long Hill Township, Morris County

Dear Ms. Ishak:

Thank you for your data request regarding rare species information for the above referenced project site.

Searches of the Natural Heritage Database and the Landscape Project (Version 3.3) are based on a representation of the boundaries of your project site in our Geographic Information System (GIS). We make every effort to accurately transfer your project bounds from the topographic map(s) submitted with the Natural Heritage Data Request Form into our Geographic Information System. We do not typically verify that your project bounds are accurate, or check them against other sources.

We have checked the Landscape Project habitat mapping and the Biotics Database for occurrences of any rare wildlife species or wildlife habitat on the referenced site. The Natural Heritage Database was searched for occurrences of rare plant species or ecological communities that may be on the project site. Please refer to Table 1 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented on site. A detailed report is provided for each category coded as 'Yes' in Table 1.

We have also checked the Landscape Project habitat mapping and Biotics Database for occurrences of rare wildlife species or wildlife habitat in the immediate vicinity (within ¼ mile) of the referenced site. Additionally, the Natural Heritage Database was checked for occurrences of rare plant species or ecological communities within ¼ mile of the site. Please refer to Table 2 (attached) to determine if any rare plant species, ecological communities, or rare wildlife species or wildlife habitat are documented within the immediate vicinity of the site. Detailed reports are provided for all categories coded as 'Yes' in Table 2. These reports may include species that have also been documented on the project site.

We have also checked the Landscape Project habitat mapping and Biotics Database for all occurrences of rare wildlife species or wildlife habitat within one mile of the referenced site. Please refer to Table 3 (attached) to determine if any rare wildlife species or wildlife habitat is documented within one mile of the project site. Detailed reports are provided for each category coded as 'Yes' in Table 3. These reports may include species that have also been documented on the project site.

For requests submitted in order to make a riparian zone width determination as part of a Flood Hazard Area Control Act (FHACA) rule application, we report records for all rare plant species and ecological communities tracked by the Natural Heritage Program that may be on, or in the immediate vicinity of, your project site. A subset of these plant species are also covered by the FHACA rules when the records are located within one mile of the project site. One mile searches for FHACA plant species will only report precisely located occurrences for those wetland plant species identified under the FHACA regulations as being critically dependent on the watercourse. Please refer to Table 3 (attached) to determine if any precisely located rare wetland plant species covered by the FHACA rules have been documented. Detailed reports are

provided for each category coded as 'Yes' in Table 3. These reports may include species that have also been documented on, or in the immediate vicinity of, the project site.

The Natural Heritage Program reviews its data periodically to identify priority sites for natural diversity in the State. Included as priority sites are some of the State's best habitats for rare and endangered species and ecological communities. Please refer to Tables 1, 2 and 3 (attached) to determine if any priority sites are located on, in the immediate vicinity, or within one mile of the project site.

A list of rare plant species and ecological communities that have been documented from the county (or counties), referenced above, can be downloaded from <http://www.state.nj.us/dep/parksandforests/natural/heritage/countylist.html>. If suitable habitat is present at the project site, the species in that list have potential to be present.

Status and rank codes used in the tables and lists are defined in EXPLANATION OF CODES USED IN NATURAL HERITAGE REPORTS, which can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/nhpcodes_2010.pdf.

Beginning May 9, 2017, the Natural Heritage Program reports for wildlife species will utilize data from Landscape Project Version 3.3. If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive web application at the following URL, <https://njdep.maps.arcgis.com/apps/webappviewer/index.html?id=0e6a44098c524ed99bf739953cb4d4c7>, or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program at (609) 292-9400.

For additional information regarding any Federally listed plant or animal species, please contact the U.S. Fish & Wildlife Service, New Jersey Field Office at <http://www.fws.gov/northeast/njfieldoffice/endangered/consultation.html>.

PLEASE SEE 'CAUTIONS AND RESTRICTIONS ON NHP DATA', which can be downloaded from <http://www.state.nj.us/dep/parksandforests/natural/heritage/newcaution2008.pdf>.

Thank you for consulting the Natural Heritage Program. The attached invoice details the payment due for processing this data request. Feel free to contact us again regarding any future data requests.

Sincerely,



Robert J. Cartica
Administrator

c: NHP File No. 19-4007465-17385

Table 1: On Site Data Request Search Results (6 Possible Reports)

<u>Report Name</u>	<u>Included</u>	<u>Number of Pages</u>
1. Possibly on Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites On Site	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat on the Project Site Based on Search of Landscape Project 3.3	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat on the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species On the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

**Rare Wildlife Species or Wildlife Habitat on the
Project Site Based on Search of
Landscape Project 3.3 Species Based Patches**

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
<i>Aves</i>								
	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Great Blue Heron	Ardea herodias	Foraging	2	NA	Special Concern	G5	S3B,S4N
<i>Mammalia</i>								
	Indiana Bat	Myotis sodalis	Maternity Colony	5	Federally Listed Endangered	State Endangered	G2	S1
	Indiana Bat	Myotis sodalis	Roost Site	5	Federally Listed Endangered	State Endangered	G2	S1

Table 2: Vicinity Data Request Search Results (6 possible reports)

<u>Report Name</u>	<u>Included</u>	<u>Number of Pages</u>
1. Immediate Vicinity of the Project Site Based on Search of Natural Heritage Database: Rare Plant Species and Ecological Communities Currently Recorded in the New Jersey Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites within the Immediate Vicinity	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat Within the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	1 page(s) included
4. Vernal Pool Habitat In the Immediate Vicinity of Project Site Based on Search of Landscape Project 3.3	No	0 pages included
5. Rare Wildlife Species or Wildlife Habitat In the Immediate Vicinity of the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species In the Immediate Vicinity of the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	No	0 pages included

**Rare Wildlife Species or Wildlife Habitat Within the
Immediate Vicinity of the Project Site Based on Search of
Landscape Project 3.3 Species Based Patches**

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Strank
<i>Aves</i>								
	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Great Blue Heron	Ardea herodias	Foraging	2	NA	Special Concern	G5	S3B,S4N
<i>Mammalia</i>								
	Indiana Bat	Myotis sodalis	Active Season Sighting	5	Federally Listed Endangered	State Endangered	G2	S1
	Indiana Bat	Myotis sodalis	Maternity Colony	5	Federally Listed Endangered	State Endangered	G2	S1
	Indiana Bat	Myotis sodalis	Roost Site	5	Federally Listed Endangered	State Endangered	G2	S1
	Northern Myotis	Myotis septentrionalis	Active Season Sighting	5	Federally Listed Threatened	NA	G1G2	S1
	Northern Myotis	Myotis septentrionalis	Roost Site	5	Federally Listed Threatened	NA	G1G2	S1
<i>Reptilia</i>								
	Wood Turtle	Glyptemys insculpta	Occupied Habitat	3	NA	State Threatened	G3	S2

**Table 3: Within 1 Mile for Riparian Zone Width Determination
(6 possible reports)**

<u>Report Name</u>	<u>Included</u>	<u>Number of Pages</u>
1. Rare Plant Species Occurrences for Riparian Zone Width Determination (Flood Hazard Area Control Act Rule Application) - Within One Mile of the Project Site Based on Search of Natural Heritage Database	No	0 pages included
2. Natural Heritage Priority Sites for Riparian Zone Width Determination - Within One Mile of the Project Site	No	0 pages included
3. Rare Wildlife Species or Wildlife Habitat for Riparian Zone Width Determination - Within One Mile of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches	Yes	2 page(s) included
4. Vernal Pool Habitat for Riparian Zone Width Determination - Within One Mile of the Project Site Based on Search of Landscape Project 3.3	Yes	1 page(s) included
5. Rare Wildlife Species or Wildlife Habitat for Riparian Zone Width Determination - Within One Mile of the Project Site Based on Search of Landscape Project 3.3 Stream Habitat File	No	0 pages included
6. Other Animal Species for Riparian Zone Width Determination - Within One Mile of the Project Site Based on Additional Species Tracked by Endangered and Nongame Species Program	Yes	1 page(s) included

<p>Rare Wildlife Species or Wildlife Habitat for Riparian Zone Width Determination Within One Mile of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches</p>
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Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
<i>Aves</i>								
	Bald Eagle	Haliaeetus leucocephalus	Foraging	4	NA	State Endangered	G5	S1B,S2N
	Barred Owl	Strix varia	Breeding Sighting	3	NA	State Threatened	G5	S2B,S2N
	Barred Owl	Strix varia	Non-breeding Sighting	3	NA	State Threatened	G5	S2B,S2N
	Brown Thrasher	Toxostoma rufum	Breeding Sighting	2	NA	Special Concern	G5	S3B,S4N
	Great Blue Heron	Ardea herodias	Foraging	2	NA	Special Concern	G5	S3B,S4N
	Red-shouldered Hawk	Buteo lineatus	Breeding Sighting	4	NA	State Endangered	G5	S1B,S3N
	Red-shouldered Hawk	Buteo lineatus	Nest	4	NA	State Endangered	G5	S1B,S3N
	Red-shouldered Hawk	Buteo lineatus	Non-breeding Sighting	2	NA	Special Concern	G5	S1B,S3N
	Veery	Catharus fuscescens	Breeding Sighting	2	NA	Special Concern	G5	S3B,S4N
<i>Mammalia</i>								
	Indiana Bat	Myotis sodalis	Active Season Sighting	5	Federally Listed Endangered	State Endangered	G2	S1

<p>Rare Wildlife Species or Wildlife Habitat for Riparian Zone Width Determination Within One Mile of the Project Site Based on Search of Landscape Project 3.3 Species Based Patches</p>
--

Class	Common Name	Scientific Name	Feature Type	Rank	Federal Protection Status	State Protection Status	Grank	Srank
	Indiana Bat	Myotis sodalis	Maternity Colony	5	Federally Listed Endangered	State Endangered	G2	S1
	Indiana Bat	Myotis sodalis	Roost Site	5	Federally Listed Endangered	State Endangered	G2	S1
	Northern Myotis	Myotis septentrionalis	Active Season Sighting	5	Federally Listed Threatened	NA	G1G2	S1
	Northern Myotis	Myotis septentrionalis	Roost Site	5	Federally Listed Threatened	NA	G1G2	S1
<i>Reptilia</i>								
	Bog Turtle	Glyptemys muhlenbergii	Occupied Habitat	5	Federally Listed Threatened	State Endangered	G3	S1
	Eastern Box Turtle	Terrapene carolina carolina	Occupied Habitat	2	NA	Special Concern	G5T5	S3
	Wood Turtle	Glyptemys insculpta	Occupied Habitat	3	NA	State Threatened	G3	S2

**Vernal Pool Habitat for Riparian Zone Width Determination
Within One Mile of the Project Site
Based on Search of Landscape Project 3.3**

Vernal Pool Habitat Type	Vernal Pool Habitat ID
Vernal habitat area	2900
Vernal habitat area	2903
Vernal habitat area	2918
Potential vernal habitat area	1936
Total number of records:	4

**Other Animal Species for Riparian Zone Width Determination
 Within One Mile of the Project Site
 Based on Additional Species Tracked by
 Endangered and Nongame Species Program**

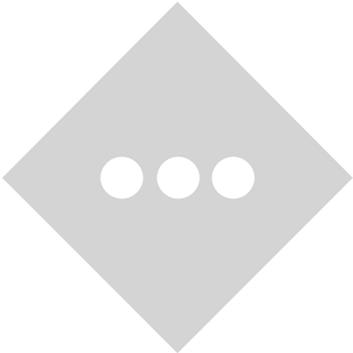
Scientific Name	Common Name	Federal Protection Status	State Protection Status	Grank	Srank
-----------------	-------------	---------------------------	-------------------------	-------	-------

Vertebrate Animals

Eptesicus fuscus	Big Brown Bat			G5	S3
------------------	---------------	--	--	----	----

Total number of records: 1

APPENDIX D
OPERATION AND MAINTENANCE PLAN



**30 YEAR OPERATION AND MAINTENANCE PLAN
FOR OPERABLE UNIT 1
ASBESTOS DUMP SUPERFUND SITE
MILLINGTON, NEW JERSEY**

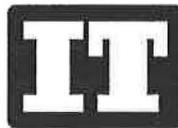
Prepared for:

**New Jersey Department of Environmental Protection
Division of Hazardous Site Mitigation
Hazardous Waste Programs
Trenton, New Jersey**

**United States Environmental Protection Agency
Region II
New Jersey Remediation Branch
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Prepared by:



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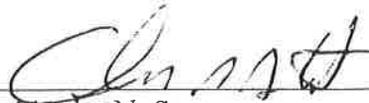
September 2001

Revision 1

**30 YEAR OPERATION AND MAINTENANCE PLAN
FOR OPERABLE UNIT 1
ASBESTOS DUMP SUPERFUND SITE
MILLINGTON, NEW JERSEY**

The material and data in this report were prepared under the supervision and direction of the undersigned.

The IT Group



Charles N. Strotz
Project Manager



David Ambrose
Quality Control Systems Manager

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List of Acronyms

ACM	Asbestos-Containing Material
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended
CFR	Code of Federal Regulations
CRQL	Contract Required Quantitation Limit
dbh	Diameter at Breast Height
EPA	Environmental Protection Agency
IT	IT Corporation
NGC	National Gypsum Company
NJAC	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
NPL	National Priorities List
O&M	Operation and Maintenance
OMP	Operation and Maintenance Plan
OSHA	Occupational Safety and Health Administration
OU-1	Operational Unit 1 of the Asbestos Dump Superfund Site
PMA	Phenylmercuric Acetate
PPE	Personal Protective Equipment
QA/QC	Quality Assurance/Quality Control
RA	Remedial Activities
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
SAP	Sampling and Analysis Plan
TEM	Transmission Electron Microscopy
USACE	United States Corps of Engineers
USEPA	United States Environmental Protection Agency

1.0 Introduction

1.1 Overview

This operation and maintenance plan (OMP) has been prepared as part of the remedial activities at the Operable Unit No. 1 (OU-1) of the Asbestos Dump Superfund Site located at 50A Division Avenue in Millington, Morris County, New Jersey. The overall objective of this OMP is to provide for periodic inspection, maintenance and monitoring to evaluate and maintain the effectiveness of the remedial action activities implemented at the site. This OMP is comprehensive and addresses the procedural and administrative details for post-closure monitoring and maintenance activities.

This OMP documents the United States Environmental Protection Agency's (USEPA) approach for maintaining the installation and monitoring the effectiveness of the remedial actions implemented at this site. It should be noted that this OMP is intended to be flexible to allow for modifications, as necessary, with Agency approval based on conditions encountered during post-closure monitoring activities.

Section 1.0 presents a brief introduction. Chapter 2.0 describes site location, history, and the activities that were carried out on-site. Section 3.0 describes the maintenance and monitoring activities that will be required for the 30-year post-closure monitoring period of the Operation and Maintenance (O&M) contract. Section 4.0 provides references and Section 5.0 discusses the limitations of the OMP.

The OMP relates to inspections of the site; routine maintenance of the site; and sampling in groundwater, surface water, and sediments for asbestos. Appendix F to this OMP is under separate cover from this document and contains the Sampling and Analysis Plan (SAP) which contains the Field Sampling Plan (FSP) identified as Volume 2 and Quality Assurance Project Plan (QAPP) identified as Volume 3.

2.0 Site Description

2.1 General Overview

This section provides a brief summary of the site location, history, site geology, site hydrology, and prior uses of the site, and a brief summary of the remedial actions carried out at the site.

2.2 Site Location

The Asbestos Dump Site Operable Unit One is an 11-acre commercial property located at 50A Division Avenue in Millington, New Jersey. OU-1 is bounded by the Passaic River on the west, a single family residence along the northern edge of the property, the NJ Transit Millington train station and the TIFA commercial property on the eastern portion, and Stone House Road on the south. Figure 2-1 shows the site location map.

2.3 Site History

From 1927 to 1946, the Millington site was operated by Asbestos, LTD., which fiberized and sold asbestos. Smith Asbestos, Inc. owned and operated the plant from 1946 to 1953. During this period, asbestos siding and roofing products were manufactured at the site. During this time, Smith Asbestos constructed dams on the site to impound water from the manufacturing process. This allowed asbestos fibers that were in the wastewater to settle to the bottom. Periodically, asbestos sediment from the wastewater settling ponds was removed, disposed of on-site, and covered with soil.

The property was acquired by National Gypsum in May 1953. From 1953 to 1975, the company manufactured cement asbestos siding and roofing sheets. During National Gypsum's period of ownership, most of the waste generated was recaptured and recycled. Waste that was not recycled included broken siding and asbestos fibers. These waste products were disposed of on a 5-acre portion of the property during this time. This included a 330-foot by 75-foot area where predominately asbestos fibers were disposed. After the limited space for on-site dumping reached full capacity, additional wastes were transported off-site for disposal.

From 1953 to 1972, National Gypsum utilized phenylmercuric acetate (PMA) as a fungicide coating on the asbestos shingles. Wastes generated from cleaning of the coating equipment were disposed of on-site in small pits located west of the manufacturing plant.

In May 1975, National Gypsum closed the Millington plant. In 1978, ownership of the land was transferred to TIFA Ltd. TIFA has since divided the plant into several smaller parcels, which have been leased to other manufacturing and service companies.

Remedial Investigation (RI) activities were previously conducted at the site by McLaren Hart Corporation in order to evaluate soil, groundwater, surface water, and air media at the site. The RI activities were conducted from August 1986 through November 1987. Asbestos was the primary contaminant detected at the site. Asbestos was found in the form of broken asbestos tile, siding and fibers. The quantity of waste on-site is estimated to be 90,000 cubic yards.

2.4 Site Geology

The Millington site is located between the Second and Third Watchung Basalts (Preakness and Hook Mountain, respectively). The bedrock geology in this area consists of coarse-grained silt stone of the Towaco formation. The overall geology at the site consists of fill that is situated on a silt-clay deposit that directly overlies bedrock. Bedrock is shallowest at the eastern section of the site at approximately 4½ ft below ground surface. The bedrock slopes westward toward the Passaic River where it lies approximately 32 ft below the asbestos mound.

The overlying fill deposit consists of yellow, medium grained sand in the vicinity of MW-901 and reddish-brown silty clayey topsoil fill, with a slight veneer of asbestos waste products (i.e., broken tiles, shingles, and siding) at the surface, throughout the remainder of the site. This unit ranges from ½ ft thick at MW-901 and increases in mass to 6 ft at MW-906 and is only 2 ft thick at MW-903. Below this upper fill, deposit is a deposit consisting solely of loose asbestos fiber. The asbestos waste layer was identified at MW-906 where 9 ft was encountered and on the asbestos waste mound at MW-903. Figure 2-4 and Appendix C presents the locations of the seven monitoring wells. Underlying the asbestos waste is the silt-clay unit, which is observed throughout the site. Below this unit lies the silt stone bedrock.

Elevation of the mound ranges from 253 ft in the center to 250 ft MSL along the flanks. The geology of the mound consists of four units. The upper most unit consists of a veneer of silty to clayey fill material approximately 6 to 8 inches (in.) thick. Beneath the fill layer lies the asbestos deposit. This deposit is the most massive unit and is responsible for the existence of the asbestos mound. The asbestos deposit consists of pure, loose, asbestos fibers. The unit ranges from 28 ft thick in the center to 24 ft thick toward the edges. The following underlying unit is made up of a coarse textured, reddish brown silty-clay to clayey silt. This layer averages between 4 to 7 ft in

thickness and probably formed by weathering of the underlying bedrock unit. The silt stone bedrock is shallowest in the vicinity of the river. The upper foot to 6 ft of this unit is extremely weathered, which has helped make it a water bearing zone. The exact thickness of the bedrock at the site is not known but has reported to be up to 340-ft thick in this vicinity.

2.5 Site Hydrology

The Passaic River in the vicinity of Millington, New Jersey has a drainage area of approximately 55.4 square miles. The ultimate source of water in the Passaic River and its tributaries is precipitation. Not all precipitation becomes stream flow because of evapotranspiration. The estimated water loss in the Passaic River Basin in the headwaters near Millington is 25 to 26 in. per year.

The Passaic River is classified as an FW2-NT (Fresh water, Non-Trout bearing) surface water. This designation signifies that the surface water body is not designated FW1 or Pinelands Water. The following lists the designated uses of all FW2 waters:

- Maintenance and migration a propagation of the natural and established biota
- Primary and secondary contact recreation
- Industrial and agricultural water supply
- Public potable water supply after such treatment as required by law or regulation
- Any other reasonable uses.

Primary contact recreation is defined as recreational activities that involve significant ingestion risks and includes but is not limited to, wading, swimming, diving, surfing, and water skiing. Secondary contact recreation means recreational activities where the probability of water ingestion is minimal and includes, but is not limited to, boating and fishing.

The direction of stream flow at the Millington Site is north to south. Stream flow data indicate that precipitation is the controlling factor on water flow quantity and flow velocity. Periods of low precipitation (usually during the summer) are characterized by low flow rates and discharge of water volume. High precipitation experienced during the fall and spring results in an increase in both the flow volume and rate. The average flow rate of the Passaic River near the Millington Site is 83.6 cubic feet per second.

Data on the regional surface water quality of the part of the Passaic River near the Millington site is limited to the concentration of ions and trace elements. The Millington site is located within

the Piedmont Lowland part of the Passaic River Basin characterized by a dissolved solids content ranging between 100 to 400 milligrams per liter. The predominant cations are the alkaline earth's ranging from 40 to 70 percent. Consequently, the percentages (30 to 60) of alkali metal in the region are the highest observed in the basin. The predominant anions in this region are those associated with salinity, principally sulfate and chloride, but also nitrate and minor amounts of fluoride.

The western-most section of the Asbestos Dump OU-1 Site lies within the flood plain of the Passaic River. Of special concern is the asbestos mound, which is situated directly on the flood plain rising approximately 30 ft above the Passaic River. Conversations with residents along the Passaic River adjacent to the Millington site reveal that local, annual flooding occurs one to three times per year.

Drainage at the Millington site is a relatively simple process consisting of direct surface runoff or transport via groundwater or the storm sewer network. Surface runoff is controlled by topography of the site. The overall topography slopes west towards the Passaic River. It is expected that rainwater would runoff as overland flow towards the Passaic River after the soils reach their saturation point and rainwater cease infiltrating into the ground. Surface runoff also occurs on the asbestos mound on the slope facing the Passaic River. Rainwater percolating through the site will become entrained in the local groundwater flow direction, which is towards the Passaic River, located just west of the site.

Surface flow of stormwater runoff from the site drains through three flow networks. The first network consists of the pre construction installed storm water sewer network. Flow from the paved portions of the site flow into catch basins within the paved portions of the site. These flows are carried in an underground reinforced concrete pipe system, which drains into the wetland channel at the south portion of the site. A 48" outlet from this storm water sewer system comprises one inlet into the wetland channel. The second outlet from the storm water sewer system is a 15" outlet that comprises the second inlet, adjacent to Stone House Road, into the wetland channel. The second network consists of the surface drainage features incorporated into the construction of the landfill cap over the asbestos mound. This surface flow starts with a grass lined channel at the top of the asbestos mound. The top of the asbestos mound drains into this grass lined channel rather than over the western slope of the asbestos mound. The diversion of this flow into the grassed lined channel rather than over the slope above the retaining wall greatly reduces erosion on the slope of the asbestos mound. The flow from the grass lined channel then

continues into a rip rap lined channel which is diverted around the disposal mound area of the asbestos mound and picks up additional surface flow from the disposal mound area. The flow then discharges via a grated standpipe and pipe discharge into the wetland channel. The third flow network address surface flow from the west mound slope which is collected in a series of grated standpipes behind the retaining wall which individually discharge through the rip rap protection slope at the base of the retaining wall into the Passaic River. In addition to the three flow networks of the cap system there are minor flow channels consisting of rip rap drainage ditches at the north and south access roads which both discharge separately through the rip rap banks of the Passaic River, and a drainage swale east of the east access road which discharges into a drainage swale which subsequently sheet flows into the wooded area east of the wetland channel.

2.6 Remedial Actions Undertaken

In accordance with the Record of Decision (ROD), the major components of the remedy implemented at Asbestos Dump Superfund Site – Operable Unit 1 consisted of the following:

- Construction of slope protection/stabilization along the bank of the Passaic River.
- Installation of a 2'-2' soil cover cap. See Figure 2-2 and 2-3 for the typical cross-sections of the landfill cap.
- Excavation and on-site disposal of asbestos-containing material (ACM).
- Removal and off-site disposal of drums containing material PPE.
- Construction of surface water runoff controls.
- Revegetation of site.
- Extension of three existing wells.
- Installation of facility access controls.

Remedial Activities were initiated in April 1999 and concluded in May 2000. USEPA through the USACE and IT Corporation conducted post construction inspections of the landfill on a monthly basis from June 2000 through May 2001. Upon completion of this OMP, NJDEP will perform all required O&M activities.

2.6.1 Slope Protection/Stabilization Along River Bank

Along the Passaic River bank on the western edge of the site, a 516-foot long, ten foot high retaining wall was constructed to provide slope protection and stabilization of the ACM mound.

The wall consists of steel H-piles set in reinforced concrete rock sockets with precast, reinforced concrete panels set in the flanges. The bottom of the concrete panels are covered by the slope protection along the bank of the Passaic River and the final exposed height of the retaining wall is 8 feet - 6 inches. At the base of the retaining wall exists a five-foot access path constructed of crushed stone.

2.6.2 Soil Cover Cap

A minimum 2-foot thick soil cap covers the regraded ACM mound. The cap has two different cross-sections across the site. The flat areas of the site are covered by a 4-inch prepared subgrade of ¾-inch clean stone, the 10-oz non-woven, needle-punched geotextile; 20 inches of compacted, controlled fill; and a 6-inch layer of topsoil, with a vegetative layer. See Figure 2-2 for a graphic depiction of the cap layers.

On the north, west, and south sloped areas of the mound, the soil cover consists of a 4-inch prepared subgrade of ¾-inch clean stone, overlaid by a 10-oz non-woven, needle-punched geotextile, then a geogrid layer, overlaid by successive 10-inch layers of ¾-inch crushed stone and structural fill finishing with a 6-inch layer of topsoil and a vegetative layer. See Figure 2-3 for a graphic representation of the cap layers for sloped surfaces.

It was determined that on the sloped portion of the cap, the geogrid layer was required for slope stability, hence the two different cross-sections.

2.6.3 Surface Water Runoff Controls

The site was constructed with several types of surface water runoff controls, including grass and rip-rap-lined ditches, retaining wall drains, grouted rip-rap channels, and a perforated standpipe inlet and associated outfall. These surface water runoff controls are shown on Drawing C105 "Final Grading and Fence Location Plan." Drawing C108 (Appendix C) of the design drawings illustrates the runoff controls in cross-section detail. The wetland channel constructed at the southern portion of the site incorporates both grouted and non-grouted rip-rap-lined sections, and provides both on- and off-site surface water runoff control. The wetland channel discharges directly into the Passaic River and collects storm water runoff from the storm sewer system and the asbestos mound drainage ditches. Drawing C109 (Appendix C) of the design drawings shows the plan view of the Wetland Channel, as well as Wetland Channel Section Z-Z. Additionally, the area located between Building 4 and the facility access road at the southwestern portion of the site was converted into a drainage swale.

2.6.4 Monitoring Wells

There are seven monitoring wells associated with the site. Three of the existing monitoring wells (MW902, MW903, and MW904) were extended in order to accommodate the new soil cover landfill cap. Threaded couplings were manufactured and welded to the existing well casings, and threaded pipe extensions were installed. New bollards were installed around all monitoring wells remaining above grade to protect the casings from any damage. Monitoring well MW906 was converted to a flush-mounted well by installing a Campbell Foundry Pattern 4400 Large Valve Box and cover over the existing well, and grading the surrounding area flush with the lid. The locations of the monitoring wells are presented on Figure 1-1 of the Sampling and Analysis Plan. Table 1-0 of the FSP provides a listing of the Monitoring Wells and elevations of the outer and inner casings. Groundwater flow for all monitoring wells is towards the west.

2.6.5 Facility Access Control

A 6-foot high chain link fence surrounds the site on its north, east, and south limits. A double swing gate located at the northeastern corner of the site provides facility access.

3.0 Maintenance and Monitoring Plan

3.1 Introduction

The operation and maintenance program for the Asbestos Dump Site – Operable Unit One includes maintenance of the permanent features such as the perimeter fence, retaining wall, surface water runoff controls, access roads and path, and soil cover cap. This OMP is for the monitoring period following completion of the landfill construction as required by the New Jersey Solid Waste Regulation for post-closure off sanitary landfills. The regulation requires post-closure monitoring of the landfill for a 30-year period following closure (N.J.A.C. 7:26-2A.9(c)5). This regulation also requires the preparation and implementation of a Post-Closure Care Plan which stipulates the institution of programs for the maintenance of the final cover, final cover vegetation and side slopes, the implementation of run-on and runoff programs, and the institution of a groundwater monitoring program (N.J.A.C.7:26-2A.9 (e)). The requirements for the environmental monitoring program are presented in the New Jersey Pollutant Discharge Elimination System regulation (N.J.A.C. 7:14A) and include well siting, construction and sampling. A copy of the New Jersey Landfill Closure and Post-closure Guidance document has been provided as Appendix A to this OMP.

The operation and maintenance activities addressed in this document include the maintenance of the design components as follows:

- Mowing of the grassed portion of the final cover and pruning of any other vegetation.
- Monitoring of surface water and sediment sampling of the Passaic River.
- Groundwater monitoring in accordance with New Jersey landfill closure requirements.
- Periodic visits to the capped area to inspect the integrity of the cover materials.
- Periodic visits to inspect the retaining wall, perimeter fence and facility access.
- Periodic visits to inspect the surface water runoff controls.

The OMP for the subject site will be implemented through periodic inspection; collection of groundwater, surface water and sediment sample and the analysis of the environmental data in order to monitor the condition and effectiveness of all portions of the remedy conducted at the site. The schedule for these inspections and environmental monitoring activities for the subject site has been provided as Table 3-1. If any problems are observed during these inspections, the Operation and Maintenance contractor will notify NJDEP immediately and propose necessary repairs. The environmental monitoring is

presented below and includes a brief description of the activities to be conducted for the monitoring of surface water, groundwater, and sediment, including the preparation of reports on monitoring and maintenance findings.

As part of the O&M activities, USEPA Region II is required to conduct 5-year reviews of the site to determine the effectiveness of the program. The results of the monitoring and maintenance activities of this OMP will be evaluated during the 5-year review.

3.1.1 General

The remedial actions conducted at the site consisted of the construction of slope stabilization protection in the form of a retaining wall, excavation and on-site disposal of Asbestos Containing Material (ACM), placement of a 2'-2" soil cover cap, surface water runoff controls, access path, wetland channel. The overall objective of this OMP is to provide for periodic inspection, maintenance and monitoring to evaluate and maintain the effectiveness of the remedial action activities implemented at the site.

Following completion of the remedial action in May 2000, inspections were carried out by USEPA's construction contractor until May 2001 (See inspection reports in Appendix G). Sampling of the groundwater, surface water, and sediment will be carried out biannually for the second year and at a frequency to be determined by the initial sampling events results. Frequency of sampling will be determined upon the analysis of the initial one year sampling results and this OMP will be revised to reflect the revised schedule as determined by the same. Inspection reports shall be submitted to NJDEP and USEPA within 30 days of inspection activities and formatted in accordance with the inspection report forms included in Appendix B or an equivalent authorized form from NJDEPA and USEPA. Sampling results shall be submitted to the agencies within 30 days of receipt of the analytical results and should include at a minimum, groundwater elevations, laboratory analysis sheets, chain-of-custody records, and sample collection field sheets. Further, where significant problems are identified the O&M contractor will propose solutions to the problems in the inspection reports for NJDEP review and approval.

The 1-year following the completion of construction, IT Corporation performed the O&M activities for the site. During this first year of post-closure (June 2000 through May 2001), IT Corporation prepared inspection forms (See Appendix G) to summarize their findings.

NJDEP will be responsible for implementing the OMP for a 29-year period following completion of the initial maintenance period performed by IT Corporation. The components of the plan are described below.

The activities addressed by the OMP fall into two major categories:

- Site Monitoring
- Site Maintenance.

Site monitoring addresses the performance of physical inspections of the site and collection of physical samples for chemical analyses. The purposes of the monitoring activities is to ensure the effectiveness of the remedial actions and to document any potential problems that have to be addressed during site maintenance.

Site maintenance addresses all of the activities necessary to preserve the integrity of the remedial actions (e.g., mowing of landfill vegetative cover, repairing of eroded areas, repair of damage caused by burrowing wildlife). If the inspections carried out in the site monitoring category of activities indicate significant and/or recurrent problems, then special maintenance activities shall be proposed.

An Inspection and Monitoring Report, which documents each formal inspection and environmental monitoring event, will be submitted to the NJDEP and USEPA within 30 days of the actual completion of the inspection and/or receipt of analytical results. These reports will summarize the findings of the inspections and the environmental monitoring results. The Inspection and Monitoring Report will also document if any problems were detected at the site and proposals on how to address the problem. These biannual reports will be presented as part of the long term monitoring program. NJDEP and USEPA will make an assessment regarding the frequency and/or modifications of sampling and inspections after review of the Inspection and Monitoring Reports. Additional inspections will be performed after significant rainfall events. In addition, NJDEP may request additional inspections for other reasons.

Schedule changes to the OMP pertaining to the frequency of inspections and environmental monitoring shall not be made without approval from the appropriate agencies.

3.2 Site Monitoring

Site monitoring will include a program of periodic inspections and the collection and chemical analysis of selected media. Inspection and sampling activities shall occur concurrently to minimize mobilization of personnel to the site as indicated on the proposed schedule (see Table 3-1). After review of historical groundwater sampling data, the USEPA has determined that the installation of additional off-site monitoring wells is not warranted, at this time.

3.2.1 Inspections

Inspections of the facility access control; retaining wall, surface water runoff controls, soil cover cap, and monitoring wells shall be performed as described in the following sections. Inspection forms, that may be used by site personnel performing these inspections as well as the information data base for the preparation of reports, have been provided as Appendix B to this OMP.

3.2.2 Inspection of the Facility Access Control (fencing and gates)

There is a chain link fence around the perimeter of the site. The main entrance to the Asbestos Dump Superfund Site – Operable Unit One is the Type II double swing locking gate, as depicted as Detail 18 on Drawing C110 of the design drawings (Appendix C). The gate is located at the northeast corner of the site. The 6-foot high chain link fence, shown as Details 15, 16, 19, and 20 on Drawing C110 of the design drawings (Appendix C), will remain on the north and south boundaries of the site, down to the edge of the Passaic River. The relocated 6-foot chain link fence along the eastern edge of the site will complete the facility access control to the site. A gravel access road encircles the site, beginning and culminating at the northeast access gate, as shown on Drawing C105 of the design drawings (Appendix C). The chain link fence and gate shall be inspected for items such as signs of vandalism, holes or breaks, damage from fallen trees, any posted signs that are missing, or cracked concrete footings. The gates shall also be checked for ease of opening, and that the locking mechanisms are intact and in working order. The access roads will be maintained and kept clear to ensure access for routine inspection and monitoring activities. Minor repairs shall be performed immediately. If significant problems are encountered, a proposal for addressing the problems must be submitted to NJDEP as soon as practical.

3.2.3 Inspection of the Retaining Wall

The retaining wall will be inspected for any structural damage, which may occur to the concrete panels or steel columns, and for any acts of vandalism. In addition, the access path along the riverbank will be inspected. The coating on the steel piles shall be inspected to ensure it remains intact to prevent oxidation damage. The precast concrete panels shall be inspected for items,

such as graffiti and deep gouges or cracking of the concrete panels. If necessary, repairs will be performed in a manner and with materials as close as possible to those used during the initial construction of the component under repair. Repairs will be carried out as soon as practical following discovery of the damage. For significant problems encountered, the contractor must submit a proposal to NJDEP as soon as practical.

3.2.4 Inspection of Surface Water Runoff Controls

The purpose of these inspections is to ensure that the site drainage structures function to maintain the integrity of the remedy. The inspections shall include observation of the condition of the grass-lined, rip-rap and grouted rip-rap channels, and the standpipes, outfall pipes, and discharge pipe sections. The condition of the standpipe, the 30" corrugated metal outfall pipe and the discharge flared end section should also be examined. At the wetland channel the condition of the 48" concrete pipe outfall and head wall of the storm water system and also the 15" concrete pipe outfall shall also be examined. Details for the channels are to be found on Drawing C108 of the design drawings (Appendix C). All surface water runoff controls will be inspected for blockages caused by debris, leaves, grass clippings, silt deposits or excessive vegetative growth (e.g., trees, bushes, shrubs and other woody plants) which could impede or change the course of flow and cause erosion. All information collected during the inspection of the surface water controls will be documented in the Inspection Report. Areas of erosion, or woody plant intrusion shall be noted. The grates on the standpipe inlet and retaining wall drains shall be inspected for blockages. Details for the standpipe inlet are to be found on Drawing C108 of the design drawings. (Appendix C) Details for the retaining wall drains can be found on Drawing C112, Section AD-AD. (Appendix C) The runoff controls shall be inspected after significant rainfall events (1½-inch rain in 24 hours), in addition to the regularly scheduled inspection dates. Minor repairs shall be performed as soon as practical. For significant problems, a proposal for addressing the problems must be submitted to NJDEP as soon as practical.

3.2.5 Inspection of the Soil Cap

A minimum two-foot thick multi-layered cap was constructed over the asbestos mound. On the slope of the asbestos mound the cap consists of a 4-inch layer of ¾ inch clean stone subgrade overlain by a 10 oz geotextile fabric layer, a geogrid layer, a 10-inch layer of crushed stone, a 10 inch layer of structural fill and a 6 inch vegetated soil layer. On the flat area of the asbestos mound, the cap consists of a 4-inch layer of ¾ inch clean stone for the subgrade overlain by a 10 oz geotextile fabric layer, 20 inches of compacted, controlled fill and a 6 inch vegetative soil layer. The soil cover shall be inspected for the following items:

- Location and condition of any areas of the cap have been eroded (e.g. slope, toe).

- Rutting caused by mowing activities.
- Location of any subsidence cracks.
- Location and condition of areas where significant (greater than 2 inches) ponding has occurred.
- Condition of the vegetative cover, including average heights, and location of any unvegetated areas.
- Presence of large weeds or woody plants whose roots may penetrate the cover material.
- Evidence of trespassing or unauthorized types of use of the capped area.
- Location of any burrowing animal activity within the capped area or any immediately adjacent areas of the property.
- Wildlife trails.
- Condition of any corrective actions taken in response to previous inspection reports.

The results of the inspection along with any recommendations and schedule for corrective actions, will be summarized in a report that will be submitted to NJDEP and USEPA by the contractor within 30 days after the inspection and/or receipt by the contractor of the sampling event's laboratory analysis. An example of an inspection report has been provided as Appendix D. If the inspections reveal any deficiencies including, but not limited to, those listed above, corrective actions shall be taken to correct said deficiencies.

3.2.6 Inspection of Monitoring Wells

The seven monitoring wells on-site shall be inspected for items such as damaged casings, broken/missing caps or locks, damaged bollards, and cracked or broken concrete aprons.

If any monitoring well is damaged or otherwise rendered inadequate for their intended use, said well shall be replaced or repaired within 30 days of the date of the inspection or as otherwise directed by the NJDEP. The replacement well shall be developed within 5 days after it has been installed. The replacement well will not be sampled less than two weeks after installation and development in accordance with NJDEP's "Field Sampling Procedures Manual" dated May 1992 (page 171). A replacement well must meet the construction requirements

established by NJDEP. A valid New Jersey well permit is required prior to the installation of the replacement well.

Comments and corrective actions will be recorded in a permanent log, indicating date of inspection, inspector's name, and the conditions observed. During the inspection, locks shall be oiled sufficiently to prevent weathering and ensure smooth mechanism movement, as needed. Monitoring wells shall be inspected concurrently with the groundwater sampling events.

3.3 Environmental Monitoring

Included with this OMP are the Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP). All these documents shall be available at the site during inspection and sampling activities. Surface water, groundwater, and sediment monitoring shall be performed on a biannual basis for the second year and subsequent sampling frequency will be based on the initial year sampling results and this OMP will be revised accordingly. Table 3-1 of this OMP will be revised to indicate the sampling frequency as appropriate.

3.3.1 General

Environmental monitoring includes the collection and analysis of surface water, groundwater and sediment samples from the site and Passaic River. If the results for the parameters being analyzed in the surface water, groundwater, and sediment samples exceed background levels or Federal Maximum Contaminant Levels (MCLs) Guidelines, the affected medium (media) will be immediately resampled and reanalyzed for confirmation. The analytical results and confirmation resampling analytical results will be compared to New Jersey state and federal ambient water quality criteria, MCL's, and sediment quality guidelines. The results will also be compared to previous sampling results in order to document any trends.

Care should be taken during sampling progression so as to not disturb sediments in the river prior to sampling the river water. Samples must also be taken starting at the most downstream location and moving upstream.

Remedial Investigation (RI) activities were previously conducted at the site by McLaren Hart Corporation in order to evaluate soil, groundwater, surface water, and air media at the site. The RI activities were conducted from August 1986 through November 1987. A summary of the analytical results is presented in Tables 1-1, 1-2, and 1-3 of the FSP. Asbestos was the primary

contaminant detected at the site. Asbestos was found in the form of broken asbestos tile, siding and fibers. The quantity of waste on-site is estimated to be 90,000 cubic yards.

In addition to the RI activities conducted by McLaren Hart, CDM Federal Corporation collected groundwater, surface water and sediment samples during January 1998. Groundwater samples were collected from seven on site monitoring wells and surface water and sediment samples were collected from five locations along the Passaic River. The parameters analyzed included TCL Volatile Organic Compounds, Semi-Volatile Organic Compounds, Pesticides/PCBs, Total Metals and Cyanide, TAL Dissolved Metals and Asbestos. Results of the groundwater sampling indicated no levels of VOCs, SVOCs, and Pesticides/PCBs above the Contract Required Quantitation Limit (CRQL) and only trace or naturally occurring levels of metals and cyanide. Asbestos structures classified as chrysotile and amosite were found in MW-903, 904, and 906. Results of the surface water sampling indicated elevated levels of lead at MSW-4 and MSW-5.

Sediment sample results indicated no VOCs, Pesticides or PCBs above the CRQL. Various SVOCs and several inorganic compounds were detected above the CRQL. SVOC compounds detected included benzo(a)anthrane, benzo(a)pyrene, chrysene, fluoranthene, phenanthrene, and pyrene. Inorganic compounds included arsenic, barium, chromium, colbalt, copper, lead, nickel, vanadium, zinc and mercury.

Appendix E presents a summary of the January 1998 groundwater, surface water, and sediment sampling results.

The following discussion in this section provides a general overview of the environmental monitoring program. A detailed sampling and analysis plan (SAP) has been prepared for the monitoring activities at this site and has been provided as Appendix F of this OMP. This SAP shall be followed in the implementation of the environmental monitoring program. The O&M contractor is responsible for conducting the monitoring activities associated with the environmental monitoring plan and for reporting the results of the monitoring activities to the appropriate regulatory agencies.

The parameters to be analyzed were selected based on the results of the remedial investigation and the requirements of the USEPA and/or NJDEP for post-closure monitoring of the landfill. Past environmental sampling at the site included the collection and analysis of sediment,

groundwater, and surface water samples. This OMP is related to asbestos sampling in groundwater, surface water, and sediments.

The following parameters will be analyzed for all media, in accordance with the SAP provided as Appendix F:

Parameter	Method
Asbestos	100.2 TEM-Asbestos

All samples will be analyzed by a USEPA approved NJDEP certified laboratory. A general overview of the environmental monitoring program is presented below.

3.3.1.1 Surface Water Monitoring

Surface water monitoring consists of obtaining surface water quality samples from the upstream and downstream locations shown on Figure 1-2 of the FSP. Samples obtained from location MSW-5 are upstream of the site and are representative of background conditions. Samples obtained from locations MSW-4 and MSW-3 are downstream of the site and represent site conditions after water has passed by the landfill. The purpose of these samples is to provide an indication of any impact the landfill may be having on the surface waters of the Passaic River. Actual timing of the sampling events shall be based on surface water level monitoring data to coincide with conditions that minimize dilution (i.e., during base or low flow conditions) in order to provide representative samples. After completion of the initial biannual sampling events, the contractor may request approval from NJDEP and USEPA to modify the frequency and/or analytical testing requirements based on the results from those previously collected rounds.

A brief discussion of the methodologies and procedures for the collection and analysis of surface water quality samples is provided below.

Surface Water Sampling Field Protocol. The field protocol for surface water sampling is consistent with direct filling of sample jars following measurement of field parameters (e.g., dissolved oxygen, depth of water, temperature, and pH,) and labeling of the containers at specified sample stations. Depth of water will be determined as measured by the staff gauge at Long Hill Road. Preservatives will be specified by the laboratory method selected.

Once the samples have been obtained, they will be sent to an NJDEP-certified laboratory for analysis.

Surface Water Sampling Laboratory Protocol. The laboratory protocol for surface water samples includes analytical, QA/QC, and data validation procedures. Methods comply with the State of New Jersey and Federal requirements, while being consistent with the baseline methods used during the Phase II RI to the extent possible. The protocol will be updated with any applicable changes in State and Federal regulations.

3.3.1.2 Groundwater Monitoring

The purpose of the groundwater monitoring activities is to continually evaluate the performance of the remedy and to assess groundwater quality at the site. The groundwater-monitoring program consists of obtaining samples from the seven (7) groundwater monitoring wells at the locations indicated on Figure 1-1 of the FSP.

Samples will be collected from the seven (7) groundwater wells on-site; timing of the sampling events will coincide with surface water sampling as described above. After the initial year of biannual sampling, the contractor may request approval from the appropriate regulatory agencies to modify the frequency and/or analytical testing requirements based on the results from those previously collected rounds.

A brief discussion of the methodologies procedures for the collection and analysis of groundwater quality samples is provided below and both the State of New Jersey and Federal standard operating procedures for monitoring well sampling and sampling equipment decontamination are provided in the FSP.

Groundwater Sampling Field Protocol. The field protocol for groundwater sampling consists of obtaining static water level measurements, and utilizing EPA Region 2 low flow purging and sampling procedures for collection of groundwater samples. Groundwater Sampling Procedure Low Stress (Low Flow) Purging and Sampling is found in Sampling and Analysis Plan, Part I (Field Sampling Plan) Appendix C of this OMP. Sampling will take place only after in-situ parameters (temperature, pH, and specific conductivity) has reached equilibrium. Sample containers will be labeled according to the specified sample stations. Preservatives will be specified by the laboratory method selected.

Once the samples have been obtained, they will be sent to an NJDEP-certified laboratory for analysis.

Groundwater Sampling Laboratory Protocol. The laboratory protocol for groundwater samples includes the analytical, QA/QC, and data validation procedures followed during the Remedial Investigation (RI). Methods also comply with State of New Jersey and Federal requirements while being as consistent as possible with the baseline methods used during the RI. This protocol will be updated with any applicable change in State and Federal regulations.

3.3.1.3 Sediment Monitoring

The sediment monitoring consists of obtaining sediment quality samples from the same locations and after surface water collection at each point. Sampling locations are presented on Figure 1-2 of the SAP (identified as Volume 2). After the initial round of biannual sampling, the contractor may request approval from NJDEP and USEPA to modify the frequency and/or analytical testing requirements based on the results from previously collected rounds.

A brief discussion of the methodologies and procedures for the collection and analysis of sediment quality samples is provided below.

Sediment Sampling Field Protocol. The protocol for sediment sampling consists of direct filling of sample jars with a scoop or trowel with sufficient sample volume and labeling of the containers at each sampling station. Care should be taken that sediment sampling follows surface water sampling in order to minimize disturbance of sediments into the water sampling. Sediment sampling shall be taken from a depth of 0 to 6 inches.

Once the samples have been obtained, they will be sent to an NJDEP-certified laboratory for analysis.

Sediment Sampling Laboratory Protocol. The laboratory protocol for sediment samples includes the analytical, QA/QC and data validation procedures followed during the RI. Methods comply with State of New Jersey and Federal requirements while being as consistent as possible with the baseline methods used during the RI. This protocol will be updated with any applicable change in State and Federal regulations.

3.4 Site Maintenance

The following sections discuss the site maintenance activities that will be performed if required.

3.4.1 Materials of Construction

This section lists the permanent materials utilized in the construction of the remedial action and the subcontractor or supplier of the material.

Fence and Gates	All Fence Company Michael Yeatman	P.O. Box 115 Chatham, NJ 07928 (973) 538-2382
Retaining Wall Steel	Creamer Environmental, Inc. Thomas J. Cawley Jr.	101 East Broadway Hackensack, NJ 07601 (201) 488-9800
Retaining Wall Steel Coatings	Carboline	350 Hanley Industrial Court St. Louis, MO 63144 (314) 644-1000
Retaining Wall Concrete Panels	Concrete Safety Systems Clarence Mauser	9190 Old Rt. 22 Bethel, PA 19507 (717) 933-4107
Corrugated Metal Piping	Kennedy Culvert & Supply Frank A. Posella	395 Roycefield Road Hillsborough, NJ 08876 (908) 722-7000
Asphalt Paving	Halecon, Inc. Fred Haelig	136 Billian Street Bridgewater, NJ 08807 (732) 469-8136

3.4.2 Maintenance of the Facility Control

The facility access installed as part of the remedial action includes a double swing locking gate, a 6-foot high chain link fence on the north, east and southern perimeter, and a gravel access road and path that encircles the site. The O&M contractor will maintain the access road and path such that routine inspection and monitoring activities can be accomplished. Maintenance includes filling any significant ruts or holes, and the removal of any debris. The chain link fence and gate shall be maintained in order to prohibit any unauthorized site access. Maintenance includes the repair of fence sections damaged by falling trees or flood borne debris, replacement of any missing signs, and the lubrication of the gate locks, as necessary.

3.4.3 Maintenance of the Retaining Wall

The retaining wall along the Passaic River serves as slope protection and stabilization of the ACM mound. Maintenance will include the touch up of any chips/gouges on the steel H-piles, removal of any markings on the H-piles or concrete panels and the monitoring of any significant (greater than 1½ inches deep) damage to the concrete panels. Materials utilized to repair components of the wall shall be the same as, or compatible with those used for the original construction of the component. Markings shall be removed by any combination of pressure washing or solvent/detergent application, such that the original finish of the marked component is not compromised. Coating on the steel column supports of the retaining wall as required for touch ups or repainting are as follows:

Primer	Carboline Rustbond Penetrating Sealer SG
Interior Coating	Carboline Bitumastic 300M
Exterior Intermediate Coat	Carboline 893
Exterior Topcoat	Carboline 133 HB

Interior Coating refers to steel in contact with soils behind the retaining wall. Exterior Coating refers to exposed steel on face of retaining wall.

3.4.4 Maintenance of the Surface Water Runoff Controls

The surface water runoff controls consist of grass-lined, rip-rap and grouted rip-rap-lined swales, retaining wall drains, and a perforated standpipe inlet. Maintenance of these structures will include the removal of accumulated sediment and debris from the swales and drains as well as weed control in the area. As the vegetation on-site advances in its establishment of a self-sustaining cover, the sediment accumulations will decrease, thereby allowing a decrease in sediment removal operations as time progresses. Those structures that will convey off-site run-on will continue to have sediment accumulations removed as necessary. Those structures with grates shall be kept free of obstructions and allow free passage of any stormwater runoff.

3.4.5 Maintenance of the Soil Cover Cap

Final cover maintenance includes maintaining the integrity and effectiveness of the final cover components including making repairs to the cover as necessary to correct the effects of settlement, subsidence and erosion. The drainage controls on the landfill and the vegetation cover, once established, will mitigate excessive erosion. In addition, due to the age and physical characteristics of the waste encountered in the landfill and compaction achieved during cap component installation, minimum settlement is expected. A survey of the final grades of the

asbestos mound and slopes shall be performed every 5 years to check for subsidence. Results should be compared to final survey results of the as-built conditions. If any eroded areas, unvegetated areas, or areas of localizing ponding are found, corrective actions will be taken, as outlined below.

3.4.5.1 Corrective Actions – Eroded Areas

In areas where there is erosion over 2 inches in depth, the contractor shall, at a minimum, remove all loose soils, place compacted soils to replace those lost, and revegetate the areas in areas where erosion occurs over a large area (greater than 3 feet in any direction), the appropriate soils be added over the eroded area to meet as-built conditions. If the erosion problem recurs in a particular area or if the inspector believes that an alternative solution is required, the inspector shall incorporate appropriate recommended construction details into the inspection report to be submitted to NJDEP and USEPA. Materials used to replace components of the cap shall be the same as, or compatible with, those used for installation of the original cap. Significant corrective actions, if necessary will require that the contractor prepare new drawings and may require revision of the OMP.

3.4.5.2 Corrective Actions – Localized Settlement

In areas where localized settlement has caused ponding greater than 6 inches to occur, the contractor shall clear vegetation, place and compact clean fill within the topsoil layer to the original grades with hand tools or a low-grade pressure backhoe with smooth bucket and then revegetate the settled area.

3.4.5.3 Corrective Actions – Revegetation

Areas that lack vegetation will be fertilized and reseeded or replanted when feasible. This reseeded or replanting will occur during an appropriate growing season. If it is not the appropriate growing season, the contractor shall install erosion control matting over the unvegetated areas if required until the area can be seeded. Also, Silt fences or hay bales shall be installed above the sparsely vegetated area to help control erosion until such time as vegetation can be established.

3.4.6 Maintenance of Landfill Grass Cover

Vegetation will be maintained in an effort to prevent run-on and run-off from eroding or otherwise damaging the final cover. Vegetative maintenance will include the application of seed, lime, fertilizer, and mulch on areas in which self-sustaining vegetative cover has not been fully

established. The asbestos mound cap contains two distinct grass cover areas of application. The sloped areas of the cap on the north, west and south limits within the access roads and above the retaining wall are planted with a mixture of grass and crown vetch. These slope areas are not to be mowed both from a safety standpoint that the slopes are too steep to be mowed and from a vegetative maintenance standpoint that the crown vetch grows without cutting to a sustained height. The remainder of the grassed areas of the site within and outside of the asbestos cap area are seeded with a mixture of grass seeds. All trees, shrubs, and other deep-rooted vegetation with a diameter at breast height (dbh) greater than 2 inches will have to be grubbed within the asbestos mound cap area.

Grassed areas will be mowed once each spring and fall annually to prevent the invasion of woody vegetation on the capped landfill, as well as for aesthetic purposes. Mowing will begin after the establishment of vegetative cover and will continue throughout the post-closure period. This annual mowing cycle will be more than adequate to control any woody vegetation on the landfill. When conditions allow low grade pressure tractors with mower attachments shall be used to mow the vegetation. In order to minimize damage to the surface of the cap during mowing operations, sharp turns with the mowing equipment should be avoided and mowing paths should be staggered to minimize the potential for rutting. Mowers shall mulch the vegetation, which shall be left in place.

Vegetative maintenance will be performed during optimum seeding dates as established within the latest edition New Jersey Department of Transportation Standard Specifications.

3.4.7 Maintenance of Monitoring Wells

The groundwater monitoring wells must be maintained in an operable condition to allow the collection of samples. Maintaining the groundwater monitoring systems entails inspection of each monitoring well for items such as damaged casings, damaged or disturbed caps and/or locks, and cracked or broken concrete aprons. If a well screen becomes clogged or excessive sediment collects in the casings, the monitoring well will be redeveloped. Comments and corrective actions will be recorded in a permanent log. During the inspection, well cap locks are to be lubricated to ensure ease of operation and prevent weathering, as necessary. The flush-mounted monitoring well (MW-906) casting shall be cleared of any soil/debris prior to reinstalling the cover. If the integrity of the well is compromised, well repair or replacement measures will be evaluated by the NJDEP. Photographs and documentation of all well repairs will be submitted with these well monitoring reports.

4.0 References

CDM Federal Programs Corporation, 1996, *Final Remedial Design Report – Asbestos Dump Site – OU-1*, Millington, NJ, February 12, 1996.

CDM Federal Programs Corporation, 1996, *Revised Sampling and Analysis Plan, Asbestos Dump Site – OU-1*, Millington, NJ, April 30, 1998.

CDM Federal Programs Corporation, Field Data Summary Report, 1998, *Asbestos Dump Site – OU-1*, Millington, NJ, August 1998.

U.S. Army Corps of Engineers (USACE), 1998, *Request for Proposal – Remedial Action – Asbestos Dump Site – OU-1*, Millington, Morris County, NJ, October 1996.

5.0 Limitations

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

Tables

Table 3-1
 Millington Asbestos Dump OU-1
 Long-Term Environmental Monitoring and Inspections

Media	Parameters	Frequency (1-30 years)	Field Duplicate	Field Blanks	Rinsate Blanks	Trip Blanks
Groundwater	Asbestos	Second Year – Biannually Years 3 to 30*- TBD	1	1	1	1
Surface Water	Asbestos	Second Year – Biannually Years 3 to 30*- TBD	1	1	1	0
Sediment	Asbestos	Second Year – Biannually Years 3 to 30*- TBD	1	1	1	0
Inspection Schedule**	Retaining Wall System, Facility Access Controls, Vegetative Cap, Surface Water Runoff Controls, Monitoring Wells, et al.	First Year – Monthly Years 2 to 30 – Biannually	NA	NA	NA	NA

* Based on the reported findings, the NJDEP and USEPA will make a determination regarding any modifications in sampling frequency and/or sampling parameters

** Additional inspections will be conducted after significant rainfall events (1 1/2" rainfall within 24 hours) and at the request of NJDEP.

Groundwater and surface water field blanks, rinsate blanks, and trip blanks will be analyzed for Asbestos
 TBD- To Be Determined

Figures

DRAWING NUMBER 780601-A1

APPROVED BY

CHECKED BY

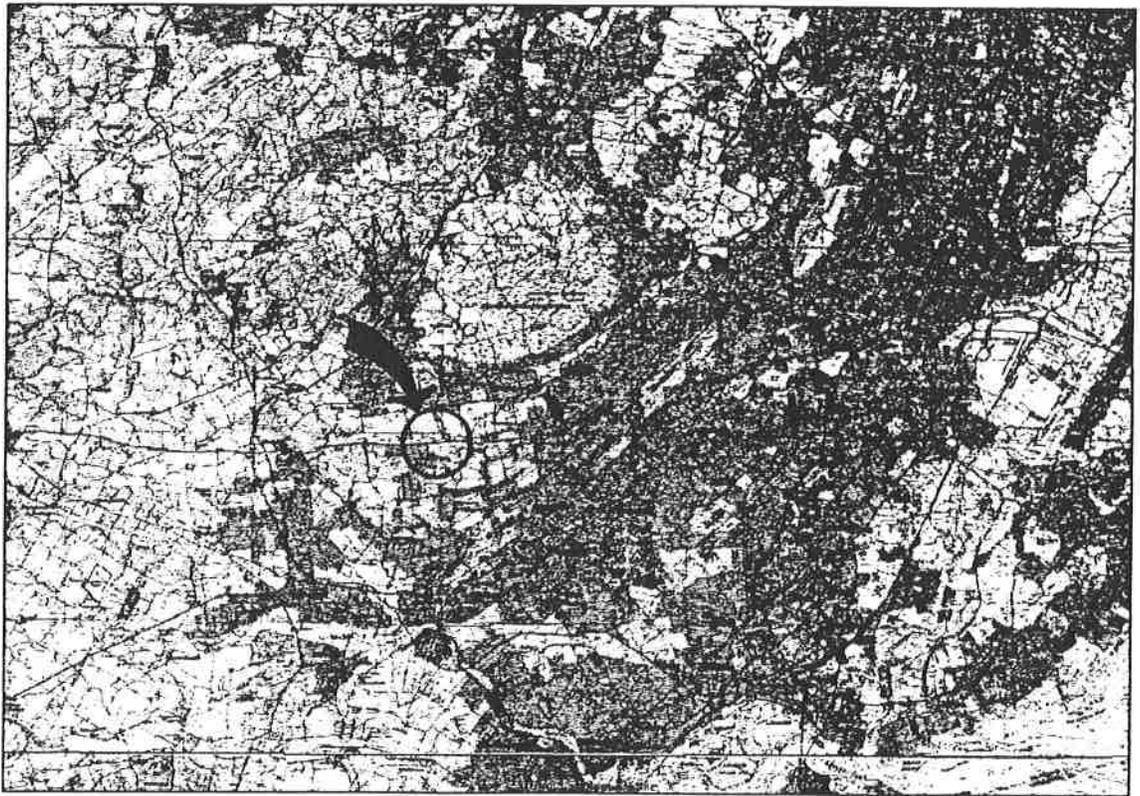
DRAWN BY 3/28/00

J. DANZA

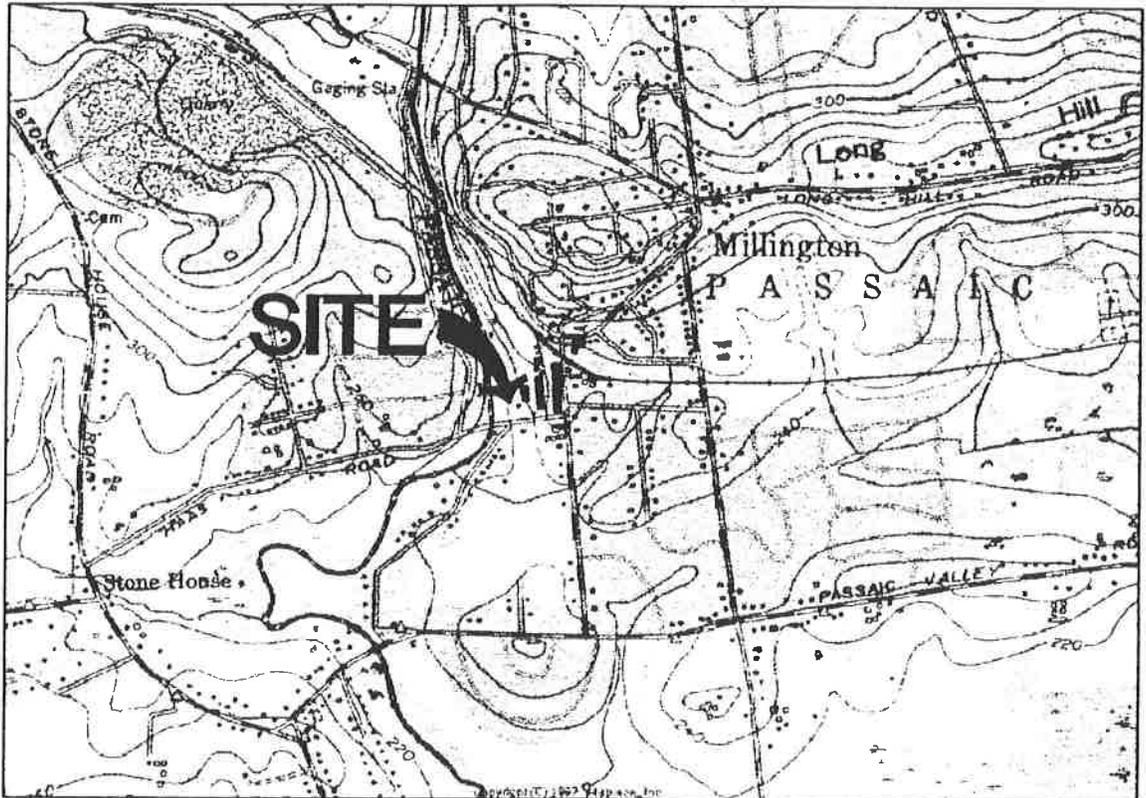
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NEW JERSEY



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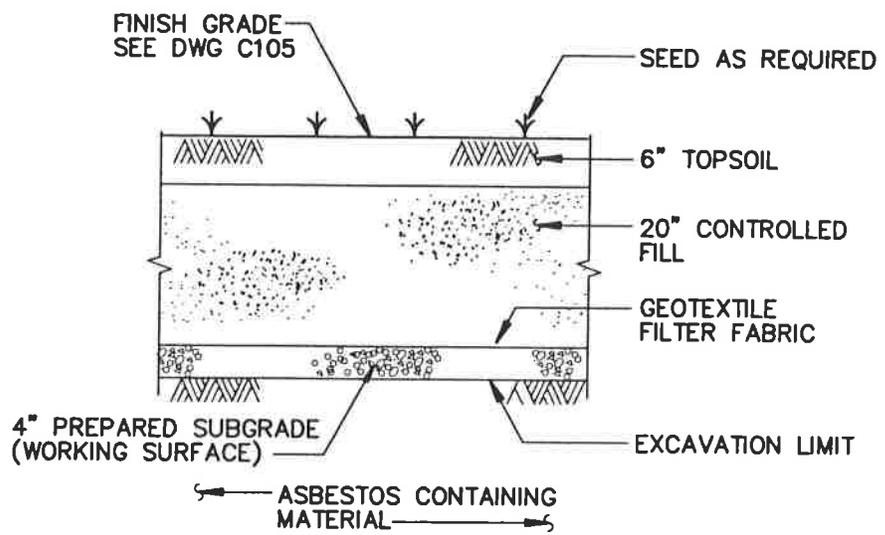
MAPTECH - TERRAIN NAVIGATOR
MILLINGTON AREA
LONG HILL TOWNSHIP, NEW JERSEY



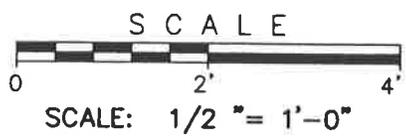
ASBESTOS DUMP LANDFILL OU-1
MILLINGTON, NEW JERSEY

FIGURE 2-1
SITE LOCATION MAP
ASBESTOS DUMP LANDFILL OU-1
MILLINGTON, NEW JERSEY

IMAGE X-REF ---
 OFFICE SOM ---
 DRAWING NUMBER 780601-A4



2'-2" SOIL COVER

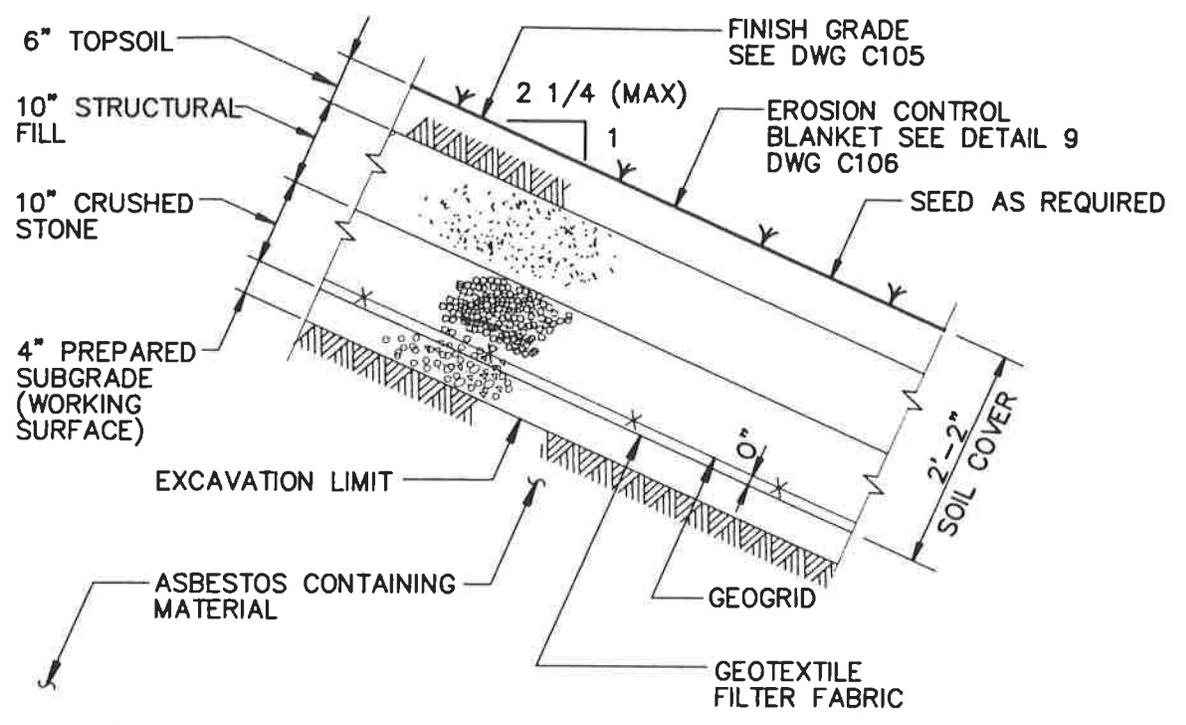


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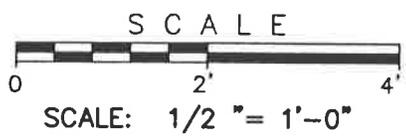
REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

<p>ITT CORPORATION</p>	NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION TRENTON, NEW JERSEY			
	FIGURE 2-2 FINAL SOIL COVER ASBESTOS DUMP SUPERFUND SITE MILLINGTON, NEW JERSEY			
DESIGNED BY	D.AMBROSE	3/31/00	CHECKED BY	
DRAWN BY	J.DANZA	3/31/00	APPROVED BY	
SCALE:	DRAWING NO.		SHEET NO.	
1/2" = 1'-0"	780601-A4			
REVISION NO.				

IMAGE X-REF ---
 OFFICE SOM
 DRAWING NUMBER 780601-A3



2'-2" SOIL COVER
SLOPED SURFACE

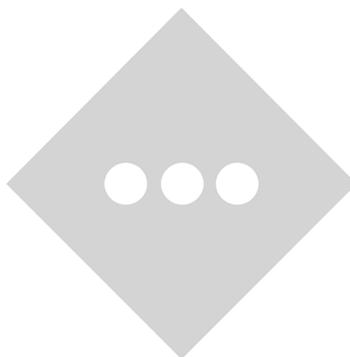


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REV	DATE	BY	CHK'D	APR'VD	DESCRIPTION/ISSUE

	NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION TRENTON, NEW JERSEY			
	FIGURE 2-3 FINAL SOIL COVER-SLOPED SURFACE ASBESTOS DUMP SUPERFUND SITE MILLINGTON, NEW JERSEY			
DESIGNED BY	D.AMBROSE	3/31/00	CHECKED BY	
DRAWN BY	J.DANZA	3/31/00	APPROVED BY	
SCALE	DRAWING NO.		SHEET NO.	
1/2"=1'-0"	780601-A3			
REVISION NO.				

APPENDIX E
MARCH 2019 PRELIMINARY ASSESSMENT /
SITE INVESTIGATION



PRELIMINARY ASSESSMENT / SITE INVESTIGATION REPORT

50 Division Avenue
Millington (Long Hill Township),
Morris County, New Jersey 07946
NJDEP SRP PI #: 024069

Submitted to:

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Senior Vice President - Residential
c/o Prism Millington, LLC
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Submitted by:

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973-560-1400

March 2019

Project # 208322



Prepared by Nicholas DiVincent
Environmental Scientist



Reviewed by Francis Rooney, LSRP
Project Manager

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2. Photograph Log
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5. NJDEP OPRA, County and Local Government Records
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Executive Summary

EWMA was retained by Prism Millington, LLC to conduct a Preliminary Assessment / Site Investigation (PA/SI) Report concerning the Property located at 50 Division Avenue, Millington, Township of Long Hill, New Jersey (the "Property").

The PA identified the following twenty-two (22) potential Areas of Concern (AOCs) at the Property:

AOC #	AOC Description
AOC-1	Asbestos Landfill (Possible Pockets of Asbestos Fill throughout Property)
AOC-2	Former Fuel Oil USTs
AOC-3	Former Garage and Tank Area between Buildings 3 and 4
AOC-4	Former Above Ground Storage Tanks between Buildings 3 and 4
AOC-5	Former Gas Pump and Suspected UST
AOC-6	Former Tanks in Area of Building 2
AOC-7	Former Oil Pit Area
AOC-8	Discharge Area of Former Sluiceway
AOC-9	Transformer House
AOC-10	Former Production Well
AOC-11	Former Septic System
AOC-12	Former Rail Line and Equipment Testing Area
AOC-13	Former Residential Structures/Dwellings
AOC-14	Steel Floor Plate
AOC-15	Drums
AOC-16	Floor Drains
AOC-17	Hazardous Material Storage Area
AOC-18	Compressor Vent Discharge
AOC-19	Former Elevator
AOC-20	Concrete
AOC-21	Historic Fill
AOC-22	Dumpsters

Nine of the aforementioned AOCs identified in the PA did not warrant further investigation. Thirteen AOCs (AOCs 1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 20 and 21) indicated potential contamination and thus warranted investigation. They have been tabulated as follows:

AOC #	AOC Description
AOC-1	Asbestos Landfill (Possible Pockets of Asbestos Fill throughout Property)
AOC-2	Former Fuel Oil USTs
AOC-3	Former Garage and Tank Area between Buildings 3 and 4
AOC-4	Former Above Ground Storage Tanks between Buildings 3 and 4
AOC-5	Former Gas Pump and Suspected UST
AOC-6	Former Tanks in Area of Building 2
AOC-7	Former Oil Pit Area
AOC-8	Discharge Area of Former Sluiceway
AOC-9	Transformer House
AOC-12	Former Rail Line and Equipment Testing Area
AOC-13	Former Residential Structures/Dwellings
AOC-20	Concrete
AOC-21	Historic Fill

The site investigation was conducted on upland areas of the site around the existing buildings and parking lots and focused on the 13 AOCs described above. It excluded the fenced and restricted asbestos landfill area addressed under Superfund. A site investigation summary, description of site background information, details of the investigation activities and findings, and recommendations are presented below. Based on the results of the site investigation, seven AOCs remain on-site that require further investigation.

This combined PA/SI Report has been prepared in accordance with the New Jersey Department of Environmental Protection (NJDEP) Technical Guidance documents and Technical Requirements for Site Remediation (TRSR). An Authorization to Submit a Remedial Phase Report through NJDEP Online, Case Inventory Document (CID) Worksheet, Cover/Certification Form, and a Receptor Evaluation Form are included as **Appendix 1**. The Site location is illustrated on **Figure 1**, and the identified AOCs are illustrated on **Figure 2**. Photographs from the site visit performed by EWMA on February 28, 2019 are included as **Appendix 2**.

1. General Information

The approximately 12 acre Property located at 50 Division Avenue is a delisted National Priorities List (NPL or Superfund) site due to a closed asbestos landfill on portions of the site. The Site has historically operated as an asbestos products manufacturer and a pesticide application equipment manufacturer and pesticide packaging distribution facility and currently is a multi-tenant industrial/business park. Tifa Realty, Inc. (TIFA), the current Property owner, submitted a Preliminary Assessment for the former Tifa Limited leasehold (Building 1, Suites 28, 29 and 40) in September 2014 and was issued an Unrestricted Use Response Action Outcome (RAO) on September 3, 2014. This RAO was later amended on January 16, 2015 and February 4, 2015

This report discusses the investigation of suspected areas of concern (AOCs) at the site identified in the preliminary assessment, and provides recommendations if further action is necessary in compliance with the Technical Requirements for Site Remediation (TRSR), N.J.A.C. 7:26E and applicable guidance documents.

1.2 Location and Legal Description

Item	Details
Current Property Owner	Tifa Realty Inc. % CBRE
Property Street Address	50 Division Avenue, Millington (Long Hill), NJ 07946 (Figure 1 and Figure 2)
Block and Lot	Block: 12301 / Lot:1 (Figure 3)
City	Long Hill
County	Morris
State	New Jersey
Acreage of Land	11.9 Acres
Building Square Footage	Approximately 146,783 square feet
Year Built	Buildings 1, 2 and 3 were constructed sometime in the 1920s and Building 4 was constructed sometime in the late 1950s early 1960s
Current Tenants	See Section 3.1
Property Zoning Information	The Property is zoned for industrial purposes with class 4B designation

1.2 Physical Conditions of Site and Surroundings

The Property is located at 50 Division Avenue, Millington, in the Township of Long Hill, New Jersey. According to the, Zoning Officer in the Township of Long Zoning Department, the Property is zoned “LI-2” which corresponds to “Light Industrial Use”.

The Property is located in a mixed-use suburban area that is characterized by light industrial businesses and single-family residences. Property improvements include buildings, asphalt-paved parking/drive areas, and grass-landscaped areas. Access to the eastern portion of the Property is from Division Avenue and access to the southern portion of the Property is from Stone House Road. Landscaped areas are located on the eastern portion of the Property between the building and Division Avenue. The western portion of the Property contains a 4.5 acre fenced in area which was land filled with asbestos containing materials. The landfill is capped and covered by soil and vegetation as an engineering control.

The *Property* contains four 1 and 2-story, concrete block and steel framed buildings surrounded by asphalt-paved parking areas and loading and unloading areas. The buildings are identified as Building 1, 2, 3, & 4 and are constructed with a slab-on-grade foundation and do not contain basements. The United Water Company provides potable water to the site. Wastewater discharged from the building is accommodated by the public treatment works. The topography in the area of the *Property* generally slopes gently toward the southwest and storm water runoff collected at the *Property* and surrounding area is discharged to catch basins connecting to the Township of Long Hill municipal storm water system. A portion of the storm water collected from the building’s roof drains discharge to a concrete underground piping system which discharge across the Property in an east to west direction (under Building 2) to the Passaic River. Jersey Central Power and Light (JCP&L) provides electricity to the Property and Public Service Electric and Gas (PSE&G) Company provides natural gas to the Property. According to Mr. Al Gallo of the Long Hill Township Department of Public Works Department the site is further serviced by public water and sewer. Photographs of the Property are included in **Appendix 2**.

The buildings are equipped with roof-mounted natural gas fired heating, ventilation and air conditioning (HVAC) units to provide heat and cool, dehumidified air to the building office areas. In addition, ceiling mounted natural gas fired heating units are in the warehouse portion of the buildings. These systems are powered by electricity and natural gas.

The remaining portions of the Property are covered with the associated paved parking areas, lawn areas, and landscaping. Vehicular access to the subject Property is gained via Division Avenue along the eastern side of the Property and Stone House Road along the southern side of the Property. The gross area of the subject buildings is approximately 190,000 square feet.

Currently, adjoining properties are generally used for commercial and residential purposes. The following adjoining Property uses were noted at the time of EWMA's site visit:

Adjoining Properties	Name	Address	Operations
North	Lot 1 Parking Lot	47 Old Mill Road, Warren, NJ 07059	Commercial
South	JP Certified Office	84 Division Ave, Millington, NJ 07946	Commercial
East	Long Hill Chamber of Commerce & Fromartharie Inc.	59 Division Ave, & 85 Division Ave, Millington, NJ 07946	Commercial
West	Redacted	1 Pond Hill Road & 11 Pond Hill Road, 21 Pond Hill Road, Basking Ridge, NJ 07920	Residential

2. Physical Setting

Item	Details
USGS Quadrangle Map Used	Bernardsville, NJ
Site Elevation (MSL)	Approximately 243 Feet
General Topography	Generally South
Site Geology	Towaco Formation
Soil Unit	Urban land-Penn complex, 0 to 8 percent slopes (USPENB) & Penn channery silt loam, 8 to 15 percent slopes (PeoC)
Principal Aquifer	Brunswick aquifer
Estimated Direction of Groundwater Flow	West-Southwest
Estimated Depth to Groundwater	Approximately 8 to 9 feet below grade surface (bgs)
Closest Water Bodies (Feet from Site and Direction)	The Passaic River is located along the western portion of the Property
Historic Fill Map	Based on information obtained from the NJDEP Geo-Web, the Property is partially mapped within a historic fill area

A United States Geological Survey (USGS) Site Location Map and a Site Plan are included as **Figures 1** and **2** respectively.

2.1 Geology and Soil

According to the Rutgers University Engineering Soil Survey of New Jersey for Morris County, the subject site is located within the Appalachian highlands and underlain by Precambrian gneissic bedrock. Bedrock geology in the vicinity of the subject site consists of the Glacial Till Formation with limestone, sandstone and shale bedrock. The survey shows that the site is underlain by Penn Series, which is moderately deep, gently sloping to steep, well-drained shaly silt. The Penn ranges in dark brown shaly silt loam to reddish brown very shaly silt. According to the survey, the depth to bedrock varies considerably and should be considered on a site by site basis. Permeability of this series is slow or moderate.

A soil boring investigation performed in September 2013 encountered subsurface characteristics somewhat consistent with the survey. The majority of the site outside the restricted landfill area is covered by asphalt pavement or buildings. This developed

area of the site is underlain by a layer of granular soil fill materials to depths ranging up to approximately five feet below ground surface (bgs). The fill included pieces of concrete and apparent pieces of discarded, suspect asbestos products (shingles, corrugated panels). The fill is underlain by reddish brown sandy silt and clay with little gravel extending to the top of bedrock which is reported to be red brown shale of the Towaco formation.

2.2 Hydrogeology

According to the engineering soil survey, old glacial deposits soils generally have deep to moderately deep, well drained to somewhat poorly drained nearly level to steep shaly silt loam soils. The survey also indicates that depths to water table are correlative with location. Soil boring activity in September 2013 encountered groundwater ranging from 8 to 9 feet bgs at the north of the Building 1- oil pits (AOC-7). Other borings and well points installed on-site did not encounter groundwater in the overburden. The groundwater at the oil pit area likely is within a localized perched water zone in the overburden. A thin groundwater-bearing zone at the base of the overburden/fill layers is reported in the landfilled area. Based on the topography of the site and the surrounding area, groundwater beneath the site is expected to flow in a west-southwesterly direction towards the Passaic River.

2.3 Topography

According to the United States Geological Survey (USGS), 7.5-minute Topographic Map of the Bernardsville, New Jersey quadrangle (2014), the site is located approximately 243 feet above Mean Sea Level (MSL). The map shows that the region slopes slightly from east to west, towards the Passaic River. The portion of the quadrangle depicting the Property is included as **Figure 1**. Review of the USGS 7.5 Minute Topographic Map did not reveal AOCs in connection with the Property.

2.4 Surface Water Bodies

The USGS topographic map and NJ-GeoWeb shows the Passaic River is located only the western Property boundary. According to the New Jersey Surface Water Quality Standards (SWQS), N.J.A.C. 7:9-4, the water of the Passaic River is classified as General Fresh Water (C2) which is not category 1, Non-Trout (FW2-NT), with the following designated uses:

1. Maintenance, migration and propagation of the natural and established biota;

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2. Primary contact recreation;
3. Industrial and agricultural water supply;
4. Public potable water supply after conventional filtration treatment (a series of processes including filtration, flocculation, coagulation, and sedimentation, resulting in substantial particulate removal but no consistent removal of chemical constituents) and disinfection; and
5. Any other reasonable uses.

2.5 National Wetlands Inventory Map

A review of US Fish and Wildlife Service National Wetlands Inventory Maps indicated wetland areas are not present on the Property. However, a 2.56 acre freshwater forested/shrub wetland area is present to the southwest of the Property.

3. Current Operations & Processes

3.1 Current Operation Summary

The Property currently is utilized as a multi-tenant, corporate/industrial park with multiple leased tenant spaces. A tenant list provided by the Property owner indicating tenant location and activity is provided below:

Building No.	Square Footage	Tenant	Activity
1	89,324	Vacant	Not Applicable
4	15,668	Vacant	Not Applicable
1	4,271	Wintronics	Electrical Apparatus and Equipment Repairs
1	3,250	Zita Corporation	Music Instrument Rental / Repairs
1	1,600	Provident Service Associates	Ductwork Cleaning
2	1,575	Joe Cerami	Finishing Carpentry Contractor
1	900	Oveissi Sport	Sporting Store Warehouse
1	476	Garments For Less	Garment Distributor
1	905	Depalma Food Group, LLC	Food Distributor
1	1,689	Flaherty Machine & Manufacturing	Industrial Machinery & Equipment Merchant
1	253	Gator Lures, LLC	Sporting and Athletic Goods Manufacturing
1	1,557	Depalma Food Group, LLC	Food Distributor
1	1,088	James W. Loescher Contracting	Home Remodeling Contractor
1	1,232	Genni Research LLC	Computer Sales / Repairs
1	1,448	Flaherty Machine & Manufacturing	Industrial Machinery & Equipment Merchant
1	4,952	Zita Corporation	Music Instrument Rental / Repairs
1	3,470	Dubgifco, LLC	Other Misc. Store Retailers

1	123	Management Office	Management Office
1	110	Blue Water, Inc.	Beverage Product Warehouse
1	324	Blue Water, Inc.	Beverage Product Warehouse
1	552	Blue Water, Inc.	Beverage Product Warehouse
3	2,112	RW Delights	Baker of Soufflés
3	1,500	C.P Electric	Electrician
3	2,080	Noah's Bagels, Inc.	Bakery
3	1,390	Door Boy	Door Repairs / Installation
1	1,663	Blue Water, Inc.	Beverage Product Warehouse
1	1,953	Blue Water, Inc.	Beverage Product Warehouse
3	800	Premier Coating of NJ	Paint Contracting Warehouse
3	300	Alliance Printing and Promo	Sales Office for Promotional Printing Services
3	124	Thos Giannini Inc.	Finishing Carpentry Contractor
2	1,075	Competitive Glass & Mirror	Replace/Repair/Install Glass
2	925	Ken Prince Plumbing & Heating	Plumbing and heating repairs
Parking Lot	Not Applicable	Britez Landscaping	Landscape Contractor
Parking Lot	Not Applicable	Decorative Design Landscaping	Landscape Design Contractor
Parking Lot	Not Applicable	Long Hill Auto Service	Automotive Maintenance/Repair

Note the tenant list and information was provided by the site contact.

Based upon the observations made at the time of the site visit, some occupants of the *Property* likely are subject to the NJDEP Industrial Site Recovery Act (ISRA), N.J.S.A. 13:1K-6 et seq. and N.J.A.C. 7:26B should an ISRA applicable event occur.

3.2 Hazardous Substance/Waste Inventory

Hazardous substances and/or wastes can include items such as petroleum based oils, lubricants, or cleaning products. Containers of consumer products containing small quantities of hazardous constituents used for general housekeeping practices by the current tenants were noted by EWMA within the Property building. Several tenants stored various materials such as paints, cleaners, lubricants, and adhesives within the



individual tenant spaces. These materials were stored in their original containers and in their original packaging in 1–gallon containers, plastic tubes and assorted containers.

EWMA noted a steel 55-gallon drum in the western portion of the parking lot, near the asbestos landfill. The drum was not labeled and the contents were not known. Evidence of spill or release from the drum was not observed, as no staining was present on the asphalt.

EWMA observed a former laboratory in a second story portion of Building 1. The laboratory is abandoned and has been out of use for some time. EWMA observed 5-gallon containers of hazardous materials including styrene monomer, Ottopol K-21, dyes, and butyl acetate. In addition, EWMA observed bags of vermiculite and pieces of shingle siding material that appeared to be left over from National Gypsum Company asbestos manufacturing operations. The containers of liquids appeared to be in poor condition with corrosion evident. EWMA recommends properly disposing of these materials in accordance with Federal, State, and local regulations.

3.3 Wastewater Discharges & Process Waste Streams

Wastewater generated at the Property is limited to domestic sewage from bathrooms in the building. No process wastewater currently is generated at the facility. Wastewater discharged from the building is currently accommodated by the public treatment works of the Long Hill Township Municipal Utilities Authority. Based on observations, EWMA does not consider wastewater to be an AOC.

A review of a 1953 Survey Map of the former National Gypsum Company facility depicts a ‘sluiceway’ discharge channel beginning at the northern side of Building 1 and discharging to the west and in the direction of the Passaic River. The sluiceway is depicted in the area now covered by Building 2. EWMA noted a manhole inside Building 2 and in the adjacent parking lot to the west. It appears that the sluiceway noted in the 1953 map corresponds to this sewer drain.

TIFA obtained a permit through the Long Hill Township Building Department for the bypass of a septic tank and a building connection to the sanitary sewer system in April 1986. Based on this information, there is a potential for a septic system to be associated with the Property.

At present, wastewater generated at the Property is limited to domestic sewage from bathrooms in the building. No process wastewater currently is generated at the facility.

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Wastewater discharged from the building is currently accommodated by the public treatment works of the Long Hill Township Municipal Utilities Authority.

3.4 Environmental Permits

EWMA obtained the following information online which relates to federal, state and local environmental permits at the Property. Lists of the permits with the type and identification number are provided in Section 5.3 below.

3.5 Enforcement Actions

No enforcement actions for violations of environmental law or regulations were identified during the records review for the Property.

4. History of Ownership & Operations

Several sources were reviewed to confirm the use of the Property from 1932 or before the Property was developed and naturally vegetated. These sources include review of city directories and historic aerial photographs. The ownership and operations history is provided below.

Name of Owner/Operator	Type of Operations	Dates of Operation	
		Start	End
Asbestos Ltd.	Asbestos Fabrication and Sales Facility	01/01/1927	01/01/1946
Smith Asbestos Inc.	Asbestos Roofing and Siding Products Manufacturing	01/01/1946	01/01/1953
National Gypsum Co.	Cement Asbestos Siding and Roofing Manufacturing	01/01/1953	01/01/1976
Tifa Ltd.	Pesticide Application Equipment Manufacturing	01/01/1976	01/01/1990
Tifa Realty Inc.	Multiple Industrial/Commercial Tenants and Offices	01/01/1976	05/05/1998
Tifa Realty Inc. % CBRE	Multiple Industrial/Commercial Tenants and Offices	05/05/1998	Present

Data reviewed identified the Property as commercially developed as early as the 1920's. The Property was developed in 1927 when Asbestos, Ltd. began an asbestos fabricating plant. Asbestos Ltd. operated an asbestos fiberization and sales facility on-site until 1946. Smith Asbestos, Inc. acquired the Property from Asbestos Ltd. in 1946. From 1946 through 1953, Smith Asbestos manufactured asbestos roofing and siding products. Smith maintained an asbestos settling pond from which sediment was removed and disposed on Property. The asbestos plant and Property was purchased by National Gypsum Company (NGC) in 1953 and used for manufacturing cement asbestos siding and roofing until the plant closed in 1975.

The Property was later sold to Tifa Realty, Inc. in 1976 and the affiliate that operated a portion of the Property as a pesticide application equipment manufacturer and pesticide packaging distribution facility was Tifa, Ltd. Following the cessation of pesticide

manufacturing and distribution operations Tifa Realty, Inc. divided the building spaces into several individual tenant spaces and leased the spaces to various tenants. Twenty-four (24) tenants currently occupy the buildings. Tifa Realty, Inc. is the current owner of the Property.

4.1 Sanborn™ Fire Insurance Map Review

EWMA retained EDR to perform a search of available Sanborn™ Fire Insurance Maps for the Property. EDR indicated that Sanborn map coverage was not available for the Property and vicinity. EDR's Sanborn™ Map No Coverage Certification is provided in **Appendix 3**.

4.2 Aerial Photograph Review

EWMA reviewed aerial photographs provided by NETROnline, A Division of Nationwide Environmental Title Search, LLC at the internet site www.historicaerials.com, which depicts the Property in the years 1931, 1956, 1957, 1963, 1970, 1979, 1987, 1991, 1995, 2002, 2006, 2007, 2008, 2010, 2012, 2013 and 2015. A summary of the relevant features is provided below.

1931: The quality of the aerial photograph is poor; however, it appears that the Property is being developed for industrial purposes. The entire portion of the Property is cleared of woodlands and is undergoing development. The western portion of the Property, directly adjacent to the onsite buildings does not appear to be disturbed. The current railway system can be seen to the north of the Property and the Passaic River adjacent to the West. Division Avenue is shown to the east. The entire area surrounding the site during this time was mainly agricultural with a small quarry operation northwest of the Property. Additional parcels directly to the east and northeast are interpreted as being generally commercial with a few residences located to the northeast of the Property.

1956 & 1957: The Property has undergone several stages of development. Industrial structures are shown constructed on a large portion of the Property along Division Avenue. The parcel of undeveloped land west and directly adjacent has been removed of all trees and now appears to be an open field with automobile tracks. The properties directly to the north, east, and south are comprised mostly of commercial and some residential uses. The land surrounding the site area is mostly agricultural with some re-vegetation apparent.

1963 and 1970: The properties directly adjacent to the north, east, and south appear similar to the previous aerial photographs and are mainly commercial. There are two new larger structures present on the Property in these photographs, in the same vicinity

as the previous structures with a new paved parking area directly north of the structures onsite. Several apparent above ground storage tanks (ASTs) are located southwest of the onsite structure in the general vicinity of AOC-4. Some of the agricultural land surrounding the Property to the north, east, south, and west has been residentially developed.

1979: The Property appears similar to the previous aerial photographs; with the exception of the apparent ASTs located southwest of the onsite structure had been removed. The surrounding parcels appear unchanged from the previous aerial photographs, aside for a small expansion of operations at the Property adjacent to the south, and several new residential properties to the east. Most of the agricultural land that has not been developed has returned back to wooded areas.

1987, 1991 & 1995: The Property appears similar to the previous aerial photographs. The surrounding parcels appear slightly more developed then the previous aerial photographs.

2002: The western portion of the Property has been cleared and appears to have been capped and is mounded with an access road traversing. Additionally, a retaining wall is now seen along the Passaic River. The surrounding parcels appear unchanged from the previous aerial photographs.

2006, 2007, 2008, 2010, 2012, 2013 & 2015: No major changes to the Property and adjoining properties are depicted.

Review of aerial photographs indicates that the Property was utilized for industrial/commercial purposes from as early as 1931. Historic industrial activities associated with manufacturing have the have the potential to create an Areas of Concern at the Property.

4.3 Historic USGS 7.5 Minute Topographic Maps

4.3.1 Current Topographic Map

The USGS 7.5 Minute Topographic Maps (Bernardsville, NJ Quadrangles), indicates the Property to be approximately 243 feet above mean sea level (msl). The portion of the quadrangle depicting the Property is included on **Figure 1**.

4.3.2 Historic Topographic Maps

Historical USGS 7.5 Minute Topographic Maps were not obtained for review since other historical record sources documented herein provided the appropriate level of information regarding the Property and surrounding properties.

4.4 City Directory Abstract Review

EWMA ordered an EDR-City Directory Abstract, which is a compilation of available city directories that list the Property. The City Directory Abstract searched available files from 1972 to 2014. A copy of the EDR City Directory is attached as **Appendix 4**. The information regarding the Property is summarized below:

Entity	Address	From	To
National Gypsum Co. Inc.	50 Division Avenue	1972	1975
Gold Bond Building Products	50 Division Avenue	1975	1975
Blue Spruce Co.	50 Division Avenue	1979	1979
Garden State Air Freight	50 Division Avenue	1979	1979
Tifa Ltd.	50 Division Avenue	1979	2010
Esco Precision Inc.	50 Division Avenue	1982	1987
Gellner & Co. Inc.	50 Division Avenue	1982	2014
Geoscience Services	50 Division Avenue	1982	1982
Iden Industries	50 Division Avenue	1982	1987
McGahren Associates	50 Division Avenue	1982	1982
Mulab Inc.	50 Division Avenue	1982	1992
Sphinx Electroplating Corp.	50 Division Avenue	1982	1995
Texpar Trading Corp.	50 Division Avenue	1982	2000
Accurate Welding	50 Division Avenue	1987	1995
Aero Industries	50 Division Avenue	1987	1987
Am Home News Service	50 Division Avenue	1987	1987
Chiaramonte Offset Printing & Composition	50 Division Avenue	1987	2000
Computer Support of North America	50 Division Avenue	1987	1987
Crystalline Optics	50 Division Avenue	1987	1992
Custom Woodwork	50 Division Avenue	1987	1987
Growth Catering	50 Division Avenue	1987	1987
KH Enterprises	50 Division Avenue	1987	1992
Lands End Woodworks	50 Division Avenue	1987	1987
Pro-Com Inc.	50 Division Avenue	1987	1987
The Office Commissary	50 Division Avenue	1987	1987

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Tony International Co. Inc.	50 Division Avenue	1987	1987
US International Travel	50 Division Avenue	1987	1987
Entity	Address	From	To
United Microcomputer Applications Inc.	50 Division Avenue	1987	1987
Watchung Mountain News Service	50 Division Avenue	1987	1987
Z & R Cutter Service Inc.	50 Division Avenue	1987	2014
A M Home News Service Inc.	50 Division Avenue	1992	1992
Beacon Light Diversified Fing	50 Division Avenue	1992	2005
Dash-Offset Inc.	50 Division Avenue	1992	1995
HFI	50 Division Avenue	1992	1992
Marlin Candle Co.	50 Division Avenue	1992	1992
Meade Kenneth	50 Division Avenue	1992	1995
Nelson G A	50 Division Avenue	1992	1992
Northeast Instruments Inc.	50 Division Avenue	1992	2010
Vikheine Machine Tool Corp. / Vikheine Precision	50 Division Avenue	1992	2010
Wintronics Inc.	50 Division Avenue	1992	2014
Anderson, D	50 Division Avenue	1995	1995
Franz Cabinet Co.	50 Division Avenue	1995	1995
Megiie Export Inc.	50 Division Avenue	1995	2010
Orbit Computer Systems Inc.	50 Division Avenue	1995	1995
Auto Drill LLC	50 Division Avenue	2000	2014
Bonduelle Inc.	50 Division Avenue	2000	2005
Burke Remodeling	50 Division Avenue	2000	2000
Dash Printing & Imaging Inc.	50 Division Avenue	2000	2000
Imperial Metals Products Inc.	50 Division Avenue	2000	2010
Lux Digital Inc.	50 Division Avenue	2000	2005
Oveissi International	50 Division Avenue	2000	2005
Providet Service Associate Inc.	50 Division Avenue	2000	2010
Raytek Corporation	50 Division Avenue	2000	2000
360 Viscom LLC	50 Division Avenue	2005	2005
A Travel A	50 Division Avenue	2005	2010
Alliance Prtg Promotional Services	50 Division Avenue	2005	2014
Dice Brothers Inc.	50 Division Avenue	2005	2005
Dre Imports Inc.	50 Division Avenue	2005	2010
Evans Hagen & Co.	50 Division Avenue	2005	2005
Grace Material Handling Co.	50 Division Avenue	2005	2014



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Imperial Metal Products Inc.	50 Division Avenue	2005	2010
Jersey Crusher Inc.	50 Division Avenue	2005	2010
Entity	Address	From	To
Lawn Doctor	50 Division Avenue	2005	2010
Prestige Custom Cabinetry LLC	50 Division Avenue	2005	2014
Proforma Alliance Prtg PR	50 Division Avenue	2005	2014
Provident Service Associate Inc.	50 Division Avenue	2005	2014
Swartz Marc	50 Division Avenue	2005	2014
Sweet Tooth Distributors Inc.	50 Division Avenue	2005	2010
Tifa International LLC	50 Division Avenue	2005	2010
TKG Imaging Inc.	50 Division Avenue	2005	2005
Wood Works	50 Division Avenue	2005	2010
Allbook Inc.	50 Division Avenue	2010	2014
Bio Repository Resources LLC	50 Division Avenue	2010	2010
Donduelle Inc.	50 Division Avenue	2010	2010
C M S Commodity Management Systems	50 Division Avenue	2010	2010
Commodity Management Corp	50 Division Avenue	2010	2010
Dolce Desserts	50 Division Avenue	2010	2010
Elefante Music	50 Division Avenue	2010	2010
Faba Mario	50 Division Avenue	2010	2010
Gator Lures	50 Division Avenue	2010	2014
Genni Research	50 Division Avenue	2010	2014
High Gear Cyclery Inc.	50 Division Avenue	2010	2010
Jencks Signs Corp	50 Division Avenue	2010	2014
Neac Inc.	50 Division Avenue	2010	2010
Of Glory and Grace Studios	50 Division Avenue	2010	2010
Oveissi International	50 Division Avenue	2010	2014
Planet Ary & Pastry	50 Division Avenue	2010	2010
Roman Plumbing Heating	50 Division Avenue	2010	2010
RW Delights Inc.	50 Division Avenue	2010	2014
Somerset Hills Doors and Architecture	50 Division Avenue	2010	2014
Summit Protective Tech Corp.	50 Division Avenue	2010	2010
Top Flight Gymnastics	50 Division Avenue	2010	2014
Wild Bills Soda	50 Division Avenue	2010	2010
C P Electrical Engineering & Controls	50 Division Avenue	2014	2014
Garments for Less Inc.	50 Division Avenue	2014	2014
Huster Brokerage Ltd.	50 Division Avenue	2014	2014



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Megan Gunn	50 Division Avenue	2014	2014
Take Flight Dance Center LLC	50 Division Avenue	2014	2014
Entity	Address	From	To
Tifa Realty Inc.	50 Division Avenue	2014	2014

Review of the city directories identified the Property has been used for commercial/industrial purposes from 1972 through 2014.

5. Government Records Search

The following sources were examined for information on the Property: 1) EDR Radius Report; 2) NJDEP On-line Data Miner Public Records Access Program (Data Miner); 3) NJDEP GeoWeb; 4) U.S. Environmental Protection Agency (EPA) Envirofacts; and 5) U.S. EPA Enforcement and Compliance History Online (ECHO). EWMA also submitted an Open Public Records Act (OPRA) request to NJDEP and a government records request to municipal offices for documents pertaining to the Property.

Entity	OPRA Request Sent	Reviewed Files	Individual Contacted
Township of Long Hill Records	2/19/2019	Discussed Below	City Clerk
Morris County Records	2/19/2019	Discussed Below	County Clerk
NJDEP Records	2/19/2019	Discussed Below	NJDEP Files and Databases
US Environmental Protection Agency Records	Online Search	Discussed Below	USEPA Envirofacts

5.1 Municipal, County and State Files

Township of Long Hill Records

A records request was sent to the Township of Long Hill Clerk on February 19, 2019 to obtain environmental information from the Building, Engineering, Health, and Fire Departments. EWMA requested environmental records including reports of spills, hazardous materials releases/responses, USTs, and hazardous materials storage at the Property. The Township of Long Hill Building Department provided an approved permit for the abandonment of two 30,000 gallon heating oil USTs at the Property. A copy of the records and the record request is included as **Appendix 5**.

Morris County Records

On February 19, 2019, EWMA submitted a records request to the Morris County Clerk's Office for information related to the Property. EWMA requested environmental records including reports of spills, hazardous materials releases/responses, USTs, and hazardous materials storage at the Property. The County indicated that they did not have any records for the Property. A copy of the record request and response are included as **Appendix 5**.

New Jersey Department of Environmental Protection (NJDEP) Environmental Records

On February 19, 2019, an OPRA request was submitted to the NJDEP for environmental information related to the Property. The NJDEP response indicated the department has responsive records for the Property. It should be noted that EWMA is still awaiting records from the NJDEP SRP. If information is received that alters our conclusions of this report, an update will be provided in an addendum. A copy of the record request and response is included as **Appendix 5**.

5.2 EDR Database Review

The Environmental Data Resources, Inc. (EDR) report was reviewed to obtain the latest information from federal, state and local agencies concerning sites with AOCs within the "approximate minimum search distance". The primary focus of this review is to evaluate whether there are off-site sources of environmental contamination that could impact the site. The EDR Radius Report is included as **Appendix 6**.

The results of the database search are arranged in the EDR report in order of proximal distance from the "Target Property" (i.e., from closest to farthest). Please note that EDR's "upgradient/downgradient" determinations are based on topographical elevations using the USGS 1 degree Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. The EDR report establishes general topographic grade towards the south in the Property vicinity. EDR further states that groundwater flow is variable from site to site and accurate assessment of groundwater flow can only be field determined for each site.

The EDR report identified 143 sites within the searched radii. The Property was identified as A1 through A31, B32 and B33 on the searched databases. A summary of the sites identified at the Property is as follows:

- Gellner & Co. Inc. (A1), Tifa International LLC (A24) and Sphinx Electro-Plating Corp. (A26) were identified on the RCRA NonGen / NLR database. The listed

hazardous waste summary included D001 -- an ignitable hazardous waste, D002 -- a corrosive hazardous waste, D003 -- a reactive hazardous waste that reacts violently with water. The summary also includes arsenic, lindane, chlordane, PCE, aluminum phosphide, arsenic oxide, dinoseb, chlordane – alpha and gamma isomers, cyclohexanone, cyclohexane. No violations were found

- Imperial Metal Products (A2), Gator Lures Corp (A3), Sphinx Electro-Plating Corp. (A5 and A17), Lux Digital Corp (A8), RW Delights Inc. (A14), Esco Precision Inc. (A16), AutoDrill Corp. (A18), Gellner & Co. Inc. (A21), Lawn Doctor of Bernardsville (A22), Wintronics Inc. (A25), Wild Bills Olde Fashion Soda Pop (A28) and Asbestos Dump (B32) were identified on the FINDS database. The FINDS Report is a computerized inventory of all facilities that are regulated or tracked by the EPA. These facilities are assigned an identification number that serves as a cross-reference for other databases in the EPA's program system.
- Tifa Ltd. (A4 and A6) was identified on the NJ Release and NJ SPILLS databases for an incident on December 5, 1980, involving black liquid. No other information regarding the spill was reported.
- Sphinx Electro-Plating Corp. (A5) and Gellner & Co. Inc.(A21) were also identified under the ECHO database.
- Tifa Ltd. (A7) and Asbestos Dump (A30) were identified on the Integrated Compliance Information System (ICIS) database. Tifa operates under SIC code 5169. The Property had enforcement action and a penalty. Additionally, the sites were listed under the FINDs and ECHO databases. Tifa (CI) Limited (A31) was also identified on the ICIS database.
- Tifa Limited (A9) was identified on the NJ HIST LUST, NJ UST, NJ Release, NJ ISRA and NJ NPDES databases. The HIST LUST is under case number 93-01-07-1125 due to a spill to land from the No. 6 oil UST. A No Further Action Letter (NFA) was issued on 11/28/1994. The NJ UST listing is for two (2) 30,000 gallon No. 6 heating oil USTs that are abandoned in place. The NJ Release listing is for two case numbers (93-11-23-1322-15 and 93-11-23-1415-23) that were called in due to strong chemical odors that were noted inside the facility due to pesticide manufacturing. The NJ ISRA listing was for the sale of the Property on October 6, 2009 and is listed under Case No. E20090221 and PI Number 024069 with multiple case names. Finally, the NJ NPDES listing is for Sphinx Electroplating Corp under permit number NJ0062341. They are listed under the discharger classification as minor and were located in Building 3. There was a renewal and they discharged to POTW (SIU).

- Tifa Intl LLC (A10) and Tifa Ltd (A19) are listed under the SSTS database Section 7 Tracking System (SSTS– USEPA pesticide production tracking system) for fish toxicants, Rotenone (broad-spectrum insecticide, and pesticide) manufacturing for export); Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) where they blend, formulate, or concentrate multiple insecticides, herbicides, and antifouling paints, some which have restricted use and marketed in the US, and exported out of the US.
- Pole Transformer/JC1499 (A11) is listed under the NJ SPILL database for a spill of approximately 60 gallons of Non-PCB transformer oil due to a motor vehicle accident with a utility pole on March 30, 1995. Case No. 95-03-30-1526-49 was assigned. Area of 50 Division Ave (A23) was also listed under the NJ SPILL database for a spill of transformer oil on March 30, 1995. Case No. 95-03-30-1500-12 was assigned.
- The Property is listed as EDR site A12 on the NJ Release database for a citizen complaint regarding improper disposal/storage at Top Flight Gymnastics on June 20, 2014. Case No. 14-06-23-1404-13 was assigned.
- The Property is again listed under EDR site A13 on the NJ Release database under case number 97-1-20-1424-00 due to strong odors coming from facility and contaminating the air.
- Northeast Instruments, Inc. is listed as EDR site A15 under the MLTS database under license number 29-28063-01.
- Tifa Limited is listed as EDR site A20 on the FTTS database, which tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA, and EPCRA, HIST FTTS. The Property is listed as a producer and has a violation.
- Annis Fuel Oil Services Inc. is listed as EDR site A27 under the NJ ENGINEERING CONTROLS and NJ MANIFEST databases. The DER filing data was on September 8, 2009 and is for asbestos to a depth of 100 feet. Their NJ Manifest EPA Id number is NJD980762199.
- Tifa International Corp. is listed as EDR site A29 under the NJEMS database. The NJEMS Sites are points representing sites regulated by NJDEP under one or more regulatory permitting or enforcement programs, or sites that are otherwise of some interest to a NJDEP program. No violations were reported in the database.

- The EDR report lists Asbestos Dump (B33) in the Delisted NPL, SEMS, US ENGINEERING CONTROLS, US INSTITUTIONAL CONTROL, ROD, PRP, ICIS and CONSENT databases. The Asbestos Dump was listed to the NPL in September 1993. The site was removed (“delisted”) from the NPL list on July 12, 2010.

The adjacent sites are not considered a AOC in connection with the Property due to one of the following reasons: a) they are topographically downgradient of the Property based upon their locations using the EDR Overview & Detail Maps and approximate topographic elevations using the 7.5 minute USGS Topographic Map for the Bernardsville, NJ Quadrangle; b) they are at too great a distance from the Property; c) there is no documentation that a discharge has occurred; or d) an indicated spill case has been closed by the appropriate regulatory agency.

Please note that according to the attached EDR Report, two “orphan” sites are located within the searched radii. These sites have a federal or state classification, but due to an address or zip code deficiency they were not plotted on the EDR maps. Based upon the orphan listings, it does not appear that any of the sites are located within close proximity to the Property. Refer to the EDR Report that is attached as **Appendix 6** for a listing of orphan sites.

5.3 NJDEP GeoWeb and Data Miner

The NJDEP On-line Data Miner Public Records Access Program (Data Miner) and the NJDEP GeoWeb were reviewed to document relevant information regarding former owners and occupants of the Property. The Geo-Web outputs and Data Miner information are included as **Appendix 7**. Based on the NJDEP GeoWeb & Data Miner records, the Property is identified on the following databases:

Preferred ID	Name	Active	Address	Type
Site Remediation				
024069	Tifa Limited	Y	50 Division Avenue, Long Hill Township, NJ 07946	SRP-PI
Right to Know				
00000047219	RW Delights Inc.	Y	50 Division Avenue, Long Hill Township, NJ 07946	Pollution Prevention/Right to Know



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00000037224	Autodrill Inc.	Y	50 Division Avenue, Long Hill Township, NJ 07946	Pollution Prevention/Right to Know
00000012073	David Reich	Y	50 Division Avenue, Long Hill Township, NJ 07946	Pollution Prevention/Right to Know
00000046926	Gator Lures LLC	Y	50 Division Avenue, Long Hill Township, NJ 07946	Pollution Prevention/Right to Know
64237300000	Gellner & Co. Inc.	Y	50 Division Avenue, Long Hill Township, NJ 07946	Pollution Prevention/Right to Know
90593500000	Imperial Metal Products	Y	50 Division Avenue, Long Hill Township, NJ 07946	Pollution Prevention/Right to Know
0000016785	Lux Digital LLC	N	50 Division Avenue, Long Hill Township, NJ 07946	Pollution Prevention/Right to Know
54323700000	Sphinx Electro-Plating Corp.	Y	50 Division Avenue, Long Hill Township, NJ 07946	Pollution Prevention/Right to Know
58493900000	Tifa Ltd. (NJ Corp) Tifa Square	Y	50 Division Avenue, Long Hill Township, NJ 07946	Pollution Prevention/Right to Know
0000046959	Wild Bill's Olde Fashion Soda Pop Co.	Y	50 Division Avenue, Long Hill Township, NJ 07946	Pollution Prevention/Right to Know



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63088600000	Wintronics Inc.	Y	50 Division Avenue, Long Hill Township, NJ 07946	Pollution Prevention/Right to Know
Water Quality				
46928	Sphinx Electro-Plating Corp.	Y	50 Division Avenue, Long Hill Township, NJ 07946	NJPDES
297268	Tifa International LLC	Y	50 Division Avenue, Long Hill Township, NJ 07946	NJPDES
Hazardous Waste				
NJX000241737	Esco Precision Inc.	N	50 Division Avenue, Long Hill Township, NJ 07946	Hazardous Waste Generator
NJN986627792	Gellner & Co. Inc.	N	50 Division Avenue, Long Hill Township, NJ 07946	Hazardous Waste Generator
NJX000264721	Gellner & Co. Inc.	N	50 Division Avenue, Long Hill Township, NJ 07946	Hazardous Waste Generator
NJD980762199	Tifa International LLC	N	50 Division Avenue, Long Hill Township, NJ 07946	Hazardous Waste Generator
NR2863509173	Tifa International LLC	Y	50 Division Avenue, Long Hill Township, NJ 07946	Hazardous Non- Regulated
Solid Waste				



601763	Millington Asbestos	Y	50 Division Avenue, Long Hill Township, NJ 07946	Solid Waste Facility
Pesticides				
95394A	Lawn Doctor of Bernardsville	Y	4 John Street, Morristown, NJ 07960	Pesticide Applicator Business
U000633	Tifa Limited	U	50 Division Avenue Long Hill Township, NJ 07946	Pesticide Dealer Business

5.4 U.S. EPA ECHO and Envirofacts

The USEPA Envirofacts database was examined on February 19, 2019. Envirofacts is a single reporting tool for obtaining USEPA information from multiple EPA databases. This tool allows firms to search EPA databases on a specific Property(s) without filing a Freedom of Information Act (FOIA) request. The Property located at 50 Division Avenue, Millington, NJ was identified on the USEPA Envirofacts databases under Gellner & Co. Inc., Tifa International Corp., and Sphinx Electro-Plating Corp. The USEPA Envirofacts online response for 50 Division Avenue, Millington, NJ 07946 is included as **Appendix 8**.

6. Regulatory History

6.1 Discharge History of Hazardous Substances and Wastes

During the years prior to National Gypsum's (NGC) acquisition, off-spec asbestos products and asbestos fibers and sediment from settling pond areas were dumped on the western portion of the Property creating a 4-5 acre asbestos landfill adjacent to the Passaic River. The materials included an estimated 90,000 cubic yards of primarily discarded product placed in upland area and a 330 by 75 foot 'asbestos mound' consisting primarily of asbestos fibers. The disposal areas were largely covered with soil. Beginning in 1977, public concerns were raised about the health and environmental impacts of the asbestos wastes. The NJDEP issued an Administrative Order to NGC regarding corrective action with regard to the asbestos materials.

The asbestos landfill portion of the Property was investigated and delineated by NGC and the USEPA. In 1983, the asbestos dump site was added as a "Superfund Site" to the National Priority List (NPL) established by the USEPA under the Superfund Program. The site was assigned EPA CERCLIS ID # NJD980654149. The asbestos landfill was investigated and delineated by the USEPA and was subsequently capped, covered with vegetated material secured with a fence, and a Deed Notice was put in place on August 29, 2008. The site was delisted in 2010 after consolidating waste, solidifying materials, capping areas, installing drainage control and slope preservation, and restricting future use of portions of site.

On January 7, 1993 the NJDEP Spill Hotline was notified of a spill to land from a No. 6 heating oil UST and case number 93-01-07-1125 was assigned. According to information obtained from the Long Hill Township Building Department file, two 30,000-gallon No. 6 heating oil USTs were abandoned in-place on February 1, 1993. The USTs were investigated and one UST had evidence of contamination present in soil samples collected from around it. A bedrock monitoring well (MW-1) was installed and groundwater samples were subsequently collected. Fuel oil constituents were not reported, however TCE was identified in the groundwater at 34 ug/l, exceeding the NJDEP Ground Water Quality Standards (GWQS). Nevertheless, NJDEP issued a No Further Action (NFA) for the UST closures on November 28, 1994 indicating an assumption that the TCE would be addressed as part of the NPL work. The USTs were filled with slurry and the monitoring well was sealed.

At present, wastewater generated at the Property is limited to domestic sewage from bathrooms in the building. No process wastewater currently is generated at the facility. Wastewater discharged from the building is currently accommodated by the public treatment works of the Long Hill Township Municipal Utilities Authority.

6.2 Previously Conducted/Ongoing Remediation that has not yet received NFA/RAO

The remediation work was conducted under Army Corps of Engineers oversight and Remedial Action approved by EPA in 2001 including 30-year Operations and Maintenance Plan. EPA delisted the site effective July 12, 2010. The Federal Register entry proposing delisting described NJDEP as responsible for operation and maintenance activities (inspect and maintain the 6-foot chain link access control fence; periodic retaining wall, soil cap and other design elements; mowing/pruning; monitoring surface water and sediment of Passaic River; groundwater monitoring pursuant to landfill closure requirements.

As part of the operations and maintenance plan, five year inspections are conducted. The 2005 and 2010 five-year review indicated no significant offsite migration and remedial elements were functioning as intended. The 2010 sediment sampling was conducted as part of the 2010 inspection and identified asbestos in sediments. Re-sampling as part of the 5-year review was non-detect.

6.3 Protectiveness of Past Remedies/Order of Magnitude Analysis

TIFA filed a Deed Notice with the Morris County Clerk on September 8, 2008 (Block 12301, Lot 1) that restricts groundwater use and that limits development or intrusion into the asbestos landfill cap. The Deed Notice was filed as part of the remedial requirements for the site.

Since the remediation standards for the contaminants of concern have not changed by an order of magnitude since the establishment of the Deed Notice and CEA, an order of magnitude analysis is not required.

7. Area of Concern Narrative

The following is a summary of the findings and recommendations for each of the AOCs identified at the Property:

AOC-1: Asbestos Landfill (Possible Pockets of Asbestos Fill throughout Property)

The site contains a 4-5-acre asbestos landfill closed under CERCLA (Superfund) and is a delisted NPL site. Deed Notice/ use restrictions and engineering controls have been established as part of remedial measures. NGC and EPA completed response measures at the site including investigation and remediation of the landfill via capping, slope stabilization and institutional controls. USEPA's ROD notes several contaminants (in addition to asbestos) in soil and groundwater above current remediation standards. According to the ROD and the EPA online summary, "Contaminants of Concern at Asbestos Dump", arsenic, asbestos, benzene, bis(2ethylhexyl)phthalate, cadmium, lead, mercury, nickel, and trichloroethene (TCE) were detected on-site. Mercury was noted possibly to be associated with a fungicide applied to asbestos shingles. According to USEPA, groundwater was not further addressed since it was determined not to pose a significant risk to public health and the environment and therefore was not addressed in the ROD.

Based on the above information, EWMA considers the contamination detected by the EPA, the delisted NPL site status and related conditions as an AOC with respect to the Property. EWMA notes that the approved ROD for site remediation requires ongoing monitoring and maintenance of the engineering controls.

The asbestos dump landfill remains on-site. It was observed to be a vegetated area sloping down from the western edge of the parking area to the Passaic River. The landfill is enclosed behind a chain link fence.

AOC-2: Former Fuel Oil USTs

The EDR database report listed the Property as a Historic LUST site under case number 93-01-07-1125 due to a spill to land from the No. 6 heating oil UST. According to information obtained from the Long Hill Township Building Department file, two 30,000-gallon No. 6 heating oil USTs were abandoned in-place on February 1, 1993. The USTs were investigated and one UST had evidence of contamination present in soil samples collected from around it. A bedrock monitoring well (MW-1) was installed

and groundwater samples were subsequently collected. Fuel oil constituents were not reported, however TCE was identified in the groundwater at 34 ug/l, exceeding the NJDEP Ground Water Quality Standards (GWQS). Nevertheless, NJDEP issued a No Further Action (NFA) for the UST closures on 11/28/1994 indicating an assumption that the TCE would be addressed as part of the NPL work. The well was later sealed, the NPL site delisted, and further response regarding TCE in bedrock aquifer apparently was not conducted. The monitoring well record and abandonment report for MW-1 is included in **Appendix 13**.

The USTs were filled with slurry and the monitoring well was sealed. A copy of the UST abandonment information is included in **Appendix 9**. The former 30,000-gallon No. 6 heating oil USTs are considered an AOC warranting further investigation.

AOC-3: Former Garage and Tank Area between Buildings 3 & 4

A review of a 1953 Survey Map of the former National Gypsum Company facility depicts a tank on the southwestern side of Building 3 and situated between Building 3 and a garage building along Stone House Road. It is not clear if the tank was situated above or below grade (it has the shape of a propane tank), what the tank stored, or if it was removed, abandoned or investigated. Based on the information available for review EWMA considers the unknown tank identified on the map to be an AOC warranting further investigation.

AOC-4: Former Above Ground Storage Tanks (ASTs) between Buildings 3 and 4

A review of an undated Property Survey Map of the former National Gypsum Company facility depicts a tank farm containing six 5,000-gallon tanks with a berm area and adjacent to the south western side of Building 3. Additionally, during the aerial photograph review, the six 5,000-gallon ASTs are visible on the 1963 and 1970 aerial photographs in a similar location to that depicted on the survey map. Based on the information available for review EWMA considers the six 5,000-gallon ASTs identified on the map to be an AOC warranting further investigation.

AOC-5: Former Gas Pump and Suspected UST

A review of a 1953 Survey Map of the former National Gypsum Company facility depicts a gas pump on the eastern side of Building 1 along Division Ave. The area is marked by a gravel surface cover suggesting a tank removal in this area. It is not clear that this has been assessed. Based on the information available for review EWMA considers the gas pump to be an AOC warranting further investigation.

AOC-6: Former Tank Field

A historical site plan depicted a rectangular feature labeled “Tanks” (presumably a tank field) north of Building 3 and in the location now covered by Building 2. No other information regarding this potential tank field was available. Based on the information available for review EWMA considers this feature an AOC warranting further investigation.

AOC-7: Former Oil Pit

A review of a 1953 Survey Map of the former National Gypsum Company facility depicts Buildings 1 and 3 (Buildings 2 and 4 were not yet constructed) and further identifies: two “oil pits” on north side of Building 1. The area is currently paved and it is not clear if this concern has been assessed. Based on the information available for review EWMA considers the oil pits identified on the map to be an AOC warranting further investigation..

AOC-8: Discharge Area of Former Sluiceway

A review of a 1953 Survey Map of the former National Gypsum Company facility depicts a ‘sluiceway’ discharge channel beginning at the northern side of Building 1 and discharging to the west and in the direction of the Passaic River. The sluiceway is depicted in the area now covered by Building 2. EWMA noted a manhole inside Building 2 and in the adjacent parking lot to the west. It appears that the sluiceway noted in the 1953 map corresponds to this sewer drain. Mr. Mata believes that this line discharges storm water from the roofs of the buildings. It is not clear if the sluiceway channel was investigated. Based on the information available for review EWMA considers the sluiceway channel discharge area identified on the map to be an AOC warranting further investigation.

AOC-9: Transformer House

A review of an undated Property Survey Map of the former National Gypsum Company facility depicts the four buildings and further identifies a transformer house on the eastern side of Building 1. EWMA observed the transformer house and noted one pad-mounted transformer located inside and situated over a concrete pad. Additionally, another pad-mounted transformer was observed off the northeast corner of Building 2. The transformers are reportedly owned and maintained by PSE&G. Evidence of spill or release from the transformers was not observed, as no staining was present on the concrete pad. However, it is possible that a previous transformer or transformers were in-place of the current transformer and it is not clear if the transformer house was

previously assessed. Based on the information available for review EWMA considers the transformer house and potential PCB's from former transformers and equipment to be an AOC warranting further investigation.

AOC-10: Former Production Well

A review of a 1953 Survey Map of the former National Gypsum Company facility depicts a former well pad noted as 'well concrete slab' adjacent to the northern side of Building 1. It appears that the well corresponded to an on-site production well. EWMA notes that it appears that an addition to the northern portion of the building is covering its original location. Based on the information available for review, it is unknown whether the well was appropriated closed in accordance with NJDEP requirements.

A well search was conducted in accordance with NJDEP requirements in an attempt to locate any well records/permits that may coincide with this former production well. The results of the well search are provided as part of the receptor evaluation included as **Appendix 1**.

AOC-11: Former Septic Systems

Indications of the presence of on-site septic systems or cesspools were not observed at the Property during the inspection or identified in interviews or record reviews. Long Hill Township Municipal officials reported that the buildings are connected to public sewer.

However, TIFA obtained a permit through the Long Hill Township Building Department for the bypass of a septic tank and a building connection to the sanitary sewer system in April 1986. Based on this information, the septic system is considered an AOC. There is a potential for a septic system to be associated with the Property. If evidence of a former septic system is observed during any redevelopment of the Property, the appropriate number of soil and/or groundwater samples will be collected in compliance with NJDEP TRSRs.

AOC-12: Former Rail Line and Equipment Testing Area

A review of a 1953 Survey Map of the former National Gypsum Company facility depicts a former railroad siding running north to south and through the center of Building 1. It is currently covered and no longer in use. It is likely that the previous owner and occupants of the Property used the rail siding for shipments of various materials including asbestos products and pesticides and herbicides. Hazardous materials

typically are used during routine maintenance of railroad tracks and sidings. Wooden railroad ties typically were treated with preservatives that may contain heavy metals, polycyclic aromatic hydrocarbons (PAHs), pesticides, and PCBs. In addition, PCB-containing petroleum products associated with diesel engine and equipment operations in the vicinity of the railroad sidings have the potential to create an AOC at the Property. Further investigation is warranted for this AOC.

AOC-13: Former Residential Structures/Dwellings

A review of a 1953 Survey Map of the former National Gypsum Company facility depicts former dwellings on the Property. One dwelling is located on the southwestern portion of the Property and within the asbestos land fill. Three (3) structures which are designated as '2-story dwellings and frame building' are located on the northern portion of the Property and in the location of Building 2 and the current asphalt-paved parking lots.

No indications of USTs (e.g., vent pipes, fill ports, etc.) were observed at the Property during the inspection. However, EWMA notes that since dwellings and structures previously occupied the Property and were later demolished it is reasonable to assume that they were heated by fuel oil stored in USTs. However, there were no records of UST removals with the Long Hill Township Building Department or from available sources and it is not clear that any of these concerns have been assessed.

Based on the information available for review EWMA considers the potential USTs associated with the former dwellings to be an AOC warranting further investigation.

AOC-14: Steel Floor Plate

EWMA noted steel floor plates in the hallway of Building 1. The floor plate extends the length of the building in a north to south direction and turns to a hallway that runs west. EWMA lifted the steel plate in three areas and noted that the plates were set in concrete. It is not known if the steel plates covered a trench that was filled with concrete or whether they were put in place to accommodate heavy forklift travel. Because the steel plates cover a concrete area, no trenches were present and there is no evidence of staining or a discharge, no further investigation of the steel plates is warranted at this time.

AOC-15: Drums

EWMA had previously noted two plastic 55-gallon drum on the south loading dock between Building 1 and Building 3 during a 2015 site visit. The drums reportedly contained used motor oil and were left behind by a former tenant. Evidence of a spill or release from the drums was not observed at the time, as no staining was present on the concrete loading dock. The drums have since been removed from the Property.

EWMA had also previously observed a third steel 55-gallon drum on the north loading dock between Building 1 and Building 2. The drum was not labeled and the contents were unknown. Evidence of black staining was noted on the sides of the drum and on the concrete beneath it. The drum has since been removed from the Property.

During the recent site visit, EWMA noted a steel 55-gallon drum in the western portion of the parking lot, near the asbestos landfill. The drum was not labeled and the contents were not known. Evidence of spill or release from the drum was not observed, as no staining was present on the asphalt. EWMA recommends the drum be removed and properly disposed.

AOC-16: Floor Drains

EWMA observed a floor drain in the Wild Bill Soda lease space within Building 2 during the site visit. According to municipal sources, the drains discharge to the municipal sanitary sewer system. Because the drain is reportedly connected to the sanitary sewer and there is no evidence of staining or a discharge, no further investigation is warranted at this time.

If evidence of a discharge associated with the floor drains is observed during any redevelopment of the Property, the appropriate number of soil and/or groundwater samples will be collected in compliance with NJDEP TRSRs.

AOC-17: Hazardous Material Storage Area

Hazardous substances and/or wastes can include items such as petroleum based oils, lubricants, or cleaning products. Containers of consumer products containing small quantities of hazardous constituents used for general housekeeping practices by the current tenants were noted by EWMA within the Property building.

Several tenants stored various materials such as paints, cleaners, lubricants, and adhesives within the individual tenant spaces. These materials were stored in their original containers and in their original packaging in 1-gallon containers, plastic tubes and assorted containers. There was no evidence of staining or a discharge at the time of the site visit and no further investigation is warranted at this time.

A variety of chemicals and containers were observed in a former laboratory space. The containers need to be removed and materials properly disposed.

AOC-18: Compressor Vent

EWMA had previously noted an out-of-service air compressor in the vacant warehouse area of Building 1 during a 2015 site visit. The compressor was formerly used by TIFA. EWMA had previously observed the area beneath the compressor and evidence of a discharge was not noted. In addition, the concrete beneath the compressor appeared intact and significant cracks (i.e., $>1/4$ -inch in width) were not observed. The air compressor was has since been removed.

EWMA noted an active compressor in the Flaherty Machine and Manufacturing leased space within Building 1. Minor compressor oil staining was observed on the concrete beneath the compressor, however; the integrity of the concrete appeared intact during the Property visit and significant cracks (i.e., $>1/4$ -inch in width) were not observed. Based on the observed conditions, EWMA does not recommend further investigation of this AOC at this time.

AOC-19: Concrete Floor Sump and Slop Sinks

One concrete floor sump is located in the painters shop within Premier Painting of NJ leased spaced within Building 3. Water collected from the sump and a slop sink within the painters space discharge into the sanitary sewer system. The sump is constructed of concrete and appeared to be in good structural condition (no fractures or cracks noted). Because the sump's discharge pipes are connected to the sanitary sewer and there is no evidence of staining or a discharge, no further investigation is warranted at this time.

EWMA observed several slop sinks in the tenant spaces and bathrooms inside the buildings. According to municipal sources, the drains discharge to the municipal sanitary sewer system. Because the drains reportedly are connected to the sanitary sewer and there is no evidence of staining or a discharge, no further investigation is warranted at this time.

AOC-20: Concrete

The interior floor and interior walls of the buildings were visually inspected for stains and/or corrosion. In general, EWMA did not observe stained areas in the majority of the spaces visited; however, concrete surface staining was noted in two former machine shop tenant spaces within Building 1. Concrete floors and walls were stained in places, and the buildings have up to 80 years of industrial use. Redevelopment of the site will require demolition of existing structures and NJDEP requires assessment of concrete prior to recycling and reuse. Therefore, further investigation is warranted for this AOC.

AOC-21: Historic Fill

Based on information obtained from the NJDEP Geo-Web, the Property is partially mapped within a historic fill area. Further investigation is warranted to confirm the presence/absence of historic fill material at the Property.

AOC-22: Dumpsters

Solid waste generated at the Property consists of domestic municipal waste and recyclable materials that are stored in dumpsters throughout the Property. The solid waste is removed by a private disposal company. EWMA observed the dumpsters and did not note evidence of a discharge or spill or evidence of hazardous materials present during the site visit. Based on this observation, no further investigation is warranted at this time.

Suspected ACM within Onsite Buildings

Based upon the observations made at the time of the site visit, possible asbestos was noted to be present in panels, floor tile and the mastic in Building 1, and roofing components on-site. Redevelopment of the site will require the proper removal and disposal of any ACM.

8. Site Investigation

8.1 Technical Overview

8.1.1 Reliability of Analytical Data

In accordance with N.J.A.C. 7:26E-2 (Quality Assurance for Sampling and Laboratory Analysis), reliable laboratory analytical data was generated for the samples collected. Samples were collected following the NJDEP *August 2005 Field Sampling Procedures Manual* (FSPM).

The laboratory analytical data for the samples are deemed reliable since sample holding times and method detection limits were not exceeded. Samples were placed in a cooler maintained at 4°C in order to ensure proper preservation. Proper chain of custody documentation was maintained until delivery to the laboratory for analysis. The samples were submitted to Integrated Analytical Laboratories, LLC (IAL; NJDEP Certified Lab No. 14751). The laboratory analytical data packages prepared by IAL are provided in **Appendix 16**. The HAZSITE data was submitted electronically via email to srpedd@dep.nj.gov. Copies of the electronic data deliverable (EDD) submissions are provided as **Appendix 17**.

A portable Photo Ionization Detector (PID), equipped with a 10.6 eV UV lamp and properly calibrated in the field with isobutylene span gas prior to use each day, was used to field screen soils. Pursuant to N.J.A.C. 7:26D amended September 18, 2017, the NJDEP Residential Direct Contact Soil Remediation Standard (NJDEP RDCSRS), the NJDEP Non-Residential Direct Contact Soil Remediation Standard (NJDEP NRDCSRS), and the NJDEP Default Impact to Ground Water Soil Screening Level (NJDEP IGWSSL) will be utilized herein as the source of applicable soil remediation standards (amended 9/18/17). All soil analytical results summarized in the tables are shown as ppm unless otherwise stated.

Pursuant to N.J.A.C. 7:9C, the NJDEP Class II-A Specific Groundwater Quality Standards (NJDEP GWQS) will be utilized herein as the source of applicable groundwater quality standards (last updated 8/9/2018). All groundwater analytical results summarized in the tables are shown as parts per billion (ppb) unless otherwise stated.

8.2 Boring Logs

Boring logs were generated during this phase of work. Copies of the boring logs are included as **Appendix 14**.

8.3 Significant Events or Seasonal Variation

Significant events or seasonal variations that would have influenced sampling procedures or analytical results were not noted during the investigation activities.

8.4 Receptor Evaluation

A Receptor Evaluation has been completed for the Property and is being provided concurrently with this Report. A copy of the Receptor Evaluation is provided as **Appendix 1**.

8.5 Summary of Ecological Assessments Conducted

An Ecological Evaluation (EE) was conducted for the Property in accordance with the NJDEP Site Remediation Program's TRSR, as listed in N.J.A.C. 7:26E. In general, the EE is part of a tiered approach to ecological risk assessment that was conducted as part of the investigation at the Property. The purpose of the EE is to identify the potential for adverse ecological effects resulting from site contamination on sensitive ecological receptors within the vicinity of the Property.

The following sections of the EE provide an evaluation of the contaminants detected on the Property that are of ecological concern, a general qualitative description of all environmentally sensitive areas within and immediately adjacent to the Property, a description of contaminant pathways to any environmentally sensitive areas, and a summary of findings and conclusions. The findings and conclusions will be used to evaluate whether more comprehensive ecological assessment required by N.J.A.C. 7:26E-4.7 is appropriate, or whether no further action is warranted.

Contaminants of Potential Ecological Concern:

Contaminants of Potential Ecological Concern (COPEC) are those contaminants that exhibit the ability to bio-magnify or bio-accumulate, or contaminants exhibiting concentrations that exceed available criteria or guidelines recommended by the NJDEP,

the National Oceanographic and Atmospheric Administration (NOAA), the USEPA, and other federal natural resource protection agencies for use in conducting ecological assessments and investigations. Benchmark screening values for soil were obtained from "Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects of Terrestrial Plants: 1997 Revision (August, 1997). The benchmark screening values provided are used only for screening purposes and not to identify if COPECs are present on the Property. They are not intended as regulatory guidance for determining if site-specific remediation measures are necessary.

Site investigation activities included the collection of soil and groundwater samples. Analytical results of the soil and groundwater samples revealed compounds that exceed the applicable NJDEP standards. Specifically, several metals (aluminum, beryllium, manganese and nickel) were identified in soil samples throughout the site at concentrations exceeding the NJDEP Impact to Ground Water Soil Screening Levels (IGWSSLs) but did not exceed the NJDEP DCSRS. They are common, naturally occurring elements and likely reflect background conditions. Mercury was also reported in a limited number of soil samples at concentrations exceeding the NJDEP IGWSSLs. Mercury may be site-related as phenyl mercuric acetate (PMA) reportedly was used in past on-site manufacturing. Extractable Petroleum Hydrocarbons (EPH) was also identified in several soil samples above the NJDEP Residential Direct Contact SRS and Ecological Screening Criterion. This contamination is associated with the former oil pits at the Property.

Analytical results of the groundwater samples revealed elevated levels of chlorinated volatile organic compounds (cVOCs) (Tetrachloroethene (PCE) and associated degradation daughter products) above their respective NJDEP Groundwater Quality Standards (GWQS) and Vapor Intrusion Screening Levels (VIGSL) triggering a potential need for a future vapor intrusion investigation. These constituents are associated with historic operations at the Property. Additionally, PAHs (Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene & Indeno(1,2,3-cd)pyrene) and Metals (Aluminum, Arsenic, Beryllium, Iron, Lead, Manganese, Mercury, Nickel, and Sodium) were found at concentrations above the NJDEP's GWQS. The metals aluminum, beryllium, iron, manganese and sodium are common, naturally occurring elements and likely reflect background conditions. While the cVOC, PAH and remaining metals are attributed to historic site operations and/or historic fill.

Environmentally Sensitive Areas:

Environmentally Sensitive Areas (ESAs) are those natural features that would most likely be affected by the presence or discharge of a hazardous substance. As defined by N.J.A.C. 7:1E-1.8, ESAs include, but are not limited to, surface waters, wetlands, beaches, prime fishing areas, forest areas, dunes, Federal and State wilderness areas, sources of water supply, and habitat for endangered or threatened plant and animal species. For the purpose of this definition, surface waters include, without limitation, rivers, streams, creeks, ponds, lakes, reservoirs, and canals. Only those ESAs defined in N.J.A.C. 7:1E-1.8 that are within, immediately adjacent or the potential to be impacted by the Property are described in this Report.

The Property is located within the Upper Passaic River Watershed. The nearest surface water body is the Passaic River, located along the western portion of the Property. Additionally, there is a deciduous wooded wetland area directly southwest of the Property.

Contamination Migration Pathways to Environmentally Sensitive Receptors:

Direct contact with COPECs is limited by the presence of landscape, asphalt and concrete cover across the Property. The potential for surface water contamination from on-site operation is low. However, contaminant migration through groundwater has been identified as a possible migration pathway.

Findings and Conclusions:

Pursuant to N.J.A.C. 7:26E-3.11(a)4, continued ecological investigations shall be required during the remedial investigation, pursuant to N.J.A.C. 7E-4.7, whenever the baseline evaluation indicated the co-occurrence of COPECs, an environmentally sensitive area, and a migration pathway to facilitate the movement of COPECs to the environmentally sensitive area. EWMA's ecological evaluation of the Property identified several COPECs and groundwater as a contaminant migration pathway. The presence of the environmentally sensitive area on/adjacent to the Property supports the requirement to evaluate the necessity for further comprehensive ecological investigations. As such, further assessment of the ecological receptor is recommended.

8.6 Site Investigation Activities

Based on the findings provided in the preliminary assessment phase, EWMA's review of

the general Property information, research of available historical Property information, and a Property visit revealed that the following areas of concern identified at the *Property* are potentially contaminated, and thus additional investigation was required:

- AOC-1: Asbestos Landfill (Possible Pockets of Asbestos Fill throughout Property)
- AOC-2: Former Fuel Oil USTs
- AOC-3: Former Garage and Tank Area between Buildings 3 and 4
- AOC-4: Former Above Ground Storage Tanks between Buildings 3 & 4
- AOC-5: Former Gas Pump and Suspected UST
- AOC-6: Former Tanks in Area of Building 2
- AOC-7: Former Oil Pit Area
- AOC-8: Discharge Area of Former Sluiceway
- AOC-9: Transformer House
- AOC-12: Former Rail Line and Equipment Testing Area
- AOC-13: Former Residential Structures/Dwellings
- AOC-20: Concrete
- AOC-21: Historic Fill

Prior to implementing field work, EWMA developed a site-specific Health and Safety Plan (HASP) for use by EWMA and its subcontractors. Prior to mobilizing, the New Jersey One-Call center was contacted to mark out utility lines. In addition, a geophysical survey was conducted using a combination of electromagnetic (EM), ground penetrating radar (GPR), and magnetic survey methods to assess selected areas for subsurface underground utilities, structures, and features, and to clear proposed boring locations with respect to underground obstructions. The survey was conducted by EnviroPhysics of Lawrenceville, New Jersey. A copy of the Geophysical survey report is provided in **Appendix 12**.

AOC-1: Asbestos Landfill (Possible Pockets of Asbestos Fill throughout Property)

The western portion of the Property contains a 4.5-acre fenced in area which was landfilled with asbestos containing materials. The landfill is closed and covered by a soil cap and vegetation (engineering control) that was designed and installed under the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA - Superfund) Program. The Property has been delisted as a Superfund site and is being monitored as part of a required Operations and Maintenance Plan.

No further action is required for the 4.5-acre fenced in area landfill area as it is addressed as a delisted NPL site and is monitored by the USEPA and NJDEP. Possible pockets of asbestos fill that may be encountered during redevelopment outside of the 4.5-acre fenced in area must be controlled and additional sampling should be

completed to confirm/deny asbestos content of these materials.

AOC-2: Former Fuel Oil USTs

Prior Investigation

Two 30,000-gallon No. 6 Fuel Oil USTs were cleaned and closed in place in 1993. At that time, sixteen soil samples were obtained around the tanks and analyzed for total petroleum hydrocarbons (TPH), and five soil samples were analyzed for PAHs. Asbestos debris and fill overlying silt was reported in most borings around the tanks. TPH was reported at concentrations ranging up to 2,950 mg/kg (parts per million (ppm)), and PAHs were reported at concentrations ranging up to 4,180 mg/kg (ppm). The concentrations did not exceed then-applicable soil cleanup criteria, however, a sheen and/or residual petroleum were observed in soil at several locations, particularly at the north end of the USTs. In light of these observations, NJDEP requested that a monitoring well be installed and sampled at the USTs. Groundwater was not present in the overburden zone, and in 1993 a bedrock monitoring well (MW-1) was installed to 29 feet bgs, from which a groundwater sample was obtained for analyses of VOC and BNs. Trichlorofluoromethane (Freon) was detected at 3.2 µg/l (parts per billion), cis 1,2-dichloroethene was detected at 1.4 µg/l, and TCE was detected at 34 µg/l in groundwater. The TCE concentration exceeds the NJDEP GWQS of 1 µg/l. Nevertheless, NJDEP issued a NFA determination for the USTs on November 28, 1994 which acknowledged the TCE and noted, "TCE is not a component of No. 6 fuel oil and the referenced facility is a Superfund Site, therefore, the noted contamination will be addressed in agreement with the United States Environmental Protection Agency (USEPA)." The well was later sealed, the NPL site delisted, and further response regarding TCE in bedrock aquifer apparently was not conducted.

Subsequently, in its Record of Decision (ROD) regarding the remedial action for the Superfund site, USEPA identified TCE and other groundwater contaminants in wells on-site within the asbestos landfill and concluded that the contaminants "...are not expected to impact public health and the environment," and noted that, "As documented in the summary of site risks section of this document [the ROD], the groundwater contamination at the site does not pose a significant risk to the public health and environment. Therefore, groundwater alternatives will not be addressed in this document." The ROD did require ongoing monitoring and institutional controls to restrict groundwater usage on-site, but further response to the TCE, apparently was not conducted or required. It is noted that the ROD referenced TCE concentrations in (overburden) groundwater as high as 6 ppb, but no reference was made to the data from the UST closure bedrock well in which TCE was detected at 35 µg/l. Apparently, the TCE in bedrock may not have been assessed.

EWMA Investigation

To further assess the condition at this area, EWMA installed and sampled four soil borings (AOC-2-1 through AOC-2-4) around the USTs after locating the USTs by geophysical survey. The borings were biased towards locations where past sampling noted residual contamination or sheen. Asbestos materials were observed in fill in three of the borings. One temporary well was installed in boring AOC-2-3, but groundwater was not present in soil or fill, and therefore no groundwater sample was obtained at that time. A petroleum odor and staining was observed in soil from boring AOC-2-3 and AOC-2-4 at the west side of the USTs. EPH analyses were conducted on three soil samples and results were each below the 1,700 mg/kg NJDEP ESC. One sample (AOC-2-4 at which oily staining was observed) was analyzed for fractionated EPH and results were entered into the NJDEP EPH Calculator. Output results using the calculator indicate that the EPH fractionated concentration is below residential and non-residential criteria. The EPH Soil Remediation Standard Calculator Outputs are included in **Appendix 10**. Samples AOC-2-3 and AOC-2-4 also were analyzed for VOCs and BNs. One BN compound, benzo(a)anthracene, was detected in each sample at 0.951 and 1.91 mg/kg respectively, exceeding the NJDEP default IGWSSL. No other compounds were detected above applicable criteria. Sample locations and analytical results above applicable standards are depicted on **Figure 4**. Soil sample results are summarized in **Table 1**.

The UST closure previously received a NFA from NJDEP and the results of EWMA's soil borings and sampling are consistent with conditions reported to NJDEP at the time of closure. Results of EWMA's investigation identified suspect ACM in fill and one compound at concentrations exceeding the NJDEP RDCSRS. Although the NFA for the UST closure is not likely to be reopened based on data from EWMA's samples, the ACM will require delineation and supplemental response measures. It is likely that these conditions could be addressed via a modification to the institutional (deed notice) and engineering (cover) controls. The 1993 soil borings reported residual product in several borings, however product was not evident during EWMA's site investigation. The NFA notwithstanding, if residual product or visually impacted soil is encountered during future development, the impacts will need to be removed and properly disposed or treated, and the extent of impacts delineated to current NJDEP SRS.

A bedrock groundwater monitoring well, MW-1, was installed adjacent to the fuel oil USTs as part of the UST closure activities. The 1994 groundwater quality results detected trichloroethylene (TCE) at 34 ppb, which exceeds the current NJDEP GWQS and VIGWSL. Further investigation was not conducted and the well was sealed/abandoned as the TCE was not considered to be associated with the fuel oil USTs, and bedrock contamination apparently was not the focus of the Superfund site investigation. This concentration of TCE was not cited in the Record of Decision (ROD) issued by

United States Environmental Protection Agency (USEPA) for the Superfund site, and as such it may not have been considered fully as part of NPL action.

Another bedrock monitoring well, MW-901, (the only bedrock well installed as part of the Superfund investigation and the only other monitoring well outside the restricted asbestos landfill area) is located along Division Avenue and is believed to be hydrologically upgradient of the well at the USTs. EWMA sampled the upgradient well and TCE was not detected. This suggests that a source area for the TCE may be present on-site.

In order to assess the current groundwater quality within the former UST area, EWMA conducted a groundwater investigation that consisted of installation of a temporary well point (M-1R(11-30) and permanent bedrock monitoring well (MW-1R), as well as collection of groundwater quality samples. Groundwater sample results are shown on **Table 6**. The purge guides for this event are included as **Appendix 15**. A site plan depicting the monitoring well locations is provided as **Figure 4**. Findings from this investigation revealed the following:

- Groundwater within the saturated overburden zone on the Property is also impacted with chlorinated solvent concentrations (PCE and TCE) above their respective NJDEP GWQS, as revealed by the temporary well point sample (M-1R) collected from 11 to 30 feet bgs within AOC-2.
- Groundwater within the shattered weathered bedrock zone is also impacted with chlorinated solvent concentrations above their respective NJDEP GWQS and VIGWSL to the maximum depths of our investigation (50 feet bgs) as revealed during the 2015 groundwater sampling events from MW-1R. The well construction log, permit, record and Form B for MW-1R are included in **Appendix 13**.

AOC-3: Former Garage and Tank Area between Buildings 3 and 4

A historical site plan depicted a garage building and horizontal tank near the southwest corner of Building 3 in an area that currently is a paved, raised parking area. The geophysical survey identified likely reinforced concrete beneath the asphalt throughout this area and also noted an excavated area at which an asphalt patch is present. EWMA advanced five borings in this area including one within the asphalt patch and met refusal at three to four feet bgs on concrete in each boring. Fill material above the refusal depth contained suspected ACM debris. Other evidence of contamination was not observed or detected and no soil samples were collected for laboratory analyses. No further action is required for this AOC except that suspected ACM will be addressed

as noted in AOC-1, above. If evidence of a discharge is observed during any redevelopment of the Property, the appropriate number of soil and/or groundwater samples will be collected in compliance with NJDEP TRSRs to evaluate the impacts within this AOC.

AOC-4: Former Above Ground Storage Tanks between Buildings 3 and 4

A review of an undated Property Survey Map of the former National Gypsum Company facility depicts a tank farm containing six 5,000-gallon tanks with a berm area and adjacent to the south western side of Building 3. Additionally, during the aerial photograph review, the six 5,000-gallon ASTs are visible on the 1963 and 1970 aerial photographs in a similar location to that depicted on the survey map. The geophysical survey did not identify anomalies indicative of underground tanks in this area. EWMA advanced one soil boring to refusal (nine feet bgs) in the former tank area. Evidence of contamination was not observed. A soil sample was obtained from eight-foot depth (0.5' interval above the groundwater table) and submitted for analyses of VOCs, BNs, Pesticides, Herbicides, and EPH. No compounds were detected. The sample location is depicted on **Figure 4**. Analytical data are summarized on **Table 1**. Soil analytical reports prepared by IAL are provided in **Appendix 10**.

If evidence of a discharge is observed during any redevelopment of the Property, the appropriate number of soil and/or groundwater samples will be collected in compliance with NJDEP TRSRs to evaluate the impacts within this AOC.

AOC-5: Former Gas Pump and Suspected UST

A historical site plan depicted a gas pump on the east side of the Building 1. The pump is no longer present but the area is gravel-covered suggesting excavation and backfilling of a tank at this location. The geophysical survey of this area indicated that the gravel area overlies a likely tank void that had been backfilled, but did not identify anomalies to suggest that an UST remained in the survey area. A monitoring well is also present in the gravel area. The well is believed to be an upgradient, bedrock monitoring well (MW-901) installed as part of the Superfund investigation. The well is 50 feet deep and the groundwater surface is approximately 30 feet bgs. The well record and Form B for MW-901 is included in **Appendix 13**.

EWMA advanced two soil borings (AOC-5-1 and AOC-5-2) to refusal (eight and 9.5 feet bgs, respectively) in the suspected tank excavation area and obtained a soil sample from each at the base of the boring for analyses of VOCs and lead. EWMA converted a soil boring into a temporary well point, but groundwater was not encountered in the

overburden and the well point was dry. Trace levels of acetone and carbon disulfide, likely laboratory artifacts, were reported in one soil sample. No other VOCs were detected. Lead was reported at concentrations below applicable remediation standards and criteria. Based on these data and observations, further investigation is not recommended. Soil sample analytical results are provided on **Table 2**. The soil sample locations and analytical results above applicable standards are depicted on **Figure 4**.

In September 2013, a groundwater sample was obtained from the existing bedrock well (MW-901) for analyses of VOCs, BNs, PCBs, Pesticides and TAL metals. No concentrations were detected above their respective NJDEP GWQS, with the exception of three metals (aluminum, manganese, and sodium). These metals are likely naturally occurring elements and are not believed to be a site-related contaminant. Groundwater sample analytical results are provided on **Table 3**. The groundwater sample location and analytical results above applicable standards are depicted on **Figure 4**. Another groundwater sample (MW-109) was obtained from bedrock monitoring well MW-901 in 2015 for VOC analysis. No VOCs were detected above the NJDEP GWQS. The groundwater sample analytical results are provided on **Table 6**.

No further soil investigation is warranted for this AOC. Further groundwater investigation is warranted for this AOC. The dissolved metals are required to be monitored and a background investigation may be conducted. If the concentrations of the dissolved metals are confirmed to be above background concentrations then the appropriate remedial action may be required to establish a groundwater Classification Exception Area (CEA).

AOC-6: Former Tanks in Area of Building 2

A historical site plan depicted a rectangular feature labeled "Tanks" in an area currently covered by Building 2. No other information regarding this potential tank field was available. EWMA advanced one soil boring (6-1) in the suspected former tank area to refusal on bedrock at 19 feet bgs. Obvious evidence of impacted soil was not observed. A soil sample was obtained from the base of the boring for analyses of VOCs, PCBs, BNs, Pesticides, Herbicides, EPH and metals. No organic compounds were detected. Several metals (aluminum, beryllium, manganese, and nickel) were reported above NJDEP IGWSSL. None exceeded the NJDEP Direct Contract SRS. It is likely that the metals reflect background conditions and may potentially be addressed via background assessment or development of site specific criteria. Sample locations and analytical results above applicable standards are depicted on **Figure 4**. Sample analytical results are provided on **Table 2**.

Further soil investigation is warranted. An attempt will be made to create a site specific IGW Criteria for soil for this AOC.

AOC-7: Former Oil Pit Area

A historical site plan depicted two features identified as “oil pits” north of Building 1 in a current paved parking area. The geophysical survey identified two six-foot diameter subsurface features that are believed to be the former pits as well as an area of buried metal north of the pits. EWMA advanced four borings (AOC-7-1 through AOC-7-4) around the suspected oil pits to refusal on bedrock at depths ranging from eight to thirteen feet bgs. EWMA collected a soil sample from each boring near its base or at a depth at which staining or odor was observed and submitted them for analyses of EPH and/or fractionated EPH. Two soil samples also were analyzed for VOCs, BNs, PCBs, Pesticides, Herbicides, and metals. In addition, EWMA installed temporary well points in three borings (AOC-7-1, AOC-7-2, and AOC-7-3) and collected grab groundwater samples at two locations for analyses of VOC, BNs, Pesticide and Herbicide analyses. Separate phase product (oil) was observed on the water surface in well point AOC-7-4 and a sample was collected for “finger print” analyses. Analyses indicated the oil resembled a mixture of lubricating oils including hydraulic and mineral oil. Various reporting requirements will be required during the upcoming phases of remediation due to the light non-aqueous phase liquid (LNAPL) present in this AOC.

ACM was observed in shallower fill materials at boring AOC-7-3. Oily staining and odor was observed in borings AOC-7-2, AOC-7-3 and AOC-7-4 at depths of nine to 12 feet bgs. Results of soil sample analyses did not identify VOCs, BNs PCBs, Pesticides or Herbicides in the soil samples. Several metals (aluminum, beryllium, manganese, and nickel) were reported above NJDEP IGWSSL, but metals did not exceed the NJDEP DCSRS. Sample locations and analytical results above applicable standards are depicted on **Figure 4**. Sample analytical results are provided on **Table 2**.

EPH analysis was conducted on one soil sample (AOC-7-1) and results were well below the 1,700 mg/kg NJDEP Ecological Screening Criteria (ESC). Three others samples (AOC-7-2, AOC-7-3, and AOC-7-4) at which oily staining was observed were analyzed for fractionated EPH and the results were input into the NJDEP EPH calculator. Output results using the calculator indicate that the EPH fractionated concentrations exceeds NJDEP ESC and RDCSRC but are below NRDCSRC. The EPH Soil Remediation Standard Calculator Outputs are included in **Appendix 10**.

In order to assess the current groundwater quality within the former oil pit area, EWMA conducted a groundwater investigation that consisted of installation of two temporary

well points (AOC-7-2 and AOC7-4) and one permanent monitoring well (MW-2), as well as collection of groundwater quality samples. Groundwater sample results are shown on **Table 3** and **Table 6**. A site plan depicting the temporary well point and monitoring well location is proved as **Figure 4**. Findings from this investigation revealed that groundwater samples obtained from temporary well points AOC-7-2 and AOC-7-3 did not identify VOCs, Pesticides or Herbicides above the NJDEP GWQS. However, several PAHs that are consistent with lubricating oils were detected above GWQS as were several metals including lead, arsenic and others potential background metals. The groundwater sample collected from monitoring well MW-2 did not detect any VOCs above the NJDEP GWQS. The well construction log, permit, record and Form B for MW-2 are included in **Appendix 13**.

Investigation results indicate that subsurface structures likely associated with reported oil pits remain on-site, and that the area surrounding these features has been negatively impacted by residual lubricating oils. Asbestos debris also is present in fill. These structures are located in an area at which perched groundwater in the overburden was present and at which separate phase product (oil) was present floating on the groundwater surface. These features and conditions require further investigation and remediation including identifying and removing the structures, delineating and remediating the extent of soil and groundwater contamination, and removing the free product.

Further soil and groundwater investigation and action is warranted. Due to elevated EPH within AOC-7 and the presence of separate phase product an area of 50 ft. x 50 ft. x 12 ft. is proposed to be excavated. Post-excavation soil samples will be collected under the direction of a LSRP. The impacted soil will be disposed of at an offsite facility and the excavation will be backfilled with clean certified fill. Any suspected ACM encountered will be addressed as described in AOC-1, above.

AOC-8: Discharge Area of Former Sluiceway

A historical site plan depicted a sluiceway from Building 1 leading to a storm drain pipe that crossed beneath the area of Building 2 and discharged into the area now covered by the parking lot. The sluiceway alignment currently is located in parts of the site storm drain system that discharges to the west of the parking area. EWMA advanced one soil boring to refusal (13.5 feet bgs) in the former discharge area. Evidence of contamination was not observed. A soil sample was obtained from the base of the boring depth and submitted for analyses. No VOCs, BNs, Pesticides or Herbicides were detected. EPH was detected at 37 mg/kg, well below guidance values. Several metals (aluminum, beryllium, manganese, mercury, and nickel) were reported above

NJDEP IGWSSL. None exceeded the NJDEP DCSRS. It is possible that the mercury may be site related as phenyl mercuric acetate (PMA) reportedly was used in the past on-site manufacturing. Otherwise, the metals likely reflect background conditions and may potentially be addressed via background assessment or development of site specific IGWSSL. Sample locations and analytical results above applicable standards are depicted on **Figure 4**. Sample analytical results are provided on **Table 2 and 4**.

Further soil investigation is warranted. An attempt will be made to create a site-specific IGWSRS for the metals.

AOC-9: Transformer House

A small transformer house is located on the east side of Building 1. Two shallow soil samples were obtained from within the house adjacent to a pad-mounted transformer. Samples were analyzed for PCBs. No PCB concentrations were detected. Sample locations are depicted on **Figure 4**. Sample analytical results are provided on **Table 4**.

No further soil investigation is warranted for this AOC.

AOC-12: Former Rail Line and Equipment Testing Area

Four soil borings were advanced to four-foot depth along the area of the former railroad siding that ran along the west side of Building 1. Soil borings AOC-12-1 and AOC-12-2 were located at the south end of the siding, and AOC-12-3 and AOC-12-4 were located at the northern end of the siding. The south siding is along a loading dock where signs in the building indicate that pesticide application equipment was tested. A soil sample from each boring was analyzed for EPH, and one sample from the north and south ends of the siding (samples AOC-12-3 and AOC-12-2, respectively) also were analyzed for TCL VOC BNs, Pesticides, Herbicides, PCBs and TAL Metals.

EPH was reported at less than 40 mg/kg, well below the NJDEP EPH SRC. A trace amount of the VOC carbon disulfide, a likely laboratory artifact and not a site related compound, was reported in sample AOC-12-3 located at the northern end of the siding. Several BN compounds and PCBs were detected at concentrations below regulatory criteria in sample AOC-12-2 from the southern end of the rail siding. No VOCs, Pesticides or Herbicides were reported. Several metals (aluminum, beryllium and manganese) were reported above NJDEP IGWSSL. No metals exceeded the NJDEP DCSRS. Mercury also was detected in the southern sample, AOC-12-2. Mercury was reportedly used in past on-site manufacturing and may be associated with site activities. Otherwise, the metals likely reflect background conditions and potentially may be

addressed via background assessment or development of site specific IGWSSL. Sample locations and analytical results above applicable standards are depicted on **Figure 4**. Sample analytical results are provided on **Table 2** and **Table 4**.

Further soil investigation and action is warranted. An attempt will be made to create a site-specific IGWSRS for the metals.

AOC-13: Former Residential Structures/Dwellings

Several onsite structures identified as dwellings were depicted in historical documents. One was located in the area covered by Building 2, one was located northwest of Building 2, and two were located in the restricted (former landfill) area that was addressed as part of the delisted NPL site work. EWMA's geophysical survey included coverage of the area northwest of Building 2 which currently is a paved parking area. Evidence of the former dwellings was not identified and no subsurface anomalies suggestive of former tanks or other features were identified.

No further soil investigation is warranted for this AOC.

AOC-20: Concrete

To preliminarily assess impact to the buildings' concrete walls and floors, five concrete chip samples were collected and analyzed for EPH or fractionated EPH, and BNs, PCBs, and Metals. Samples were obtained from Building 1 in the former TIFA warehouse space and loading dock areas and from Imperial Metals former tenant space. Concrete chip samples also were collected from Building 2 at the former Sphinx Electroplating tenant space and current garage/warehouse area.

Results of sample analyses identified several BNs in each of the samples at concentrations below NJDEP most stringent standards. PCBs were detected in each sample, and in samples C-4 (former Imperial Metals) and C-5 (former Sphinx Electroplating), PCB concentrations exceeded NJDEP RDCSRS. Several pesticides were detected in each sample and in samples obtained from Building 1 concentrations of Beta-BHC, Gamma-BHC and dieldrin exceeded the NJDEP IGWSSL.

Several metals (aluminum, cadmium, manganese and mercury) were reported above NJDEP IGWSSL in each sample. The mercury detected in sample C-4 (former Imperial Metals) also exceeded the NJDEP RDCSRS. It is possible that the mercury may be site related as mercury was reportedly used in past on-site manufacturing.

EPH analyses were conducted on all the concrete samples. EPH was below the 1,700

mg/kg NJDEP ESC in one sample (C-1). Fractionated EPH analysis on the rest of the concrete samples reported concentrations above the 1,700 mg/kg NJDEP ESC. The fractionated EPH results were then entered into the NJDEP EPH Calculator. Output results using the calculator indicate that the EPH fractionated concentration is below residential and non-residential criteria. The EPH Soil Remediation Standard Calculator Outputs are included in **Appendix 10**. Sample locations and analytical results above applicable standards are depicted on **Figure 5**. Sample analytical results are provided on **Table 5**.

Results of concrete sample analyses indicates that concrete is not suitable for unrestricted use and should be characterized prior to demolition and disposal or reuse in accordance with NJDEP *Guidance for Characterization of Concrete and Clean Material Certification for Recycling*. It is likely that concrete could be suitable for on-site reuse as fill subject to use of institutional and engineering controls.

Additional investigation and action may be required at such time that the site is re-developed. If the site use remains the same and the concrete is not disturbed then no further investigation will be warranted.

AOC-21: Historic Fill

In order to confirm the presence/absence of historic fill material at the Property, soil borings were conducted in conjunction with the AOCs described above. Fill material including pieces of concrete and apparent pieces of discarded, suspect asbestos products (shingles, corrugated panels) was identified in the developed area of the site to depths ranging up to approximately five feet below ground surface (bgs). The fill containing suspect ACM was observed in borings at AOC-2, AOC-3, AOC-4, and AOC-7 located on the west side of Buildings 2 and 3 and on the north side of Building 1. These areas are currently below asphalt-pavement. The fill is underlain by reddish brown sandy silt and clay with little gravel extending to the top of bedrock which is reported by others to be red brown shale of the Towaco formation. Most borings were advanced to refusal, believed to be the top of bedrock, at depths ranging from 9 to 19 feet bgs.

The historic fill material is proposed to be left in place and will be addressed via institutional (site-wide Deed Notice and CEAWRA) and engineering controls (i.e., asphalt, concrete caps and landscaping material). The current/proposed site features (i.e. concrete building footprints, landscaping, and asphalt pavement) will function as

engineering controls which will eliminate the likelihood of exposure of contaminants to the public and environment.

Suspected ACM within Building

EWMA retained Accredited Environmental Technologies, Inc. (AET) to perform an asbestos building survey of the four buildings located on-site. Asbestos Containing Material (ACM) is defined as materials containing more than one percent asbestos by weight. Friable ACMs are those that that can be easily crumbled, pulverized, or reduced to powder by hand pressure. The purpose of this survey was to assess the presence, location, and quantity of ACMs and Presumed Asbestos Containing Materials (PACM) throughout the buildings. AHERA-certified asbestos building inspectors conducted the survey under the coordination of EWMA.

The survey included a visual inspection of the subject structure to assess the presence, locations, and quantities of ACM and PACM within accessible locations made available during the time on-site. Bulk samples were collected from both friable and non-friable suspect asbestos containing materials. Samples were placed in sealed containers and labeled with an identifying code and submitted for analyses using Polarized Light Microscopy (PLM) per EPA Method 600-R-93-116 in AET's Environmental Science Laboratory AET's laboratory is certified by the National Institute of Standards and Technologies (NIST) and is also accredited by the American Industrial Hygiene Association. TEM Analysis was performed in the NIST Certified Laboratory of EMSL Analytical, Inc. located in Cinnaminson, New Jersey.

Survey results indicate ACMs are present in the following locations:

Building 1

- Approximately 16,200 square feet of corrugated transite ceiling panels in space 28.
- Approximately 60 square feet of transite wall panels on the east and west sides of the southeast area in space 28
- Approximately 240 square feet of transite wall panels in the 2nd floor lab in space 28
- Approximately 280 square feet of transite wall panels in the 2nd floor hall in space 28.
- Approximately 150 square feet of flat corrugated transite wall panels within space 4.
- Approximately 350 square feet of flat transite wall panels within space 4.

- Approximately 2500 square feet of 9x9 tan floor tile and associated mastic adhesive in the 2nd floor large middle room of Space 29.

Asbestos containing material was not identified within Buildings 2, 3 and 4. In addition:

- Sprayed-on fireproofing was not observed on the structural members of the subject buildings.
- Spray-applied or troweled-on decorative surfacing material was not observed on the walls or ceiling systems of the subject buildings.
- Asbestos was not confirmed in samples of the following: sheetrock partition walls and associated joint compound, acoustical ceiling tiles, resilient floor coverings in buildings 2 and 3, carpet adhesives, thermal system insulation, mortar associated with masonry walls, fire stopping putty, exterior stucco material, adhesive associated with vinyl cove base moldings, concrete expansion joints, and adhesives used to fasten wall and ceiling finishes.

The asbestos survey did not include destructive sampling to identify/sample materials above/inside solid ceilings or walls and/or below concrete or ceramic floors or below finished grade. Roofing materials were not sampled and are considered PACM. EWMA recommends that if future renovation or demolition is considered the ACMs identified above should be removed by a licensed abatement contractor and disposed in accordance with USEPA, OSHA, NESHAPs and state and local regulations. In addition, the roofing material and roof flashing should also be considered asbestos containing material. Demolition activities which expose previously unidentified building materials in concealed areas must be controlled and suspended until additional sampling can be completed to confirm/deny asbestos content of these materials.

A copy of the asbestos survey report and laboratory analyses is provided in **Appendix 11**.

9. Summary of Site Investigation Findings

Soil/Source Areas – An exterior geophysical survey was conducted in an effort to locate previously unidentified underground storage tanks (USTs), unmarked buried utilities, or other buried metal objects over accessible exterior areas of the Property. In addition, a soil boring program was initiated to investigate potential areas of impacted soil associated with AOCs onsite. Findings from these two programs revealed the following:

- The geophysical survey located several subsurface structures believed to be two former “oil pits” reported north of Building 1. Soil borings and temporary well points identified a perched groundwater zone in soils at this location. Groundwater was not encountered in overburden at other locations investigated by EWMA. Separate phase oil was encountered floating on the water surface in temporary well points, several polycyclic aromatic hydrocarbons (PAHs) and metals were detected in groundwater at concentrations exceeding GWQS, and extractable petroleum hydrocarbons (EPH) were detected in soil samples at concentrations exceeding NJDEP RDCSRS. These features and conditions require further investigation and remediation including identifying and removing the structures, removing the free product, delineating the extent of soil and groundwater contamination, and remediating residual contamination in accordance with NJDEP requirements.
- Borings advanced in parking areas on the west side of Buildings 2 and 3 and north side of Building 1 encountered suspected asbestos debris (broken shingles and corrugated panels) in shallow fill. These locations are outside the restricted asbestos dump/landfill area that was addressed under the prior Superfund response actions. During future development a deed notice modification may need to be submitted and approved by NJDEP prior to commencement of intrusive activities. Special care will be required during soil handling to prevent exposure or release, and soil may not be suitable for reuse.
- Benzo(a)anthracene was detected above NJDEP IGWSSL in soil samples obtained adjacent to the closed-in-place fuel oil USTs. Prior investigation during 1993-1994 UST closure activities identified residual product in several borings, however NJDEP Granted a No Further Action (NFA) determination for the UST closure in 1998. Given the NFA, the recent results are unlikely to trigger a reopening of the UST case. Despite the NFA, if residual product is encountered during future development, the impacted soil will need to be removed and properly disposed of, and the extent of impact delineated to current NJDEP SRS.

- Several metals were identified in soil samples throughout the site at concentrations exceeding NJDEP IGWSSL. Various metals (aluminum, beryllium, manganese, and nickel) were reported in most soil samples above IGWSSL, but did not exceed the NJDEP DCSRS. They are common, naturally occurring elements and likely reflect background conditions. However, given their presence, they will require further assessment. It is likely that they can be addressed via background assessment or development of site specific IGWSSL. Mercury was also reported in two soil samples at concentrations exceeding NJDEP IGWSSL. It is possible that the mercury may be site-related as phenyl mercuric acetate (PMA) reportedly was used in past onsite manufacturing. Given the conditions, soil is not currently suitable for unrestricted use, but it is possible that the metals can be addressed by the development of site specific criteria.

Subsurface Conditions

- The majority of the site outside the restricted landfill area is covered by asphalt pavement or buildings. This developed area of the site is underlain by a layer of granular soil fill materials to depths ranging up to approximately five feet below ground surface (bgs). The fill included pieces of concrete and apparent pieces of discarded, suspect asbestos products (shingles, corrugated panels). The suspect ACM was observed in borings at AOC-2, AOC-3, AOC-4, and AOC-7 located on the west side of Buildings 2 and 3 and on the north side of Building 1. These areas are below asphalt-pavement. The fill is underlain by reddish brown sandy silt and clay with little gravel extending to the top of bedrock which is reported by others to be red brown shale of the Towaco formation. Most borings were advanced to refusal, believed to be the top of bedrock, at depths ranging from 9 to 19 feet bgs.
- Saturated soil was observed only in borings advanced north of Building 1 at the oil pits (AOC-7). At this location, groundwater was present in the overburden at approximate depth of 8 to 9 feet bgs. Two of the borings/temporary well points at the oil pits also had Light Non-aqueous Phase Liquid (free product -- separate phase oil) floating on the water surface or oil coating the well screen. Other borings and well points installed on-site did not encounter groundwater in the overburden. The groundwater at the oil pit area likely is within a localized perched water zone in the overburden. It is noted that as part of the NPL investigation, several monitoring wells were installed including one on the upland section of the site (MW-901) and six within the landfilled area west of the parking lot (MW-902 through MW-907). The upland well is believed to be screened in bedrock and the landfill wells are believed to be screened in overburden. A thin groundwater-bearing zone at the base of the overburden/fill layers is reported in the landfilled area. The well records for the monitoring wells installed as part of the NPL investigation are included in **Appendix 13**.

Groundwater

A bedrock groundwater monitoring well was installed adjacent to the fuel oil USTs as part of the UST closure activities. The 1994 groundwater quality results detected a trichloroethylene (TCE) at a concentration of 34 µg/l, which exceeds the NJDEP GWQS and VIGWSL. Further investigation was not conducted and the well was sealed/abandoned as the TCE was not considered to be associated with the fuel oil USTs, and bedrock contamination apparently was not the focus of the Superfund site investigation. This concentration of TCE was not cited in the Record of Decision (ROD) issued by United States Environmental Protection Agency (USEPA) for the Superfund site, and as such it may not have been considered fully as part of NPL action. An additional bedrock monitoring well (the only bedrock well installed as part of the Superfund investigation and the only other monitoring well outside the restricted asbestos landfill area) is located along Division Avenue and is believed to be hydrologically upgradient of the well at the USTs. EWMA sampled the upgradient well and TCE was not detected. This suggests that a source area for the TCE may be present on-site.

EWMA conducted a groundwater investigation that consisted of installation of several temporary well points (M-1R, AOC-7-2 and AOC-7-4) and two permanent monitoring wells (MW-1R and MW-2), as well as collection of groundwater quality samples. Groundwater sample results are shown in **Table 3** and **Table 6**. A site plan depicting the monitoring well locations and exceedances are provided on **Figure 4**. Findings from this investigation revealed the following:

- Groundwater samples obtained from temporary well points AOC-7-2 and AOC-7-4 identified several PAHs that are consistent with lubricating oils as well as several metals including lead, arsenic and others potential background metals, above the NJDEP GWQS in the area of AOC-7.
- Groundwater within the saturated overburden zone on the Property is also impacted with chlorinated solvent concentrations (PCE and TCE) above their respective NJDEP GWQS, as revealed by the temporary well point sample (M-1R) collected from 11 to 30 feet bgs within AOC-2.
- Groundwater within the shattered weathered bedrock zone is also impacted with chlorinated solvent concentrations above their respective NJDEP GWQS and VIGWSL to the maximum depths of our investigation (50 feet bgs) as revealed during the 2015 groundwater sampling events from MW-1R. It should be noted

that since chlorinated solvents do not exceeded the VIGWSL in the overburden groundwater, a vapor intrusion investigation is not warranted at this time.

Asbestos/Building – An asbestos survey was conducted for the four on-site buildings. Findings from this investigation revealed the following:

- Concrete floors and walls were stained in places, and the buildings have up to 80 years of industrial use. Redevelopment of the site will require demolition of existing structures and NJDEP requires assessment of concrete prior to recycling and reuse. EWMA obtained several concrete chip samples to screen conditions. PCBs and mercury were detected in each sample, and exceeded the NJDEP RDCSRS in one or more locations. In addition several pesticides and metals were detected. Results of concrete sample analyses indicates that concrete is not suitable for unrestricted use and should be characterized prior to demolition and disposal or reuse in accordance with NJDEP Guidance for Characterization of Concrete and Clean Material Certification for Recycling.
- Asbestos was detected in transite panels, floor tile, and mastic in Building 1, and roofing components on-site are presumed to be asbestos-containing. Asbestos containing materials (ACM) should be properly removed prior to renovations or demolition work, and remaining ACM addressed under an Operations and Maintenance Plan.

9. Conclusion and Recommendations

Based on the results of the PA and SI phases, further investigation is necessary in the following eight AOCs that remain on the Property:

- AOC-2: Former Fuel Oil USTs
- AOC-4: Above Ground Storage Tanks between Buildings 3 and 4
- AOC-5: Former Gas Pump and Suspected UST
- AOC-6: Former Tanks in Area of Building 2
- AOC-7: Former Oil Pit Area
- AOC-8: Discharge Area of Former Sluiceway
- AOC-12: Former Rail Line and Equipment Testing Area
- AOC-20: Concrete
- AOC-21: Historic Fill