# POST-CONSTRUCTION
# STORMWATER MANAGEMENT (PCSM) REPORT

FOR

## ELCON
## RECYCLING

**FALLS TOWNSHIP**
**BUCKS COUNTY, PA**

**FILE NO. 2012-07083**

**ORIGINAL: JANUARY, 2019**

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Prepared For:

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The Erosion and Sediment Control Plans and Calculations and the Post-Construction Stormwater Management Plans and Calculations have been provided, designed, and implemented to be consistent with one another. Please refer to the Erosion and Sediment Control Plans and Calculations for project, dated July 12, 2019, as last revised.

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## PROJECT DATA SHEET

1. Development Name: Elcon Recycling
   Date: January, 2019

2. Location: Falls Township, Bucks County, PA

3. Facility Owner: Elcon Recycling Services, LLC
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   Blue Bell, PA 19422
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4. Person Responsible for Construction and Maintenance of earth moving operations and Erosion and Sediment Pollution Controls: (list all responsible parties if duties are assigned to more than one party.)

   Not available at this time.

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5. Post-Construction Stormwater Management Plan Preparer:

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## PCSM PLAN PREPARER INFORMATION

NAME OF PLAN PREPARER: James J. Hersh, P.E.

FORMAL EDUCATION:

Name of College or Technical Institute: Northeastern University
Curriculum or Program: Civil Engineering
Dates of Attendance: 2003 to 2008
Degree Received: Bachelor of Science in Civil Engineering

EMPLOYMENT HISTORY:

Current Employer: Gilmore & Associates, Inc.
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# PCSM NARRATIVE

## 1.0 PROJECT DESCRIPTION

The subject site (Tax parcel 13-51-1-5) is located in the Materials Processing and Manufacturing (MPM) zoning district. The site is bound by Phoenix Metals, Arley Wholesale, A&A Machinery, and Univar USA along Dean Sievers Place to the east, Sims Metal Management to the north, and Steel Road South to the west and south, in Falls Township. The attached USGS Quadrangle depicts the site location. The 32.30-acre site is currently undeveloped. The site is generally flat, but slopes toward the existing wetland at approximately one (1) percent. The majority of the site currently sheet flows directly to the existing wetland (POI-A), with a small portion of the site sheet flowing to an existing drainage swale along Dean Sievers Place and then to the wetland. The remaining portion of the site sheet flows to an adjacent property, TMP 13-51-1-6 (POI-B). The existing wetland system eventually discharges to Biles Creek, which is classified as WWF, MF in Chapter 93.

The project proposes a network of interconnected buildings covering approximately 108,600 square feet for the purpose of treating industrial waste. Drive aisles capable of accommodating a WB-67 truck and a 43-foot fire truck per Falls Township requirements will be provided throughout the site. A designated truck unloading area, a main parking area for 66 vehicles, and a small parking area for 5 vehicles are also provided. The truck unloading area is graded to be self-contained and will direct runoff collected in this area to the processing plant as an extra precaution against leaks or spills. The process tank farm in the large central island will also be self-contained and direct runoff to be processed. The processing plant will handle runoff from these areas up to the 25-year storm. For storm events larger than the 25-year storm, overflow runoff will be directed to one (1) stormwater basin along with runoff from the majority of the disturbed area. It should be noted that the proposed stormwater basin has been designed to account for runoff from the entire drainage area as if none of the runoff will be treated by the processing plant.

The proposed development will occur within approximately 13.83 acres of the 32.30-acre site. The 13.83 acres of development includes ±1.50 acres of BMP 5.6.1 minimize total disturbed area grading. Therefore, the total area to be disturbed is approximately 12.33 acres. The existing ground cover on the area of the site to be developed is approximately 2.53 acres of brush, and the remaining ±9.80 acres is considered meadow. The proposed project will increase the impervious coverage within the limit of disturbance by approximately 8.94 acres. The remaining ±3.38 acres are considered lawn area.

### 1.1 PAST, PRESENT, AND PROPOSED LAND USES: §102.8(F)(3)

The property is located on a former US Steel site at the corner of Steel Road South and Dean Sievers Place in Falls Township, Bucks County, PA. According to aerial photographs dated 1938, 1944, and 1950, this site was used as farmland for agricultural purposes prior to 1952. In 1952, borrow pits were constructed across the numerous properties owned by US Steel in order to raise the facility above the 100-year floodplain. This property was developed with a rail yard and used as a steel facility for US Steel

starting in 1952. The small sanitary waste processing building that is currently located at the bend in Steel Road South can be seen in aerial photographs dated as early as 1964. Aerial photographs also show that Steel Road South and the wet pond located on this property were constructed between 1964 and 1971. US Steel began shutting down the steel operation plants in 1984, and steel-making operations were fully stopped in 1991. By 1999, this property was graded to its current existing condition, and has remained a vacant unused lot since that time. The proposed use for this site is commercial for the treatment and storage of hazardous and residual liquid waste streams.

## 1.2 PROJECT LOCATION MAP

Trenton West Quadrangle
1" = 2,500'

# 2.0 SITE CHARACTERISTICS

## 2.1 TOPOGRAPHIC FEATURES

Topographic information was obtained from a field survey performed by Gilmore & Associates, Inc. in March of 2014. Vertical Datum is NAVD88 and was established by Global Positioning System (GPS) with observations referenced to the TopCon TopSurv GPS Base Station Network.

The site is generally flat, but slopes toward the existing wetland at approximately one (1) percent. The majority of the site currently sheet flows directly to the existing wetland (POI-A), with a small portion of the site sheet flowing to an existing drainage swale along Dean Sievers Place and then to the wetland. The remaining portion of the site sheet flows to an adjacent property, TMP 13-51-1-6 (POI-B). The existing wetland system eventually discharges to Biles Creek, which is classified as WWF, MF in Chapter 93.

## 2.2 RECEIVING WATERS

The site is located in the Delaware River South Sub-Basin of the Pidcock-Mill Creeks Watershed in Falls Township, Bucks County, PA. The nearest receiving watercourse to receive runoff is Biles Creek, and the designated and existing uses are identified as warm water fishes (WWF) and migratory fish (MF) according to PA Code, Chapter 93. This portion of Biles Creek is classified as impaired according to Category 4 of the PA Integrated Water Quality Monitoring and Assessment Report for organics and Polychlorinated Biphenyls (PCBs). It also has a TMDL according to Category 5 of the PA Integrated Water Quality Monitoring and Assessment Report, per the Delaware River Estuary PCB TMDLs. The project area is not located within any Exceptional Value (EV) or High Quality (HQ) watersheds, and there is an Approved Act 167 Plan and River Conservation Plan.

## 2.3 PROJECT AREA SOILS

Soils classification information for the project site was obtained from the Web Soil Survey of Bucks County, Pennsylvania. Urban Land (UfuB) is the only soil mapped within the proposed area of disturbance. The *Project Soils Map*, along with *Table 1*, *Table 2*, and *Table 3* below, identify the soil classifications, limitations, and resolutions located on the site.

A more traditional infiltration basin was included in the original design of this project. However, during Elcon's application review process for a Hazardous and Residual Waste Treatment and Storage Permit, PA DEP Waste Management Program personnel specifically requested that Elcon not incorporate an infiltration basin into the stormwater design. PA DEP personnel requested that the proposed basin be lined with an impermeable barrier to further protect the environment in the event that a spill bypasses the containment system and ends up in the stormwater basin. Therefore, to satisfy PA DEP's request, the basin was redesigned as a Managed Release Concept Basin with an

impermeable liner. Additional information, as prepared by the Applicants environmental consultant, IES Engineers, can be found in Appendix 9.1 of this report. Since infiltration is not included as a design feature in the proposed stormwater basin for the reasons mentioned above, infiltration testing is not being performed for the proposed project. Based on soil borings performed as part of the Act 2 work for this site, depth to groundwater ranges from 5 to 13.5 feet below ground surface.

**Project Soils Map**

**Table 1: Existing Soils Classification**

| Symbol | Soil Name | Rating | Slope |
|---|---|---|---|
| UfuB | Urban Land | | 0-8% |
| Na | Nanticoke-Hatboro Silt Loams | C/D | 0-1% |
| W | Water | | |

**Table 2: Soil Limitations**

PER TABLE E.1 OF THE EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL DATED MARCH 2012, THE FOLLOW TABLE DISPLAYS THE LIMITATIONS OF PENNSYLVANIA SOILS PERTAINING TO EARTHMOVING PROJECTS FOR THE SOILS LOCATED ON THE PROJECT SITE.

| SOIL NAME | CUTBANKS CAVE | CORROSIVE TO CONCRETE/STEEL* | DROUGHTY | EASILY ERODIBLE | FLOODING | DEPTH TO SATURATED ZONE/SEASONAL HIGH WATER TABLE | HYDRIC/HYDRIC INCLUSIONS | LOW STRENGTH/ LANDSLIDE PRONE | SLOW PERCOLATION | PIPING | POOR SOURCE OF TOPSOIL | FROST ACTION | SHRINK -- SWELL | POTENTIAL SINKHOLE | PONDING | WETNESS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ABBOTTSTOWN | X | C/S | | X | | X | X | X | X | X | X | X | | | | X |
| CROTON | X | C/S | | X | | X | X | X | X | X | X | X | | | X | X |
| PENN | X | C | X | | | | X | X | | X | X | X | | | | |
| READINGTON | X | C/S | | X | | X | X | X | X | X | X | X | | | | X |
| ROWLAND | X | C/S | | X | X | X | X | X | X | X | X | X | | | | X |
| URBAN LAND** | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

NOTE: ABSENCE OF AN X DOES NOT MEAN "NO POTENTIAL LIMITATION"
* C = CONCRETE, S = STEEL
** 'URBAN LAND' NOT INCLUDED IN TABLE E.1

**Table 3: Soil Limitations and Resolutions for Limitations**

| LIMITATION | RESOLUTION OF LIMITATIONS |
|---|---|
| CUTBANKS CAVE | PROVIDE APPROPRIATE BENCHING AND/OR SHORING IN AREAS OF EXCAVATION |
| CORROSIVE TO CONCRETE/STEEL | PROVIDE ALL PIPES IN TRENCHES WITH SELECT MATERIAL BACKFILL, AND ALL PIPES SHALL HAVE WATERTIGHT CONNECTIONS. |
| DROUGHTY | SOIL SHOULD BE INSPECTED BY A GEOTECHNICAL ENGINEER PRIOR TO USE ON SITE. ANY RECOMMENDATIONS BY THE GEOTECHNICAL ENGINEER SHALL BE FOLLOWED PRIOR TO USE OF SOIL. |
| EASILY ERODIBLE | SOILS SHALL BE STABILIZED WITH EITHER TEMPORARY OR FINAL STABILIZATION IN AREAS WHERE EARTHWORK IS DELAYED OR STOPPED FOR FOUR CONSECUTIVE DAYS. |
| FLOODING | AVOID CONSTRUCTION WITHIN THESE SOILS AS MUCH AS POSSIBLE. SOIL SHOULD BE INSPECTED BY A GEOTECHNICAL ENGINEER PRIOR TO USE ONSITE. ANY RECOMMENDATIONS BY THE ENGINEER SHOULD BE FOLLOWED PRIOR TO USE OF SOIL. |
| DEPTH TO SATURATED ZONE/SEASONAL HIGH WATER TABLE | SOILS SHOULD BE EVALUATED FOR WETNESS PRIOR TO USE IN SITE WORK. IF GEOTECHNICAL ENGINEER DEEMS SOILS TOO WET FOR SITE WORK, THEN SOILS SHALL BE AMENDED OR DRIED PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS. |
| HYDRIC/HYDRIC INCLUSIONS | SOIL SHOULD BE INSPECTED BY A GEOTECHNICAL ENGINEER PRIOR TO USE ON SITE. ANY RECOMMENDATIONS BY THE GEOTECHNICAL ENGINEER SHALL BE FOLLOWED PRIOR TO USE OF SOIL. |
| LOW STRENGTH/ LANDSLIDE PRONE | SOILS SHALL BE STABILIZED WITH EITHER TEMPORARY OR FINAL STABILIZATION IN AREAS WHERE EARTHWORK IS DELAYED OR STOPPED FOR FOUR CONSECUTIVE DAYS. |
| SLOW PERCOLATION | SOIL SHOULD BE INSPECTED BY A GEOTECHNICAL ENGINEER PRIOR TO USE ON SITE. ANY RECOMMENDATIONS BY THE GEOTECHNICAL ENGINEER SHALL BE FOLLOWED PRIOR TO USE OF SOIL. |
| PIPING | AREAS OF EMBANKMENTS WITH PIPES PASSING THROUGH THEM SHALL HAVE ANTI-SEEP COLLARS INSTALLED PER PADEP E&S DESIGN MANUAL. |
| POOR SOURCE OF TOPSOIL | SOILS SHOULD BE AMENDED AS RECOMMENDED TO PROVIDE ADDITIONAL ORGANIC CONTENT AND WATER HOLDING CAPACITY. |
| FROST ACTION | SOILS SHOULD BE FREE OF FROZEN OR MUCKY MATERIALS. FILL SHOULD NOT BE PLACED ON SATURATED OR FROZEN SURFACES. EARTHWORK INVOLVING THESE SOILS SHOULD BE LIMITED TO WARMER MONTHS WHEN PRACTICABLE. |
| WETNESS | SOILS SHOULD BE EVALUATED FOR WETNESS PRIOR TO USE IN SITE WORK. IF SOILS ARE DEEMED TOO WET FOR SITE WORK BY GEOTECHNICAL ENGINEER, SOILS ARE TO BE DRIED OR AMENDED PER ENGINEER'S RECOMMENDATIONS. |

## 2.4 ACT 2 INVESTIGATION ON TAX PARCEL 13-51-1-5

The Act 2 Final Report for 32-Acre Parcel (Act 2 Report) without its appendices, as prepared by GHD Group and dated September 8, 2015, is included as Appendix 9.4 to this report. According to the Act 2 Report, US Steel has, "demonstrated attainment with the SHS (Statewide Health Standard) for Site compounds of concern (COC) for soil in accordance with the requirements in the Pennsylvania Code, Title 25, Chapter 250 (Act 2)" (page 1).

In 1998, there were 10 soil samples taken from test pits, 4 soil samples taken from soil borings, and 3 sediment samples taken from the stormwater ditch on the west side of the parcel. Those samples were analyzed for select volatile organic compounds (VOCs), select semi-VOCs (SVOCs), Total Petroleum Hydrocarbons (TPH), and priority pollutant (PP) metals. In June 2014, 14 surficial (0-2 feet below ground surface) soil samples were taken from boreholes, 14 sub-surface (greater than 2 feet below ground surface) soil samples were taken from boreholes, and 3 surface water samples were taken and analyzed for Target Compound List (TCL) VOCs, TCL SVOCs, polychlorinated biphenyl (PCBs), and PP metals (Act 2 Report, page 2). Quality control samples were also taken during sampling, and the chemical analysis for all samples was performed by TestAmerica (Act 2 Report, page 4).

The analytical results for the soil samples provided by TestAmerica were below the Medium-Specific Concentrations (MSC) for surficial samples (0 to 2 feet below ground surface) and subsurface samples (2 to 15 feet below ground surface) for non-residential direct-contact values. All soil samples were also below the MSCs for the soil to groundwater numerical values for non-residential, non-use qualifiers. Finally, all soil samples were also below the USEPA-PA Defaults Nonresidential Volatilization to Indoor Air numerical values. The analytical results for the surface water samples were below the Chapter 93.8c, Table 5, Water Quality Criteria for Toxic Substances (Fish and Aquatic Life Criteria and Human Health Criteria) (Act 2 Report, page 4). Actual analytical values for each sample can be found in Tables 4.1 through 4.5 in the Act 2 Report.

A non-use aquifer determination was approved by PA DEP in April 1999, and eliminates the groundwater exposure pathway. PA DEP also provided a release of environmental liability for COCs in the entire US Steel facility in a letter dated April 11, 2011. There are no uses of groundwater for potable or non-potable purposes between the up-gradient boundary of this site and the Delaware River. The use of groundwater is restricted through the implementation of an Environmental Covenant and all present and future use of groundwater from any source on this site shall be prohibited, except for purposes of monitoring groundwater quality. This site is located in the Materials Processing and Manufacturing (MPM) zoning district, and an Environmental Covenant also restricts the uses on this site to be only non-residential in the future. There is no completed pathway to on-site groundwater due to existing restrictions (Act 2 Report, page 5).

Ultimately, there are no exposure pathways on this site. There is no exposure pathway or receptors to COCs in the soil because the concentrations of COCs were below the

applicable MSCs for direct-contact in a non-residential use scenario for both surface and subsurface soil. There is also no exposure pathway from soil to groundwater because the soil concentrations of COCs were below the applicable MSCs for soil to groundwater criteria for non-use aquifers. Finally, there is no exposure pathway or receptors to COCs as a result of indoor air because the soil concentrations at the site reported concentrations of COCs below the applicable USEPA-PA Defaults Nonresidential Volatilization to Indoor Air numerical values (Act 2 Report, pages 5, 8). A detailed explanation of the exposure pathway and receptor evaluation can be found in Section 6 of the Act 2 Report.

US Steel has demonstrated attainment of a Statewide Health Standard (SHS) on this property for surficial and subsurface soil based on the following conditions:

1. The site has been utilized for industrial purposes since 1952, and there are no foreseeable changes for the use of the property.
2. The random surficial and subsurface soil sampling program has demonstrated attainment of the SHS for soil.
3. An Environmental Covenant has been drafted in accordance with the Uniform Environmental Covenants Act (UECA), and will be executed for the property restricting residential use. This Covenant will make the property subject to activity and use limitations, which the owner and subsequent owners shall abide by to ensure the future use of the property is limited to non-residential use.
4. No current or future pathways to surficial or subsurface soil with unacceptable risk have been identified.

As a result, US Steel has requested a release from environmental liability for COCs in soil and no further post-remediation care will be implemented (Act 2 Report, pages 9-10).

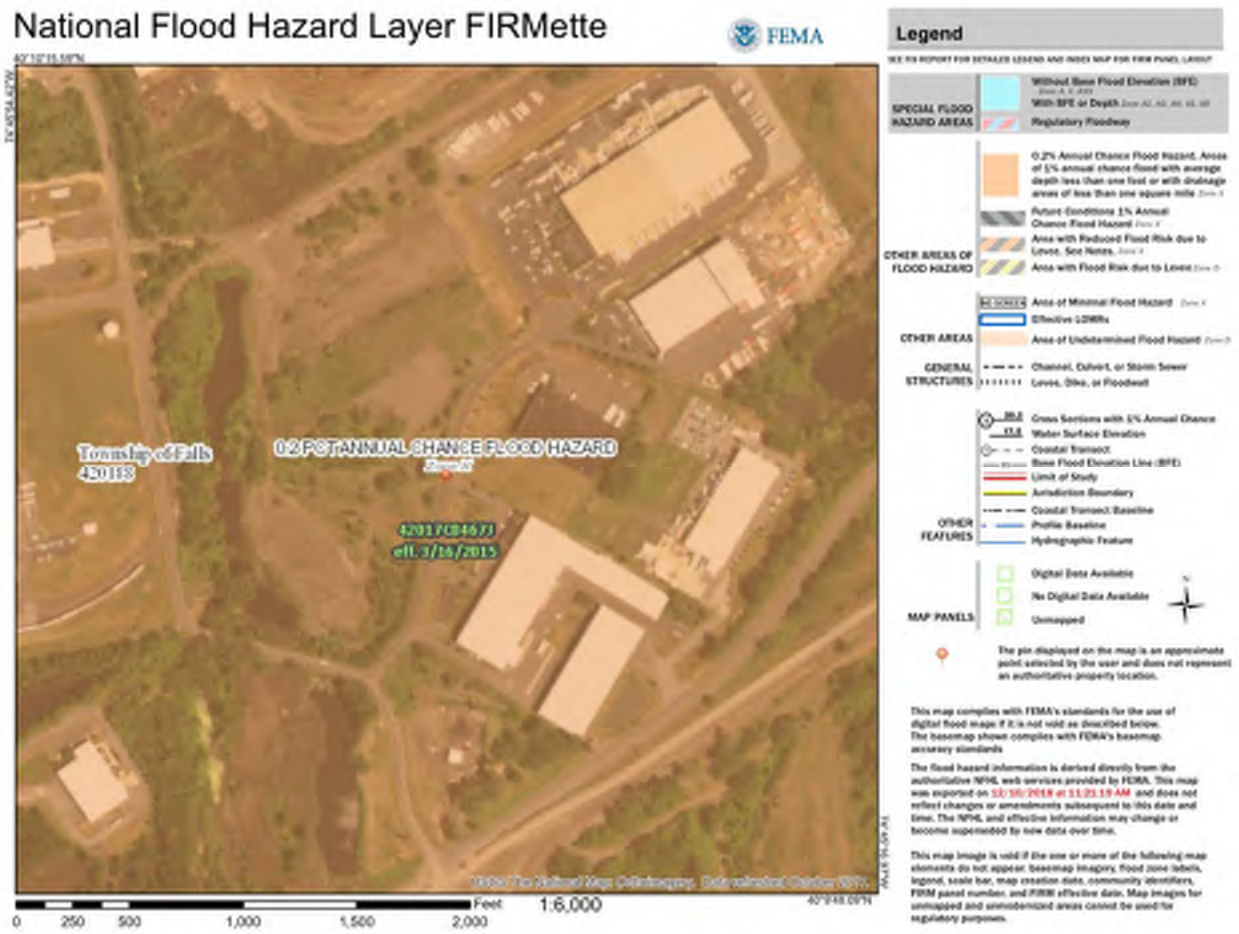
Additional information about the Act 2 work performed for this site can be found in the Act 2 Report, included as Appendix 9.4 to this report.

## 2.5 VEGETATION AND FIRM FLOODPLAIN MAPPING

The existing land coverage types within the limit of disturbance for the project site are brush and grass area. There are no delineated wetlands within the proposed project area, but the wetlands on the property to which the project will drain are delineated on the plans. The full Wetland Delineation Report, as prepared by Conestoga-Rovers & Associates and dated August 13, 2014, is included as Appendix 9.2 to this report and the Army Corps of Engineers Jurisdictional Determination dated January 5, 2015 is included as Appendix 9.3. Existing trees to be removed will be replaced in accordance with the landscape plans of the project.

According to Flood Insurance Rate Map (FIRM) 42017C0467J, effective on March 16, 2015, the entire site is located in Zone X, 0.2% annual chance flood hazard.

FIRM 42017C0467J, effective on March 16, 2015, includes the entire property, and is displayed below:




## 2.6 HYDROLOGY AND STORMWATER RECHARGE

The pre-development stormwater analysis divides the site into two (2) Points of Interest (POI). Both POI-A and POI-B eventually drain to the on-site wetland system and ultimately to Biles Creek. The total drainage area analyzed for peak rate reduction in accordance with PA DEP and Falls Township's Stormwater Management Ordinance is the area of land to be disturbed, or approximately 12.32 acres.

The post-development stormwater analysis shows the runoff will be controlled by a proposed impermeable-lined managed release concept (MRC) basin designed to capture and treat runoff from the majority of the proposed lawn and impervious areas of the site. This Best Management Practice (BMP) will be the main component for meeting the stormwater management requirements. Subsurface storm sewer conveyance systems will be installed to direct the stormwater runoff collected by inlets and roof drains toward the proposed basin. A perforated underdrain with upturned elbow and perforated cap in the outlet control structure will be installed to control the runoff release from the managed release concept basin and encourage evapotranspiration to the maximum extent possible. The basin will incorporate an impermeable liner to prevent infiltration to satisfy a specific request from PA DEP Waste Management Program personnel. The proposed

stormwater design routes stormwater through a treatment train of BMPs to prevent an increase in runoff and maximize water quality to the maximum extent possible.

**Table 4: Land Cover Breakdown for Each POI within LOD (Acres)**

| Cover Type | POI-A | | POI-B | |
|---|---|---|---|---|
| | Pre-Development | Post-Development | Pre-Development | Post-Development |
| **Impervious** | 0.00 | 8.90 | 0.00 | 0.04 |
| **Lawn** | 0.00 | 3.28 | 0.00 | 0.11 |
| **Meadow** | 8.02 | 0.00 | 1.78 | 0.00 |
| **Brush** | 2.30 | 0.00 | 0.23 | 0.00 |
| **Total** | **10.32** | **12.18** | **2.01** | **0.15** |

## 3.0 DESIGN CRITERIA

The stormwater design standards for the proposed development are set forth by Chapters 191 (Subdivision and Land Development) and 187 (Stormwater Management) of the Falls Township Code of Ordinances as well as the PADEP Erosion and Sedimentation Control Regulations and the PADEP Stormwater BMP Manual. Specific design standards and project site conditions are as follows:

1. §187-Attachment 1 Appendix A Table A-1 – Design Storm Rainfall Amount (inches):
    a. One year – 2.7 inches
    b. Two years – 3.3 inches
    c. Five years – 4.2 inches
    d. Ten years – 5.0 inches
    e. Twenty-five years – 5.8 inches
    f. Fifty years – 6.4 inches
    g. One hundred years – 7.2 inches
2. §187-9.A.(2) – Standards for managing runoff from Subarea C in the Delaware River South Watershed is shown below:
    a. Design Storm 2-year peak runoff rate must be reduced to Pre-Development 1-year
    b. Design Storm 5-year peak runoff rate must be reduced to Pre-Development 2-year
    c. Design Storm 100-year peak runoff rate must be reduced to 50% of Pre-Development 100-year

## 4.0 METHODOLOGY

The NRCS (SCS) Method was utilized for pre-development and post-development stormwater volume and peak rate analysis. The computer program "Hydraflow Hydrographs 2007" by Intelisolve was utilized to calculate and plot the runoff hydrographs. The SCS Method incorporates the time of concentration (Tc), Curve Number (CN) values, 24-hour precipitation depth, and associated drainage areas to calculate the runoff rates. Input values were obtained from existing and proposed site conditions, PennDOT Design Manual No. 2, PADEP Erosion and Sediment Pollution Control Program Manual, Technical Release-55, and the Stormwater Management requirements and standards outlined in the Falls Township Stormwater Management Ordinance.

To develop the Post-Construction Stormwater Management Plan, the pre-development and post-development peak discharge rates for the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year rainfall events were calculated utilizing the SCS Method. The calculations utilize the SCS Type II 24-hour precipitation values to compare pre- and post-development stormwater rates. The post-development peak discharge rates were calculated considering all site improvements proposed for the project. Due to the proposed managed release concept basin, addition of amended soils, re-vegetation using native species, and the minimization of disturbed area, the post-development peak discharge rates are lower than the pre-development rates at POI-A and POI-B.

For purposes of meeting the requirements of Section D.3 and D.4 of the PADEP's NPDES Permit for runoff volume and water quality control, the NRCS (SCS) Method is utilized to effectively manage the difference in the 2-year 24-hour volume for the site from the pre- to post-development condition. Runoff Curve numbers were obtained in accordance with the Falls Township Stormwater Management Ordinance.

# 5.0 ANALYSIS

For stormwater management analysis, two (2) Points of Interest were utilized for the pre- and post-development conditions based on existing topography of the on-site and off-site areas, and the natural resources and drainage outlets for the site. The following list details the pre- and post-development areas and their corresponding points of interest:

## 5.1 PRE-DEVELOPMENT POINTS OF INTEREST

- **Pre-Development Point of Interest A (POI-A)** is located on the western portion of the site where runoff from the site drains to an existing wetland system. This area captures brush and meadow areas, and includes approximately 10.32 acres within the overall proposed limits of disturbance.

- **Pre-Development Point of Interest B (POI-B)** is located at the northern property line of the site where runoff from the site drains towards an existing basin located on the adjacent property (T.P. 13-51-1-6). This area captures brush and meadow areas, and includes approximately 2.01 acres within the overall proposed limits of disturbance.

## 5.2 POST-DEVELOPMENT POINTS OF INTEREST

- **Post-Development Point of Interest A (POI-A)** is located on the western portion of the site where runoff from the site drains to an existing wetland system. This area captures grass and impervious areas from the proposed development. The proposed managed release concept basin is within the area that drains to POI-A. The proposed post-construction stormwater management facilities will reduce the peak post-development flow rates to below the pre-development peak flow rates for each storm event, as shown in *Table 5* below.

- **Post-Development Point of Interest B (POI-B)** is located at the northern property line of the site where runoff from the site drains towards an existing basin located on the adjacent property (T.P. 13-51-1-6). This area captures grass and impervious areas from the proposed development. The significant reduction in area compared to the pre-development condition will reduce the peak post-development flow rates to below the pre-development peak flow rates for each storm event, as shown in *Table 5* below.

## 5.3 PEAK DISCHARGE SUMMARY TABLE

*Table 5* below compares the pre-development and post-development peak discharge rates at the two (2) Points of Interest for the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year rainfall events:

**Table 5: Peak Discharge Rate (cfs) at Points of Interest**

| Storm Event | POI-A | | POI-B | | Total Site | | Total Site Percent Reduction |
|---|---|---|---|---|---|---|---|
| | Pre-Development | Post-Development | Pre-Development | Post-Development | Pre-Development | Post-Development | |
| **1-year** | 2.49 | 1.72 | 0.81 | 0.20 | 3.30 | 1.92 | 41.8% |
| **2-year** | 4.45 | 2.48 | 1.44 | 0.29 | 5.89 | 2.77 | 53.0% |
| **5-year** | 7.95 | 3.92 | 2.54 | 0.43 | 10.49 | 4.35 | 58.5% |
| **10-year** | 11.41 | 5.70 | 3.62 | 0.56 | 15.03 | 6.26 | 58.3% |
| **25-year** | 15.08 | 7.52 | 4.77 | 0.70 | 19.85 | 8.22 | 58.6% |
| **50-year** | 17.95 | 8.99 | 5.66 | 0.80 | 23.61 | 9.79 | 58.5% |
| **100-year** | 21.87 | 10.85 | 6.89 | 0.93 | 28.76 | 11.78 | 59.0% |

## 6.0 PCSM PLANNING AND DESIGN

The management of post-construction stormwater shall be planned and conducted to the maximum extent practicable. The project was designed to provide the following measures to limit negative impacts to the environment:

**I. STREAM INTEGRITY PRESERVATION: §102.8(b)(1)**

The proposed BMPs included in the Post-Construction Stormwater Management (PCSM) Plan have been planned and provided in order to preserve the integrity of stream channels, and maintain and protect the physical, biological, and chemical qualities of the receiving stream.

**II. PREVENT STORMWATER RUNOFF RATE INCREASE: §102.8(b)(2)**

The proposed PCSM Plan will prevent an increase in stormwater runoff rates through the use of a managed release concept basin, amended soils, re-vegetation using native species, and the minimization of disturbed area.

**III. MINIMIZE STORMWATER RUNOFF VOLUME INCREASE: §102.8(b)(3)**

The proposed PCSM Plan will minimize the increase in stormwater runoff volume through the use of a managed release concept basin, amended soils, re-vegetation using native species, and the minimization of disturbed area.

**IV. MINIMIZE IMPERVIOUS AREAS: §102.8(b)(4)**

The proposed PCSM Plan and development layout provide an efficient configuration of impervious surfaces in order to minimize the amount of impervious coverage to the maximum extent possible.

**V. MAXIMIZE DRAINAGE PROTECTION: §102.8(b)(5)**

The existing drainage features and vegetation shall be protected to the maximum extent practicable. The proposed PCSM Plan maximizes the protection of existing drainage features and existing vegetation. To achieve this goal, the areas on-site, outside of the limits of disturbance, are subject to the following criteria:

- Areas shall not be subject to grading or movement of existing soil.
- Existing vegetation in a healthy condition may not be removed.
- Invasive non-native vegetation may be removed.
- Pruning or other required maintenance of vegetation is permitted. Additional planting is permitted.
- Areas shall be protected and delineated in the field.

**VI. MINIMIZE LAND CLEARING AND GRADING: §102.8(b)(6)**

In order to minimize land clearing and grading, the areas on-site that are identified on the PCSM Plans, and areas outside of the limits of disturbance, will be protected by tree protection fencing and subject to the following criteria:

- Areas shall not be subject to grading or movement of existing soil.
- Existing vegetation in a healthy condition may not be removed.
- Invasive non-native vegetation may be removed.
- Pruning or other required maintenance of vegetation is permitted. Additional planting is permitted.
- Areas shall be protected and delineated in the field.

**VII. MINIMIZE SOIL COMPACTION: §102.8(b)(7)**

The limits of disturbance have been delineated as the minimum practical areas. All other areas shall not be disturbed, and are subject to the following criteria:

- Areas shall not be subject to grading or movement of existing soil.
- Existing vegetation in a healthy condition may not be removed.
- Invasive non-native vegetation may be removed.
- Pruning or other required maintenance of vegetation is permitted. Additional planting is permitted.
- Areas shall be protected and delineated in the field.

**VIII. OTHER CONTROLS TO MINIMIZE RUNOFF: §102.8(b)(8)**

Other structural or non-structural measures and controls shall be utilized to prevent or minimize the generation of additional stormwater runoff, such as the following:

- Minimize Total Disturbed Area - Grading (BMP 5.6.1)
- Re-Vegetate and Re-Forest Disturbed Areas, Using Native Species (BMP 5.6.3)
- Managed Release Concept (Issued December 13, 2018)
- Soil Amendment & Restoration (BMP 6.7.3)

The PCSM Plan and Narrative have been prepared by James J. Hersh, P.E., and the professional staff of Gilmore & Associates, Inc. It has been prepared in accordance with the standards and criteria of the PADEP Best Management Practice (BMP) Manual, USDA TR-55 Manual, and the Falls Township Code of Ordinances.

## PCSM COMPLETENESS REVIEW CHECKLIST ITEMS:

**EXISTING TOPOGRAPHIC FEATURES OF THE PROJECT SITE AND THE IMMEDIATE SURROUNDING AREA: §102.8(f)(1)**

- A topographic map of the project site is provided on the PCSM Plans.
- A location map (USGS quadrangle) is provided on the PCSM Plans and in Section 1.2 of this report.
- The type of cover on the project site is identified on the PCSM Plans.

**TYPES, DEPTH, SLOPE, LOCATIONS AND LIMITATIONS OF THE SOILS AND GEOLOGIC FORMATIONS: §102.8(f)(2)**

- A soil map of the project site is provided on the PCSM Plans and in Section 2.3 of this report.
- Soil use limitations and their resolutions are provided in Section 2.3 of this report.
- Site characterization of soil and geology, including appropriate infiltration and geological studies that identify location, depths, and methodology is provided on the PCSM Plans and in Sections 2.3 and 2.4 of this report.
- Geologic mapping features are addressed on the PCSM Plans and in Sections 2.3 and 2.4 of this report.

**CHARACTERISTICS OF THE PROJECT SITE, INCLUDING THE PAST, PRESENT AND PROPOSED LAND USES AND THE PROPOSED ALTERATION TO THE PROJECT SITE: §102.8(f)(3)**

- Permit boundaries are shown on the PCSM Plans.
- Proposed limits of disturbance are shown on the PCSM Plans.
- Proposed contours and grades are shown on the PCSM Plans.
- Proposed improvements (i.e. roads, buildings, utilities etc.) are shown on the PCSM Plans.
- Past, present and proposed land uses are identified in Section 1.1 of this report.
- Proposed waterways and stormwater management facilities are shown on the PCSM Plans.
- Proposed impervious areas have been minimized to the maximum extent practicable, and are shown on the PCSM Plans.

**NET CHANGE IN VOLUME AND RATE OF STORMWATER: §102.8(f)(4)**

- The design storms used for calculations are identified in Section 3.0 of this report.
- Pre- and post-construction hydrology runoff rate and volume are identified for each drainage area of the entire project site in Section 8.0 of this report.
- The net change in runoff rate and volume are identified for each drainage area of the entire project site in Sections 5.3 and 8.0 of this report.
- The summary table in the NOI is consistent with runoff calculations provided in Sections 5.3 and 8.0 of this report.
- Documentation summarizing the PCSM requirements (rate, volume, and water quality) for a DEP approved Act 167 plan have been met by the proposed stormwater design.
- Documentation summarizing the alternative approach's design criteria for rate, volume and water quality is provided in Section 8.0 of this report.

**RECEIVING SURFACE WATERS: §102.8(f)(5)**

- Existing streams, wetlands, floodways, and watercourses are shown on the PCSM Plans.
- Existing and designated uses are identified on the PCSM Plans and in Section 2.2 of this report.
- Boundaries for Exceptional Value (EV) or High Quality (HQ) watersheds are not applicable to this project, as discussed on the PCSM Plans and in Section 2.2 of this report.
- Wetland boundaries are shown on the PCSM Plans as identified in Section 2.5 of this report.

**WRITTEN DESCRIPTION OF PCSM BMPS: §102.8(f)(6)**

The PA DEP Chapter 102 Regulations, which became effective on November 19, 2010, require a Licensed Professional or his/her Designee to be present on-site to observe, inspect, and sign-off on the Critical Stages of the Post-Construction Stormwater Management implementation and facility installation. The Licensed Professional or Designee shall be present on-site for the **Critical Stages** of the PCSM Plan as identified below:

- Minimize Total Disturbed Area – Grading (BMP 5.6.1)
  Without changing the building program, you can reduce site grading, removal of existing vegetation (clearing and grubbing) and total soil disturbance. This eliminates the need for re-establishment of a new maintained landscape for the site and lot-by-lot, by modifying the proposed road system and other relevant infrastructure as well as the building location and elevations to better fit the existing topography.
- Re-Vegetate and Re-Forest Disturbed Areas, Using Native Species (BMP 5.6.3)
  Sites that require landscaping and re-vegetation should select and use vegetation (i.e., native species) that does not require significant chemical maintenance by fertilizers, herbicides, and pesticides.
- Managed Release Concept (Issued December 13, 2018) – **Critical Stage**
  Managed Release Concept (MRC) is a post-construction stormwater management (PCSM) strategy that involves the collection, storage, and filtration of captured runoff through a best management practice (BMP) that is preferably vegetated and includes a release of a portion of the captured runoff through an underdrain within the BMP, or from a pool protected from solar radiation. If the MRC BMP is not vegetated, then pretreatment is required to meet water quality requirements. The MRC is intended to be used for project areas or subareas where infiltration is not feasible to meet regulatory requirements under §102.8(g)(2).

- Soil Amendment and Restoration (BMP 6.7.3) – **Critical Stage**
  Soil amendment and restoration is the process of improving disturbed soils and low organic soils by restoring soil porosity and/or adding a soil amendment, such as compost, for the purpose of reestablishing the soil's long-term capacity for infiltration and pollution removal.

**SEQUENCE OF PCSM BMP IMPLEMENTATION OR INSTALLATION: §102.8(f)(7)**

The sequence of PCSM BMP implementation or installation is provided on the PCSM Plans.

**SUPPORTING CALCULATIONS: §102.8(f)(8)**

Supporting calculations are provided in Section 8.0 of this report.

**PLAN DRAWINGS: §102.8(f)(9)**

Locations of all proposed BMPs with drainage areas, existing and proposed discharges and points of interest, and construction details for all PCSM BMPs are included on the PCSM plans.

The Erosion and Sediment Control plans and the Post Construction Stormwater Management plans have been provided separately; however, they have been planned, designed, and implemented to be consistent with one another in relation to proposed contours, improvements, soils, wetlands, floodways, streams, discharge locations, etc. The Post Construction Stormwater Management Plan is provided as part of the PCSM Report and the Erosion and Sediment Control Plan has been provided as part of a separate E&S Control Report. Dimensions and elevations indicated on the plans are consistent with those used in the supporting calculations.

**LONG-TERM OPERATION AND MAINTENANCE SCHEDULE: §102.8(f)(10)**

Long-term operation and maintenance requirements, along with inspection schedules are provided on the PCSM Plans.

**RECYCLING OR DISPOSAL OF MATERIALS: §102.8(f)(11)**

The PCSM and E&S Plans and Reports provide identification of anticipated project wastes and directions for recycling and/or disposal of wastes. The operator shall remove from this site, recycle, or dispose of all building materials and waste materials in accordance with the Department's Solid Waste Management Regulations at 25 PA Code 260.1 et seq., 271.1 et seq., and 287.1 et seq. The contractor shall not illegally burn, bury, dump, or discharge any building materials (used or unused) or waste materials at the site.

**GEOLOGIC FORMATION OR SOIL CONDITIONS: §102.8(f)(12)**

There are no geologic formations or soil conditions that could cause contaminant pollution during earth disturbance activities.

**POTENTIAL THERMAL IMPACTS: §102.8(f)(13)**

Potential thermal impacts during construction will be mitigated in several ways. Runoff will be filtered through compost filter socks and/or inlet protection. Following the E&S controls, runoff will sheet flow over vegetated areas reducing any thermal increase, or the runoff will enter storm sewer systems that are underground and the water will be cooled by the naturally lower underground temperatures.

Potential post-construction thermal impacts will also be mitigated in several ways. First, the existing trees and brush in areas of minimized grading and the proposed trees to be planted will provide shade to the impervious surfaces, and in turn, the shaded runoff will be cooler. Second, this project proposes to utilize BMP 5.6.1 to minimize the total disturbed area as much as possible. This will also allow existing vegetated areas to shade and mitigate runoff via turbulent flow where energy (heat) is released from the water as it flows over the vegetated areas.

**RIPARIAN FOREST BUFFER MANAGEMENT PLAN: §102.8(f)(14)**

There are no existing or proposed riparian forest buffers located within the limits of disturbance for this project.

## 7.0 CONCLUSION

The stormwater management facility design detailed within this Post-Construction Stormwater Management Report meets or exceeds the standards set forth by the Falls Township Code of Ordinances. It also meets the requirements as set forth in the PADEP Erosion and Sedimentation Control Regulations, and the Stormwater BMP Manual.

This redevelopment project has been designed with enough stormwater mitigation to reduce the post-development flow rates below the corresponding pre-development flow rates in order to maintain the viability of the existing receiving drainage systems, and to prevent downstream erosion. The BMPs incorporated into the project include: minimize total disturbed area, re-vegetate and re-forest disturbed areas using native species, managed release concept basin, and amended soils. Combined, these features will all serve to mitigate the effects of the proposed improvements on the regional stormwater management system.

# 8.0 STORMWATER MANAGEMENT DESIGN CALCULATIONS

## 8.1 90% Disturbed Area Treatment Calculations

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

## Limit of Disturbance (LOD) Calculations:

**Proposed Drainage Area to POI-A: Majority of Site to Wetlands**

| | | | |
|---|---|---|---|
| Overall LOD | = | 13.38 | ac. |
| Treated Area: | | | |
| BMP 5.6.1 Minimize Grading Area | = | 1.20 | ac. |
| BMP 6.7.3 Soil Amendment (6" depth) | = | 0.67 | ac. |
| Lined MRC Basin | = | 10.38 | ac. |
| Total | = | 12.25 | ac. |
| **Area of LOD Treated** | **=** | **91.6** | **%** |

**Proposed Drainage Area to POI-B: Small Portion of Site to T.P. 13-51-1-6**

| | | | |
|---|---|---|---|
| Overall LOD | = | 0.45 | ac. |
| Treated Area: | | | |
| BMP 5.6.1 Minimize Grading Area | = | 0.30 | ac. |
| BMP 6.7.3 Soil Amendment (6" depth) | = | 0.11 | ac. |
| Total | = | 0.41 | ac. |
| **Area of LOD Treated** | **=** | **91.1** | **%** |

## 8.2 NPDES WORKSHEETS AND CHECKLISTS

## Worksheet 1. General Site Information

**INSTRUCTIONS: Fill out Worksheet 1 for each watershed** **POI-A**

**Date:** October 4, 2019

**Project Name:** Elcon Recycling

**Municipality:** Falls Township

**County:** Bucks County

**Total Area (acres):** 11.49 acres

**Major River Basin:** Delaware
http://www.dep.state.pa.us/dep/deputate/watermgt/wc/default.htm#newtopics

**Watershed:** Pidcock - Mill Creeks

**Sub-Basin:** Delaware River South

**Nearest Surface Water(s) to Receive Runoff:** Biles Creek

**Chapter 93 - Designated Water Use:** WWF, MF
http://www.pacode.com/secure/data/025/chapter93/chap93toc.html

**Impaired according to Chapter 303(d) List?**

http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/wqstandards/303d-Report.htm

Yes [X]
No [ ]

**List Causes of Impairment:**
Organics, Polychlorinated Biphenyls (PCBs)

**Is project subject to, or part of:**

**Municipal Separate Storm Sewer System (MS4) Requirements?**

http://www.dep.state.pa.us/dep/deputate/watermgt/wc/Subjects/StormwaterManagement/GeneralPermits/default.htm

Yes [X]
No [ ]

**Existing or planned drinking water supply?**

Yes [ ]
No [X]

**If yes, distance from proposed discharge (miles):** _____

**Approved Act 167 Plan?**

http://www.dep.state.pa.us/dep/deputate/watermgt/wc/Subjects/StormwaterManagement/Approved_1.html

Yes [X]
No [ ]

**Existing River Conservation Plan?**

http://www.dcnr.state.pa.us/brc/rivers/riversconservation/planningprojects/

Yes [X]
No [ ]

## Worksheet 2. Sensitive Natural Resources

**INSTRUCTIONS** **POI-A**

1. Provide Sensitive Resources Map according to non-structural BMP 5.4.1 in Chapter 5. This map should identify wetlands, woodlands, natural drainageways, steep slopes, and other sensitive natural areas.

2. Summarize the existing extent of each sensitive resource in the Existing Sensitive Resources Table (below, using acres). If none present, insert 0.

3. Summarize Total Protected Area as defined under BMPs in Chapter 5.

4. Do not count any area twice. For example, an area that is both a floodplain and a wetland may only be considered once.

| EXISTING NATURAL SENSITIVE RESOURCE | MAPPED? Yes / No / n/a | TOTAL AREA (Ac) | PROTECTED AREA (Ac) |
|---|---|---|---|
| Waterbodies | Yes | 0.00 | 0.00 |
| Floodplains | Yes | 0.00 | 0.00 |
| Riparian Areas | Yes | 0.00 | 0.00 |
| Wetlands | Yes | 0.00 | 0.00 |
| Woodlands | Yes | 0.00 | 0.00 |
| Natural Drainage Ways | Yes | 0.00 | 0.00 |
| Steep Slopes, 15% - 25% | N/A | 0.00 | 0.00 |
| Steep Slopes, over 25% | N/A | 0.00 | 0.00 |
| Other: | | | |
| Other: | | | |
| **TOTAL EXISTING:** | | 0.00 | 0.00 |

Notes:

## Worksheet 3. Nonstructural BMP Credits

**POI-A**

### PROTECTED AREA

| | | |
|---|---|---|
| 1.1 Area of Protected Sensitive/Special Value Features (see WS 2) | 0.00 | Ac |
| 1.2 Area of Riparian Forest Buffer Protection | 0.00 | Ac |
| 3.1 Area of Minimum Disturbance/Reduced Grading | 1.18 | Ac |
| **TOTAL** | 1.18 | Ac |

| Site Area | minus | Protected Area | = | Stormwater Management Area |
|---|---|---|---|---|
| 11.49 | - | 1.18 | | 10.32 |

This is the area that requires stormwater management

### VOLUME CREDITS

**3.1 Minimum Soil Compaction** (See Chapter 8, page 22 – SW BMP Manual)

| | | | | | | |
|---|---|---|---|---|---|---|
| Lawn | 0 | sq.ft. | x 1/4" x 1/12 | = | 0 | cu.ft. |
| Meadow | 0 | sq.ft. | x 1/3" x 1/12 | = | 0 | cu.ft. |

**3.3 Protected Existing Trees** (See Chapter 8, page 23 – SW BMP Manual)

*For trees within 100 feet of impervious area:*

| | | | | | | |
|---|---|---|---|---|---|---|
| Tree Canopy | 0 | sq.ft. | x 1/2" x 1/12 | = | 0 | cu.ft. |

**Revegetate and Reforest** (See Chapter 8, page 24 – SW BMP Manual)

| | | | | | | |
|---|---|---|---|---|---|---|
| Deciduous Trees | 28 | trees | x 6 $ft^3$ per tree | = | 168 | cu.ft. |
| Evergreen Trees | 0 | trees | x 10 $ft^3$ per tree | = | 0 | cu.ft. |

**5.1 Disconnect Roof Leaders to Vegetated Areas** (See Chapter 8 page 25 – SW BMP Manual)

*For runoff directed to areas protected under 5.8.1 and 5.8.2*

| | | | | | | |
|---|---|---|---|---|---|---|
| Roof Area | 0 | sq.ft. | x 1/3" x 1/12 | = | 0 | cu.ft. |

*For all other disconnected roof areas*

| | | | | | | |
|---|---|---|---|---|---|---|
| Roof Area | 0 | sq.ft. | x 1/4" x 1/12 | = | 0 | cu.ft. |

**5.2 Disconnected Non-Roof impervious to Vegetated Areas** (See Chapter 8, page 26 – SW BMP Manual)

*For runoff directed to areas protected under 5.8.1 and 5.8.2*

| | | | | | | |
|---|---|---|---|---|---|---|
| Impervious Area | 0 | sq.ft. | x 1/3" x 1/12 | = | 0 | cu.ft. |

*For all other disconnected impervious areas*

| | | | | | | |
|---|---|---|---|---|---|---|
| Impervious Area | 0 | sq.ft. | x 1/4" x 1/12 | = | 0 | cu.ft. |

**TOTAL NON-STRUCTURAL VOLUME CREDIT*** 168 cu.ft.

** For use on Worksheet-5*

## Worksheet 4. Change in Runoff Volume for 2-YR Storm Event

**PROJECT:** Elcon Recycling
**Drainage Area:** POI-A
**2-Year Rainfall:** 3.30 inches NOAA Atlas 14, Volume 2, Version 3

**Total Site Area:** 11.49 Acres
**Protected Site Area:** 1.18 Acres
**Managed Area:** 10.32 Acres

**Existing Conditions:**

| Cover Type/Condition | | Soil Type | Area (sf) | Area (ac) | CN | S | Ia (0.2*S) | Q Runoff (in) | Runoff Volume (cu.ft.) |
|---|---|---|---|---|---|---|---|---|---|
| Woodland | good | A | 0 | 0.00 | 30 | 23.33 | 4.67 | 0.085 | 0 |
| | | B | 0 | 0.00 | 55 | 8.18 | 1.64 | 0.281 | 0 |
| | | C | 0 | 0.00 | 70 | 4.29 | 0.86 | 0.887 | 0 |
| | | D | 0 | 0.00 | 77 | 2.99 | 0.60 | 1.284 | 0 |
| Brush | good | A | 0 | 0.00 | 30 | 23.33 | 4.67 | 0.085 | 0 |
| | | B | 0 | 0.00 | 48 | 10.83 | 2.17 | 0.107 | 0 |
| | | C | 99,950 | 2.29 | 65 | 5.38 | 1.08 | 0.650 | 5,411 |
| | | D | 0 | 0.00 | 73 | 3.70 | 0.74 | 1.047 | 0 |
| Meadow | good | A | 0 | 0.00 | 30 | 23.33 | 4.67 | 0.085 | 0 |
| | | B | 0 | 0.00 | 58 | 7.24 | 1.45 | 0.377 | 0 |
| | | C | 349,431 | 8.02 | 71 | 4.08 | 0.82 | 0.939 | 27,338 |
| | | D | 0 | 0.00 | 78 | 2.82 | 0.56 | 1.347 | 0 |
| Open Space (lawn) | good | A | 0 | 0.00 | 39 | 15.64 | 3.13 | 0.002 | 0 |
| | | B | 0 | 0.00 | 61 | 6.39 | 1.28 | 0.486 | 0 |
| | | C | 0 | 0.00 | 74 | 3.51 | 0.70 | 1.104 | 0 |
| | | D | 0 | 0.00 | 80 | 2.50 | 0.50 | 1.479 | 0 |
| Impervious Total | | | 0 | 0.00 | | | | | |
| Impervious (80% as Impervious) | | | 0 | 0.00 | 98 | 0.20 | 0.04 | 3.067 | 0 |
| Impervious (20% as Meadow) | | | 0 | 0.00 | 71 | 4.08 | 0.82 | 0.939 | 0 |
| Wetlands | | | 0 | 0.00 | 98 | 0.20 | 0.04 | 3.067 | 0 |
| | | | | | | | | | |
| **TOTAL:** | | | 449,381 | 10.32 | 70 | | | | 32,748 |

**Developed Conditions:**

| Cover Type/Condition | | Soil Type | Area (sf) | Area (ac) | CN | S | Ia (0.2*S) | Q Runoff (in) | Runoff Volume (cu.ft.) |
|---|---|---|---|---|---|---|---|---|---|
| Woodland | good | A | 0 | 0.00 | 30 | 23.33 | 4.67 | 0.085 | 0 |
| | | B | 0 | 0.00 | 55 | 8.18 | 1.64 | 0.281 | 0 |
| | | C | 0 | 0.00 | 70 | 4.29 | 0.86 | 0.887 | 0 |
| | | D | 0 | 0.00 | 77 | 2.99 | 0.60 | 1.284 | 0 |
| Brush | good | A | 0 | 0.00 | 30 | 23.33 | 4.67 | 0.085 | 0 |
| | | B | 0 | 0.00 | 48 | 10.83 | 2.17 | 0.107 | 0 |
| | | C | 0 | 0.00 | 65 | 5.38 | 1.08 | 0.650 | 0 |
| | | D | 0 | 0.00 | 73 | 3.70 | 0.74 | 1.047 | 0 |
| Meadow | good | A | 0 | 0.00 | 30 | 23.33 | 4.67 | 0.085 | 0 |
| | | B | 0 | 0.00 | 58 | 7.24 | 1.45 | 0.377 | 0 |
| | | C | 0 | 0.00 | 71 | 4.08 | 0.82 | 0.939 | 0 |
| | | D | 0 | 0.00 | 78 | 2.82 | 0.56 | 1.347 | 0 |
| Open Space (lawn) | good | A | 0 | 0.00 | 39 | 15.64 | 3.13 | 0.002 | 0 |
| | | B | 0 | 0.00 | 61 | 6.39 | 1.28 | 0.486 | 0 |
| | | C | 142,864 | 3.28 | 74 | 3.51 | 0.70 | 1.104 | 13,143 |
| | | D | 0 | 0.00 | 80 | 2.50 | 0.50 | 1.479 | 0 |
| Impervious | | | 387,619 | 8.90 | 98 | 0.20 | 0.04 | 3.067 | 99,073 |
| Wetlands | | | 0 | 0.00 | 98 | 0.20 | 0.04 | 3.067 | 0 |
| | | | | | | | | | |
| **TOTAL:** | | | 530,483 | 12.18 | 92 | | | | 112,216 |

**2-Year Volume Increase (cu.ft.): 79,467**

2-Year Volume Increase (cu.ft.) = Developed Conditions Runoff Volume - Existing Conditions Runoff Volume

Q Runoff (in) = (P-0.2S)^2 / (P+0.8S) where P = 2-year rainfall, inches and S = (1000/CN) -10

Runoff Volume (cu.ft) = Q x Area x 1/12 where Area = Land use area in square feet

Note: Runoff Volume must be calculated for EACH land use type/condition and HSGI. The use of a weighted CN value for volume calculations is not acceptable.

## Worksheet 5. Structural BMP Volume Credits

**PROJECT:** Elcon Recycling

**Sub Basin:** POI-A

Required Control Volume (cu.ft) - from Worksheet 4: 79,467

Non-Structural Volume Credit (cu.ft) - from Worksheet 3: 168
(maximum is 25% of required volume)

Structural Volume Requirement (cu.ft): 79,299

*(required control volume minus non-structural credit)*

| Proposed BMPs from PA Stormwater Management Practices Manual, Chapter 6 | | Area (sf) | Volume Reduction Permanently Removed (cf) |
|---|---|---|---|
| 6.4.1 | Porous Pavement | | |
| 6.4.2 | Infiltration Basin | | |
| 6.4.3 | Infiltration Bed | | |
| 6.4.4 | Infiltration Trench | | |
| 6.4.5 | Rain Garden/Bioretention | | |
| 6.4.6 | Dry Well/Seepage Pit | | |
| 6.4.7 | Constructed Filter | | |
| 6.4.8 | Vegetated Swale | | |
| 6.4.9 | Vegetated Filter Strip | | |
| 6.4.10 | Berm/Retentive Grading | | |
| 6.5.1 | Vegetated Roof | | |
| 6.5.2 | Capture and Re-Use | | |
| 6.6.1 | Constructed Wetlands | | |
| 6.6.2 | Wet Pond/Retention Basin | | |
| 6.6.3 | Dry Extended Detention Basin | | |
| 6.6.4 | Water Quality Filters | | |
| 6.7.1 | Riparian Buffer Restoration | | |
| 6.7.2 | Landscape Restoration/Reforestation | | |
| 6.7.3 | Soil Amendment | 29,044 | 1,210 |
| 6.8.1 | Level Spreader | | |
| 6.8.2 | Special Storage Areas | | |
| Other: | Lined MRC Detention Basin - Volume Removed | 452,342 | 23,742 |
| | Lined MRC Detention Basin - Geomorphologic Volume | 452,342 | 55,725 |

**Total Structural Volume (cu.ft): 80,677**

**Structural Volume Requirement (cu.ft):** 79,299

**DIFFERENCE:** 1,378

**Soil Amendment Volume Calculation**

| Amended Soil Area (sf) | 0.50 in over Amended Soil Area | 1/12 | Total Storage (cf) |
|---|---|---|---|
| 29,044 | 0.50 | 0.083 | 1,210 |

**Elcon Recycling**
**POI-A**

| **Worksheet 10 – Water Quality Compliance for Nitrate** | | |
|---|---|---|
| | | |
| Does the site design incorporate the following BMPs to address nitrate pollution? A summary "yes" rating is achieved if at least 2 Primary BMPs for nitrate are provided across the site or 4 secondary BMPs for nitrate are provided across the site (or the equivalent) "provided across the site" is taken to mean the specifications for that BMP set forward in Sections 5 and 6 are satisfied.<br>Proposed BMPs from PA Stormwater Best Management Practices Manual Chapter 5 & 6 | | |
| | **Yes** | **No** |
| **Primary BMPs for Nitrate:** | ☐ | ☐ |
| NS BMP 5.4.2 – Protect/Conserve/Enhance Riparian Buffers | ☐ | ☒ |
| NS BMP 5.5.1 – Cluster Uses at Each Site | ☐ | ☒ |
| NS BMP 5.6.1 – Minimize Total Disturbed Area | ☒ | ☐ |
| NS BMP 5.6.3 – Re-Vegetate/Re-Forest Disturbed Areas (Native Species) | ☒ | ☐ |
| NS BMP 5.9.1 – Street Sweeping/Vacuuming | ☐ | ☒ |
| Structural BMP 6.7.1 – Riparian Buffer Restoration | ☐ | ☒ |
| Structural BMP 6.7.2 – Landscape Restoration | ☐ | ☒ |
| Structural BMP – Managed Release Concept | ☒ | ☐ |
| **Secondary BMPs for Nitrate:** | ☐ | ☐ |
| NS BMP 5.4.1 – Protect Sensitive/Special Value Features | ☐ | ☒ |
| NS BMP 5.4.3 – Protect/Utilize Natural Drainage Features | ☐ | ☒ |
| NS BMP 5.6.2 – Minimize Soil Compaction | ☐ | ☒ |
| Structural BMP 6.4.5 – Rain Garden/Bioretention | ☐ | ☒ |
| Structural BMP 6.4.8 – Vegetated Swale | ☐ | ☒ |
| Structural BMP 6.4.9 – Vegetated Filter Strip | ☐ | ☒ |
| Structural BMP 6.6.1 – Constructed Wetland | ☐ | ☒ |
| Structural BMP 6.7.1 – Riparian Buffer Restoration | ☐ | ☒ |
| Structural BMP 6.7.2 – Landscape Restoration | ☐ | ☒ |
| Structural BMP 6.7.3 – Soils Amendment/Restoration | ☒ | ☐ |

## Worksheet 1. General Site Information

**INSTRUCTIONS: Fill out Worksheet 1 for each watershed** **POI-B**

**Date:** October 4, 2019

**Project Name:** Elcon Recycling

**Municipality:** Falls Township

**County:** Bucks County

**Total Area (acres):** 2.33 acres

**Major River Basin:** Delaware
http://www.dep.state.pa.us/dep/deputate/watermgt/wc/default.htm#newtopics

**Watershed:** Pidcock - Mill Creeks

**Sub-Basin:** Delaware River South

**Nearest Surface Water(s) to Receive Runoff:** Biles Creek

**Chapter 93 - Designated Water Use:** WWF, MF
http://www.pacode.com/secure/data/025/chapter93/chap93toc.html

**Impaired according to Chapter 303(d) List?**

http://www.dep.state.pa.us/dep/deputate/watermgt/wqp/wqstandards/303d-Report.htm

Yes [X]
No [ ]

**List Causes of Impairment:**
Organics, Polychlorinated Biphenyls (PCBs)

**Is project subject to, or part of:**

**Municipal Separate Storm Sewer System (MS4) Requirements?**

http://www.dep.state.pa.us/dep/deputate/watermgt/wc/Subjects/StormwaterManagement/GeneralPermits/default.htm

Yes [X]
No [ ]

**Existing or planned drinking water supply?**

Yes [ ]
No [X]

**If yes, distance from proposed discharge (miles):** _____

**Approved Act 167 Plan?**

http://www.dep.state.pa.us/dep/deputate/watermgt/wc/Subjects/StormwaterManagement/Approved_1.html

Yes [X]
No [ ]

**Existing River Conservation Plan?**

http://www.dcnr.state.pa.us/brc/rivers/riversconservation/planningprojects/

Yes [X]
No [ ]

## Worksheet 2. Sensitive Natural Resources

**INSTRUCTIONS** **POI-B**

1. Provide Sensitive Resources Map according to non-structural BMP 5.4.1 in Chapter 5. This map should identify wetlands, woodlands, natural drainageways, steep slopes, and other sensitive natural areas.

2. Summarize the existing extent of each sensitive resource in the Existing Sensitive Resources Table (below, using acres). If none present, insert 0.

3. Summarize Total Protected Area as defined under BMPs in Chapter 5.

4. Do not count any area twice. For example, an area that is both a floodplain and a wetland may only be considered once.

| EXISTING NATURAL SENSITIVE RESOURCE | MAPPED? Yes / No / n/a | TOTAL AREA (Ac) | PROTECTED AREA (Ac) |
|---|---|---|---|
| Waterbodies | Yes | 0.00 | 0.00 |
| Floodplains | Yes | 0.00 | 0.00 |
| Riparian Areas | Yes | 0.00 | 0.00 |
| Wetlands | Yes | 0.00 | 0.00 |
| Woodlands | Yes | 0.00 | 0.00 |
| Natural Drainage Ways | Yes | 0.00 | 0.00 |
| Steep Slopes, 15% - 25% | N/A | 0.00 | 0.00 |
| Steep Slopes, over 25% | N/A | 0.00 | 0.00 |
| Other: | | | |
| Other: | | | |
| **TOTAL EXISTING:** | | 0.00 | 0.00 |

Notes:

## Worksheet 3. Nonstructural BMP Credits

**POI-B**

### PROTECTED AREA

| | | |
|---|---|---|
| 1.1 Area of Protected Sensitive/Special Value Features (see WS 2) | 0.00 | Ac |
| 1.2 Area of Riparian Forest Buffer Protection | 0.00 | Ac |
| 3.1 Area of Minimum Disturbance/Reduced Grading | 0.32 | Ac |
| **TOTAL** | 0.32 | Ac |

| Site Area | minus | Protected Area | = | Stormwater Management Area |
|---|---|---|---|---|
| 2.33 | - | 0.32 | | 2.01 |

This is the area that requires stormwater management

### VOLUME CREDITS

**3.1 Minimum Soil Compaction** (See Chapter 8, page 22 – SW BMP Manual)

| | | | | | | |
|---|---|---|---|---|---|---|
| Lawn | 0 | sq.ft. | x 1/4" x 1/12 | = | 0 | cu.ft. |
| Meadow | 0 | sq.ft. | x 1/3" x 1/12 | = | 0 | cu.ft. |

**3.3 Protected Existing Trees** (See Chapter 8, page 23 – SW BMP Manual)

*For trees within 100 feet of impervious area:*

| | | | | | | |
|---|---|---|---|---|---|---|
| Tree Canopy | 0 | sq.ft. | x 1/2" x 1/12 | = | 0 | cu.ft. |

**Revegetate and Reforest** (See Chapter 8, page 24 – SW BMP Manual)

| | | | | | | |
|---|---|---|---|---|---|---|
| Deciduous Trees | 12 | trees | x 6 $ft^3$ per tree | = | 72 | cu.ft. |
| Evergreen Trees | 0 | trees | x 10 $ft^3$ per tree | = | 0 | cu.ft. |

**5.1 Disconnect Roof Leaders to Vegetated Areas** (See Chapter 8 page 25 – SW BMP Manual)

*For runoff directed to areas protected under 5.8.1 and 5.8.2*

| | | | | | | |
|---|---|---|---|---|---|---|
| Roof Area | 0 | sq.ft. | x 1/3" x 1/12 | = | 0 | cu.ft. |

*For all other disconnected roof areas*

| | | | | | | |
|---|---|---|---|---|---|---|
| Roof Area | 0 | sq.ft. | x 1/4" x 1/12 | = | 0 | cu.ft. |

**5.2 Disconnected Non-Roof impervious to Vegetated Areas** (See Chapter 8, page 26 – SW BMP Manual)

*For runoff directed to areas protected under 5.8.1 and 5.8.2*

| | | | | | | |
|---|---|---|---|---|---|---|
| Impervious Area | 0 | sq.ft. | x 1/3" x 1/12 | = | 0 | cu.ft. |

*For all other disconnected impervious areas*

| | | | | | | |
|---|---|---|---|---|---|---|
| Impervious Area | 0 | sq.ft. | x 1/4" x 1/12 | = | 0 | cu.ft. |

**TOTAL NON-STRUCTURAL VOLUME CREDIT*** 72 cu.ft.

** For use on Worksheet-5*

## Worksheet 4. Change in Runoff Volume for 2-YR Storm Event

**PROJECT:** Elcon Recycling
**Drainage Area:** POI-B
**2-Year Rainfall:** 3.30 inches NOAA Atlas 14, Volume 2, Version 3

**Total Site Area:** 2.33 Acres
**Protected Site Area:** 0.32 Acres
**Managed Area:** 2.01 Acres

**Existing Conditions:**

| Cover Type/Condition | | Soil Type | Area (sf) | Area (ac) | CN | S | Ia (0.2*S) | Q Runoff (in) | Runoff Volume (cu.ft.) |
|---|---|---|---|---|---|---|---|---|---|
| Woodland | good | A | 0 | 0.00 | 30 | 23.33 | 4.67 | 0.085 | 0 |
| | | B | 0 | 0.00 | 55 | 8.18 | 1.64 | 0.281 | 0 |
| | | C | 0 | 0.00 | 70 | 4.29 | 0.86 | 0.887 | 0 |
| | | D | 0 | 0.00 | 77 | 2.99 | 0.60 | 1.284 | 0 |
| Brush | good | A | 0 | 0.00 | 30 | 23.33 | 4.67 | 0.085 | 0 |
| | | B | 0 | 0.00 | 48 | 10.83 | 2.17 | 0.107 | 0 |
| | | C | 9,891 | 0.23 | 65 | 5.38 | 1.08 | 0.650 | 535 |
| | | D | 0 | 0.00 | 73 | 3.70 | 0.74 | 1.047 | 0 |
| Meadow | good | A | 0 | 0.00 | 30 | 23.33 | 4.67 | 0.085 | 0 |
| | | B | 0 | 0.00 | 58 | 7.24 | 1.45 | 0.377 | 0 |
| | | C | 77,698 | 1.78 | 71 | 4.08 | 0.82 | 0.939 | 6,079 |
| | | D | 0 | 0.00 | 78 | 2.82 | 0.56 | 1.347 | 0 |
| Open Space (lawn) | good | A | 0 | 0.00 | 39 | 15.64 | 3.13 | 0.002 | 0 |
| | | B | 0 | 0.00 | 61 | 6.39 | 1.28 | 0.486 | 0 |
| | | C | 0 | 0.00 | 74 | 3.51 | 0.70 | 1.104 | 0 |
| | | D | 0 | 0.00 | 80 | 2.50 | 0.50 | 1.479 | 0 |
| Impervious Total | | | 0 | 0.00 | | | | | |
| Impervious (80% as Impervious) | | | 0 | 0.00 | 98 | 0.20 | 0.04 | 3.067 | 0 |
| Impervious (20% as Meadow) | | | 0 | 0.00 | 71 | 4.08 | 0.82 | 0.939 | 0 |
| Wetlands | | | 0 | 0.00 | 98 | 0.20 | 0.04 | 3.067 | 0 |
| | | | | | | | | | |
| **TOTAL:** | | | 87,589 | 2.01 | 70 | | | | 6,614 |

**Developed Conditions:**

| Cover Type/Condition | | Soil Type | Area (sf) | Area (ac) | CN | S | Ia (0.2*S) | Q Runoff (in) | Runoff Volume (cu.ft.) |
|---|---|---|---|---|---|---|---|---|---|
| Woodland | good | A | 0 | 0.00 | 30 | 23.33 | 4.67 | 0.085 | 0 |
| | | B | 0 | 0.00 | 55 | 8.18 | 1.64 | 0.281 | 0 |
| | | C | 0 | 0.00 | 70 | 4.29 | 0.86 | 0.887 | 0 |
| | | D | 0 | 0.00 | 77 | 2.99 | 0.60 | 1.284 | 0 |
| Brush | good | A | 0 | 0.00 | 30 | 23.33 | 4.67 | 0.085 | 0 |
| | | B | 0 | 0.00 | 48 | 10.83 | 2.17 | 0.107 | 0 |
| | | C | 0 | 0.00 | 65 | 5.38 | 1.08 | 0.650 | 0 |
| | | D | 0 | 0.00 | 73 | 3.70 | 0.74 | 1.047 | 0 |
| Meadow | good | A | 0 | 0.00 | 30 | 23.33 | 4.67 | 0.085 | 0 |
| | | B | 0 | 0.00 | 58 | 7.24 | 1.45 | 0.377 | 0 |
| | | C | 0 | 0.00 | 71 | 4.08 | 0.82 | 0.939 | 0 |
| | | D | 0 | 0.00 | 78 | 2.82 | 0.56 | 1.347 | 0 |
| Open Space (lawn) | good | A | 0 | 0.00 | 39 | 15.64 | 3.13 | 0.002 | 0 |
| | | B | 0 | 0.00 | 61 | 6.39 | 1.28 | 0.486 | 0 |
| | | C | 4,715 | 0.11 | 74 | 3.51 | 0.70 | 1.104 | 434 |
| | | D | 0 | 0.00 | 80 | 2.50 | 0.50 | 1.479 | 0 |
| Impervious | | | 1,772 | 0.04 | 98 | 0.20 | 0.04 | 3.067 | 453 |
| Wetlands | | | 0 | 0.00 | 98 | 0.20 | 0.04 | 3.067 | 0 |
| | | | | | | | | | |
| **TOTAL:** | | | 6,487 | 0.15 | 81 | | | | 887 |

**2-Year Volume Increase (cu.ft.): -5,727**

2-Year Volume Increase (cu.ft.) = Developed Conditions Runoff Volume - Existing Conditions Runoff Volume

Q Runoff (in) = (P-0.2S)^2 / (P+0.8S) where P = 2-year rainfall, inches and S = (1000/CN) -10

Runoff Volume (cu.ft) = Q x Area x 1/12 where Area = Land use area in square feet

Note: Runoff Volume must be calculated for EACH land use type/condition and HSGI. The use of a weighted CN value for volume calculations is not acceptable.

## Worksheet 5. Structural BMP Volume Credits

**PROJECT:** Elcon Recycling

**Sub Basin:** POI-B

Required Control Volume (cu.ft) - from Worksheet 4: (5,727)

Non-Structural Volume Credit (cu.ft) - from Worksheet 3: 0
(maximum is 25% of required volume)

Structural Volume Requirement (cu.ft): (5,727)

*(required control volume minus non-structural credit)*

| Proposed BMPs from PA Stormwater Management Practices Manual, Chapter 6 | | Area (sf) | Volume Reduction Permanently Removed (cf) |
|---|---|---|---|
| 6.4.1 | Porous Pavement | | |
| 6.4.2 | Infiltration Basin | | |
| 6.4.3 | Infiltration Bed | | |
| 6.4.4 | Infiltration Trench | | |
| 6.4.5 | Rain Garden/Bioretention | | |
| 6.4.6 | Dry Well/Seepage Pit | | |
| 6.4.7 | Constructed Filter | | |
| 6.4.8 | Vegetated Swale | | |
| 6.4.9 | Vegetated Filter Strip | | |
| 6.4.10 | Berm/Retentive Grading | | |
| 6.5.1 | Vegetated Roof | | |
| 6.5.2 | Capture and Re-Use | | |
| 6.6.1 | Constructed Wetlands | | |
| 6.6.2 | Wet Pond/Retention Basin | | |
| 6.6.3 | Dry Extended Detention Basin | | |
| 6.6.4 | Water Quality Filters | | |
| 6.7.1 | Riparian Buffer Restoration | | |
| 6.7.2 | Landscape Restoration/Reforestation | | |
| 6.7.3 | Soil Amendment | 4,714 | 196 |
| 6.8.1 | Level Spreader | | |
| 6.8.2 | Special Storage Areas | | |
| Other: | | | |
| | | | |

**Total Structural Volume (cu.ft):** **196**

**Structural Volume Requirement (cu.ft):** (5,727)

**DIFFERENCE:** 5,924

**Soil Amendment Volume Calculation**

| Amended Soil Area (sf) | 0.50 in over Amended Soil Area | 1/12 | Total Storage (cf) |
|---|---|---|---|
| 4,714 | 0.50 | 0.083 | 196 |

**Elcon Recycling**
**POI-B**

| **Worksheet 10 – Water Quality Compliance for Nitrate** | | |
|---|---|---|
| | | |
| Does the site design incorporate the following BMPs to address nitrate pollution? A summary "yes" rating is achieved if at least 2 Primary BMPs for nitrate are provided across the site or 4 secondary BMPs for nitrate are provided across the site (or the equivalent) "provided across the site" is taken to mean the specifications for that BMP set forward in Sections 5 and 6 are satisfied.<br>Proposed BMPs from PA Stormwater Best Management Practices Manual Chapter 5 & 6 | | |
| | **Yes** | **No** |
| **Primary BMPs for Nitrate:** | ☐ | ☐ |
| NS BMP 5.4.2 – Protect/Conserve/Enhance Riparian Buffers | ☐ | ☒ |
| NS BMP 5.5.1 – Cluster Uses at Each Site | ☐ | ☒ |
| NS BMP 5.6.1 – Minimize Total Disturbed Area | ☒ | ☐ |
| NS BMP 5.6.3 – Re-Vegetate/Re-Forest Disturbed Areas (Native Species) | ☒ | ☐ |
| NS BMP 5.9.1 – Street Sweeping/Vacuuming | ☐ | ☒ |
| Structural BMP 6.7.1 – Riparian Buffer Restoration | ☐ | ☒ |
| Structural BMP 6.7.2 – Landscape Restoration | ☐ | ☒ |
| | ☐ | ☐ |
| **Secondary BMPs for Nitrate:** | ☐ | ☐ |
| NS BMP 5.4.1 – Protect Sensitive/Special Value Features | ☐ | ☒ |
| NS BMP 5.4.3 – Protect/Utilize Natural Drainage Features | ☐ | ☒ |
| NS BMP 5.6.2 – Minimize Soil Compaction | ☐ | ☒ |
| Structural BMP 6.4.5 – Rain Garden/Bioretention | ☐ | ☒ |
| Structural BMP 6.4.8 – Vegetated Swale | ☐ | ☒ |
| Structural BMP 6.4.9 – Vegetated Filter Strip | ☐ | ☒ |
| Structural BMP 6.6.1 – Constructed Wetland | ☐ | ☒ |
| Structural BMP 6.7.1 – Riparian Buffer Restoration | ☐ | ☒ |
| Structural BMP 6.7.2 – Landscape Restoration | ☐ | ☒ |
| Structural BMP 6.7.3 – Soils Amendment/Restoration | ☒ | ☐ |

## 8.8 Non-Structural BMP Credits

The use of Non-structural BMPs is an important part of a project's stormwater management system. However, the BMPs must be correctly implemented to be effective.

For the Non-Structural BMPs applied, use the appropriate checklists to demonstrate that BMPs are applicable to project.

Worksheet 3 determines the amount of Volume credit or Peak Rate credit associated with Non-structural BMPs.

The following BMPs are "self-crediting" in that the use of these BMPs automatically provides a reduction in impervious area and a corresponding reduction in stormwater impacts. Additionally, the use of these BMPs may be regulated by local ordinances. Local governments and reviewing agencies are encouraged to promote the use of these BMPs where feasible:

BMP 5.5.1 Cluster Uses
BMP 5.5.2 Concentrate Uses through Smart Growth
BMP 5.7.1 Reduce Street Imperviousness
BMP 5.7.2 Reduce Parking Imperviousness

The following BMPs provide a quantitative runoff volume reduction:

BMP 5.4.1 Protect Sensitive/Special Value Features
BMP 5.4.2 Protect/Conserve/Enhance Riparian Areas
BMP 5.4.3 Protect/Utilize Natural Flow Pathways
BMP 5.6.1 Minimize Disturbed Area
BMP 5.6.2 Minimize Soil Compaction in Disturbed Areas
BMP 5.6.3 Re-Vegetate and Re-Forest Disturbed Areas
BMP 5.8.1 Rooftop Disconnection
BMP 5.8.2 Disconnection from Storm Sewers

References that support the quantitative BMP volume reduction are provided at the end of this chapter. **No more than 25% of the Volume Reduction may be met through Non-Structural BMP credits**.

## Criteria and Credits for BMP 5.6.1 Minimize Total Disturbed Area - Grading

To receive credit, areas of Minimized Disturbance/Grading must meet the following criteria:

- ☒ Area shall not be subject to grading or movement of existing soils.
- ☒ Existing native vegetation in a healthy condition may not be removed.
- ☒ Invasive non-native vegetation may be removed.
- ☒ Pruning or other required maintenance of vegetation is permitted. Additional planting is permitted.
- ☒ Area shall be protected by having the limits of disturbance clearly shown on all construction drawings and delineated in the field.
- ☒ The area not subject to grading shall be clearly delineated on the Stormwater Management Plan. If future grading or disturbance of this area occurs, subsequent stormwater management must be provided to address disturbance.
- ☒ Shall be located on the development project.

## CREDITS

### Volume and Quality

Protected Area is not to be included in Runoff Volume calculation or Water Quality volume

Mitigation Area = (Total Area – Protected Area)

### Peak Rate and Channel Protection

Runoff from the Protected Area (area not subject to grading) may be excluded from Peak Rate calculations and Channel Protection calculations for rate control, provided that the runoff from the protected area is not conveyed to and/or through stormwater management control structures. If necessary, runoff from Protected Areas should be directed around BMPs and stormwater pipes and inlets by means of vegetated swales or low berms that direct flow to natural drainage ways.

## Criteria and Credits for BMP 5.6.3 Re-Vegetate and Re-Forest Disturbed Areas, Using Native Species

This BMP includes both Protection of Existing Trees and Re-forestation:

### Part 1 Protect Existing Trees

To receive credit for protecting existing trees **NOT** located within Sensitive/Special Value areas, the following criteria must be met:

- ☐ Trees shall be protected by having the limits of disturbance clearly shown on all construction drawings and delineated in the field.
- ☐ Protection during construction shall entail minimizing disruption of the root system; construction shall not encroach within a space measured 10 feet outside of the drip line to the tree trunk.
- ☐ Trees credited for stormwater management shall be clearly labeled on the construction drawings and recorded on Record Plan for project.
- ☐ Trees shall be maintained and protected for the life of the project (50 years) or until redevelopment occurs.
- ☐ No more than 25% of the runoff volume can be mitigated through the use of trees.
- ☐ Pruning or other required maintenance of existing vegetation is permitted for safety purposed only, unless near a building.
- ☐ Escrow shall be provided for the replacement of any protected trees used for stormwater credit that die within 5 years of construction. Dead trees shall be replaced within 6 months.
- ☐ Shall be located on the development project.
- ☐ Existing tree canopy must be within 100 feet of impervious surfaces to gain credit.
- ☐ Only applies for trees outside Sensitive/Special Value areas.
- ☐ Applies to existing trees of 4-inch caliper or larger. Non-native species are not applicable.

**CREDITS**
**Volume and Quality**
A Volume Reduction may be credited based upon the existing tree canopy.

*For Trees within 100 feet of impervious cover*:
Volume Reduction ($ft^3$) = Existing Tree Canopy ($ft^2$) x 1/2" / 12

### Peak Rate and Channel Protection

The Peak Rate for flood protection and channel protection will be reduced by the reduction in runoff volume provided above.

## Part 2 Revegetate and Reforest

To receive credit for planting trees, the following criteria must be met:

- ☒ Trees must be native species (see Appendix), minimum 2" caliper. Minimum tree height is 6 feet.
- ☒ Trees shall be adequately protected during construction.
- ☒ Trees credited for stormwater management shall be clearly labeled on the construction drawings and recorded on Record Plan for project.
- ☒ Trees shall be maintained and protected for the life of the project (50 years) or until redevelopment occurs.
- ☒ No more than 25% of the runoff volume can be mitigated through the use of trees.
- ☒ Escrow shall be provided for the replacement of any protected trees used for stormwater credit that die within 5 years of construction. Dead trees shall be replaced within 6 months.
- ☒ Shall be located on the development project.
- ☒ May be applied for trees required under Street Tree or Landscaping requirements.
- ☒ May be applied for trees planted as part of Riparian Buffer improvement.
- ☒ Non-native species are not applicable.

**CREDITS**
**Volume and Quality**

A Volume Reduction may be credited based upon the existing tree canopy.

*For Deciduous Trees:*
Volume Reduction ($ft^3$) = 6 $ft^3$

*For EvergreenTrees:*
Volume Reduction ($ft^3$) = 10 $ft^3$

**Peak Rate and Channel Protection**

The Peak Rate for flood protection and channel protection will be reduced by the reduction in runoff volume provided above.

## Supporting Documentation

### Natural Drainage Swales (BMP 5.4.3)

"Headwater streams and wetlands have a particularly important role to play in recharge. These smallest upstream components of a river network have the largest surface area of soil in contact with available water, thereby providing the greatest opportunity for recharge of groundwater. Moreover, water level in headwater streams is often higher than the water table, allowing water to flow through the channel bed and banks into soil and groundwater. Such situations occur when water levels are high, such as during spring snowmelt or rainy seasons." "Headwaters can be intermittent streams that flow briefly when snow melts or after rain, but shrink in dry times to become individual pools filled with water…wetlands are depressions in the ground that hold water whether from rainwater, snowmelt, or groundwater welling up to the surface."

The scientific Imperative for Defending Small streams and Wetlands Judy L. Meyer, PhD, et al, American Rivers, September 2003

### Trees (BMP 5.6.3)

"Besides taking in carbon dioxide and putting out oxygen, trees have an enormous impact on temperature. As much as 90 percent of the solar energy is absorbed. Trees also cool by transpiration, the evaporation of water from their leaves. A medium sized tree can move more than 500 gallons of water into the air on a hot day, thereby reducing air temperature."

The Natural Habitat Garden by Ken Druse with Margaret Roach, Timber Press 2004.

500 gal = 66.8 cf

### Volume Credits (BMPs 5.4.3; 5.6.2; 5.8.2)

Protect natural drainage ways, avoiding compaction, and disconnecting impervious areas all contribute to a reduction in the volume of runoff and the rate of runoff. The amount of reduction will vary depending on the site-specific conditions, including soil type, cover, etc. The designer may request additional volume credit by providing supporting calculations. The following table compares the difference in runoff volume for protected versus disturbed area for three storm events (1.5-inch, 2.7-inch, and 3.3-inch) for different soil types using the Cover Complex Method.

***For 1.5" Rainfall***

| | A soil | B soil | C soil | D soil |
|---|---|---|---|---|
| **Runoff Before** | 0 | 0.00 | 0.10 | 0.23 |
| **Runoff After** | 0.00 | 0.07 | 0.26 | 0.41 |
| **Difference** | ***0.00*** | ***0.07*** | ***0.16*** | ***0.18*** |

***For 2.7" Rainfall***

| | A soil | B soil | C soil | D soil |
|---|---|---|---|---|
| **Runoff Before** | 0 | 0 | 0.59 | 0.92 |
| **Runoff After** | 0.03 | 0.52 | 0.97 | 1.27 |
| **Difference** | ***0.03*** | ***0.52*** | ***0.38*** | ***0.35*** |

***For 3.3" Rainfall***

| | A soil | B soil | C soil | D soil |
|---|---|---|---|---|
| **Runoff Before** | 0 | 0.38 | 0.94 | 1.35 |
| **Runoff After** | 0.13 | 0.84 | 1.41 | 1.77 |
| **Difference** | ***0.13*** | ***0.46*** | ***0.47*** | ***0.42*** |

# Stormwater BMP Information Chart 5.B revised March 15, 2016

| Proposed Structural BMPs (site specific) | | Infiltration Information | | | | | Drainage Information | | | | | | BMP Information | | | | | | Total Drainage Area Adjustments | | | | | Impervious Drainage Area Adjustments | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Measured Infiltration Rate[9] | Factor of Safety | Design Infiltration Rate | Dewatering Time[1] | Elevation of Limiting Zone - Water Table, Bedrock, etc.[2] | Total Drainage Area to BMP | Total Impervious Drainage Area to BMP | Infiltration BMP Surface Area | Total Drainage Area Loading Ratio[6] | Impervious Area Loading Ratio[7] | Volume of Runoff Tributary to BMP During the 2yr/24hr Design Storm[5] | Calculated Infiltration Volume (from storms up to and including 2yr/24hr) | Calculated Managed Volume (from storms up to and including 2yr/24hr)[8] | Maximum water surface elevation in BMP from 2yr storm[3] | Infiltration Elevation Bottom of Bed/ Basin[3] | Elevation of Infiltration Test[4] | Elevation of E&S Sediment Basin Bottom (if applies) | Total Drainage Area to BMP | Total Roof Area to BMP | Road Area Pretreated to BMP | Landscape Area Pretreated to BMP | Adjusted Total Drainage Area to BMP | Total Impervious Drainage Area to BMP | Total Roof Area to BMP | Road Area Pretreated to BMP | Adjusted Total Impervious Drainage Area to BMP |
| | | *in./hr.* | *Min. of 2* | *in./hr.* | *hrs.* | | *sq. ft* | *sq. ft.* | *sq. ft.* | | | *cf* | *cf* | *cf* | | | | | *sq. ft.* | *sq. ft.* | *sq. ft.* | *sq. ft.* | *sq. ft.* | *sq. ft.* | *sq. ft.* | *sq. ft.* | *sq. ft.* |
| BMP 6.4.1 | **Pervious Pavement w/ Infiltration Bed** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BMP 6.4.2 | **Infiltration Basin** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BMP 6.4.3 | **Subsurface Infiltration Bed** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BMP 6.4.4 | **Infiltration Trench** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BMP 6.4.5 | **Rain Garden/Bioretention** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BMP 6.4.6 | **Dry Well / Seepage Pit** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Other: | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MRC | **Managed Release Concept (MRC) Basin** | N/A | N/A | 0.00 | 64.90 (see attached calcs) | TBD | 343,742 | 271,311 | 39,894 | 9 : 1 | 7 : 1 | 93,290 | 23,742 | 55,725 | 14.39 | 13.25 | N/A | 13.25 | 452,342 | 108,600 | 0 | 0 | 343,742 | 379,911 | 108,600 | 0 | 271,311 |
| BMP 6.4.7 | **Constructed Filter** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BMP 6.4.8 | **Vegetated Swale** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BMP 6.4.9 | **Vegetated Filter Strip** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BMP 6.4.10 | **Infilt. Berm & Ret. Grading** | | | | | | | | | | | | | | | | | | | | | | | | | | |

All information should be based on the 2-year/24-hour storm
Provide page numbers from the stormwater narrative identifying the location of the above information.

[1] Can include active infiltration time - dewatering time should not exceed 72 hours after the 2-year/24-hour storm
[2] Depth to limiting zone is recommended to be at least 2 ft below infiltration testing elevation/proposed infiltration elevation.
[3] A maximum of 2 feet of Hydraulic head is recommended.
[4] Provide supporting field notes/documenation from soil evaluation.
[5] This value should be greater than or equal to the Volume to be Infiltrated or Managed by the BMP.
[6] A maximum of 8:1 is recommended for infiltration.
[7] A maximum of 5:1 is recommended for infiltration; however, in carbonate geology areas, a maximum of 3:1 is recommended for infiltration.
[8] Calculated runoff volume that is managed in ways other than infiltration to address 25 PA Code Ch 102.8(g)(2)
[9] The infiltration testing information should be located on the plan view of the PCSM Plan and should include infiltration test elevation and rate.

**Any deviations from the recommendations above should be adequately justified by a qualified professional and included with the application.**

**NOTE: This chart is for summary purposes only and should be consistent with all design calculations and worksheets.**

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CLEAN WATER

# MANAGED RELEASE CONCEPT (MRC) DESIGN SUMMARY

***Complete One Design Summary Sheet for Each BMP Designed for MRC***

## GENERAL INFORMATION

| | | | |
|---|---|---|---|
| Applicant Name: | **Elcon Recycling Services, LLC** | Project Name: | **Elcon Recycling** |
| Applicant Address: | **1720 Walton Road** | Municipality: | **Falls Township** |
| City, State, Zip: | Blue Bell, PA 19422 | County: | **Bucks** |

Permit Type: ☐ NPDES PAG-02 ☒ NPDES IP ☐ ESCGP ☐ ESP

| | Pre-Development | Post-Development | Change |
|---|---|---|---|
| Impervious Area (acres): | 0.00 | 8.72 | +8.72 |

## MRC BMP INFORMATION

MRC BMP Type: **Lined Detention Basin** Stormwater BMP Manual Section: **6.6.3**

Will the BMP Include Vegetation? ☒ Yes ☐ No

*If Yes, Identify Proposed Vegetation:* **Native Detention Area Seed Mix ERNMX-183**

For Non-Vegetated BMPs Will There Be Pre- or Post-Treatment? ☐ Yes (Pre-) ☐ Yes (Post-) ☐ No

*If Yes, Identify Proposed Pre- or Post-Treatment:* _____

Name of Surface Water to Receive MRC BMP Discharges: **Biles Creek**

Designated Use of Surface Water: **WWF, MF** Existing Use of Surface Water (if different): _____

Is the Surface Water Impaired? ☒ Yes ☐ No

*If Yes, Identify Cause(s):* **Organics, Polychlorinated Biphenyls (PCBs)**

Will the BMP Have a Liner? ☒ Yes ☐ No

*If Yes, Identify the Type or Liner Material:* **30mil Polyvinyl Chloride (PVC) Liner**

BMP Media Description: **Amended soil with 5% min. organic content**

Are Any Deviations from MRC Design Standards Proposed? ☐ Yes ☒ No

*If Yes, Identify Deviations:* _____

## MRC BMP DESIGN VALUES AND STANDARDS

| Parameter | Design Value | Design Standard |
|---|---|---|
| Actual Contributing Impervious Area to BMP (acres) | **8.72** | |
| Equivalent Contributing Impervious Area to BMP (acres) | **6.54** | |
| MRC BMP Release Rate (cfs) | **0.063** | *No greater than 0.01 cfs / acre of equivalent contributing impervious* |
| BMP Footprint Area ($ft^2$) | **39,894** | |
| Total Drainage Area to BMP (acres) | **10.38** | |
| Bottom BMP Elevation (ft) | **11.25** | |

**MRC BMP Design Summary**

| Parameter | Design Value | Design Standard |
|---|---|---|
| 2-Yr/24-Hr Storm Ponding Depth (ft) | **1.14** | *1 ft (recommended) (2 ft max)* |
| Max. Ponding Depth (ft) | **2.90** | *4 ft (max)* |
| Overflow Bypass Elevation (ft) | **13.50** | |
| Media Depth (ft) | **2.00** | *2 ft (min) – 4 ft (max)* |
| Media Void Space (%) | **30** | |
| Internal Water Storage (IWS) Depth (ft) | **1.42** | |
| Top of IWS Elevation (ft) | **12.67** | |
| Underdrain Pipe Diameter (in) | **4.0** | |
| Underdrain Orifice Diameter (in) | **1-11/16** | |
| Underdrain Outlet Elevation (ft) | **12.67** | |
| IWS Used for Routing (%) | **50** | *50% max* |
| Separation Distance (Groundwater) (ft) | **TBD** | *1 ft (min) (2 ft recommended)* |
| Infiltration Rate (in/hr) | **N/A** | |
| 1-Yr/24-Hr **Pre**-Development Peak Rate (cfs) | **2.49** | |
| 2-Yr/24-Hr **Post**-Development Peak Rate (cfs) | **1.37** | *1-Yr/24-Hr Pre-Development Peak Rate (or per approved Act 167 Plan)* |
| 10-Yr/24-Hr **Post**-Development Peak Rate (cfs) | **3.23** | *10-Yr/24-Hr Pre-Development Peak Rate* |
| 50-Yr/24-Hr **Post**-Development Peak Rate (cfs) | **5.25** | *50-Yr/24-Hr Pre-Development Peak Rate* |
| 100-Yr/24-Hr **Post**-Development Peak Rate (cfs) | **6.38** | *100-Yr/24-Hr Pre-Development Peak Rate* |
| a. Total 2-Yr/24-Hr Runoff Volume Managed by BMP (cf) | **79,467** | |
| b. Total 1.2-inch/2-Hr Runoff Vol. Permanently Removed (cf) | **23,742** | |
| c. 2-Yr/24-Hr Volume Managed (cf) | **55,725** | *Difference of a. and b.* |
| Ponding Time @ 2-Yr/24-Hr Storm (hrs) | **64.90** | *72 hrs max* |
| Ponding Time @ 10-Yr/24-Hr Storm (hrs) | **69.30** | *72 hrs max* |
| Ponding Time @ 50-Yr/24-Hr Storm (hrs) | **70.93** | *72 hrs max* |
| Ponding Time @ 100-Yr/24-Hr Storm (hrs) | **71.57** | *72 hrs max* |

James J. Hersh

**Licensed P.E. Name**

**Licensed P.E. Signature**

PE-081807

**License No.**

10/7/19

**Date**

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
JAMES J. HERSH
ENGINEER
PE081807

## 8.3 BMP DEWATERING CALCULATIONS

# Hydrograph Report

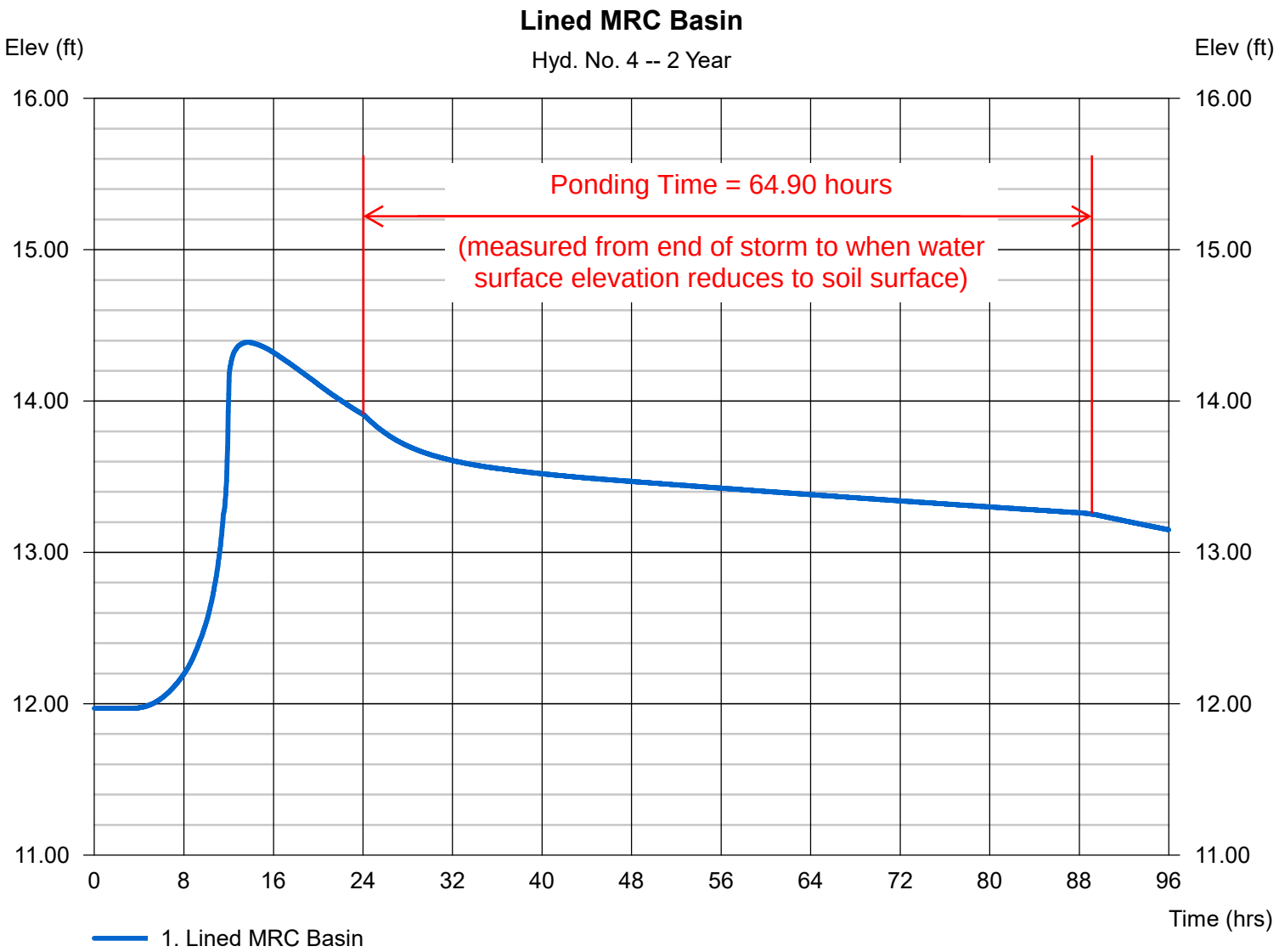
Hydraflow Hydrographs by Intelisolve v9.22 Thursday, Oct 3, 2019

## Hyd. No. 4

Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 1.373 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 822 min |
| Time interval | = | 2 min | Hyd. volume | = | 79,215 cuft |
| Inflow hyd. No. | = | 3 - Post-Dev to Lined MRC Basin | Max. Elevation | = | 14.39 ft |
| Reservoir name | = | Lined MRC Basin | Max. Storage | = | 71,359 cuft |

Storage Indication method used. Wet pond routing start elevation = 11.97 ft.



# Hydrograph Report

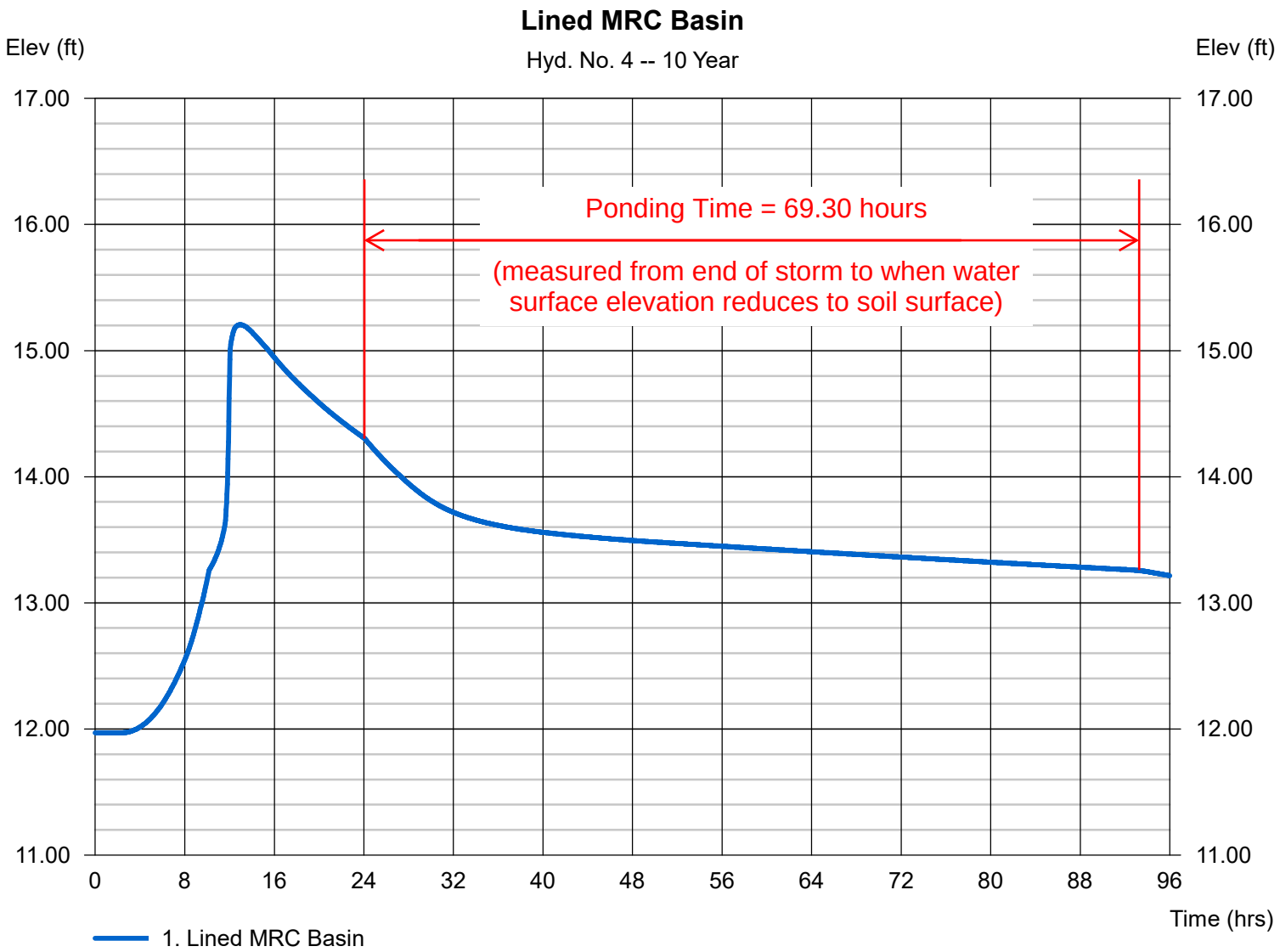
Hydraflow Hydrographs by Intelisolve v9.22 Thursday, Oct 3, 2019

## Hyd. No. 4

Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 3.230 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 776 min |
| Time interval | = | 2 min | Hyd. volume | = | 137,312 cuft |
| Inflow hyd. No. | = | 3 - Post-Dev to Lined MRC Basin | Max. Elevation | = | 15.21 ft |
| Reservoir name | = | Lined MRC Basin | Max. Storage | = | 107,547 cuft |

Storage Indication method used. Wet pond routing start elevation = 11.97 ft.



# Hydrograph Report

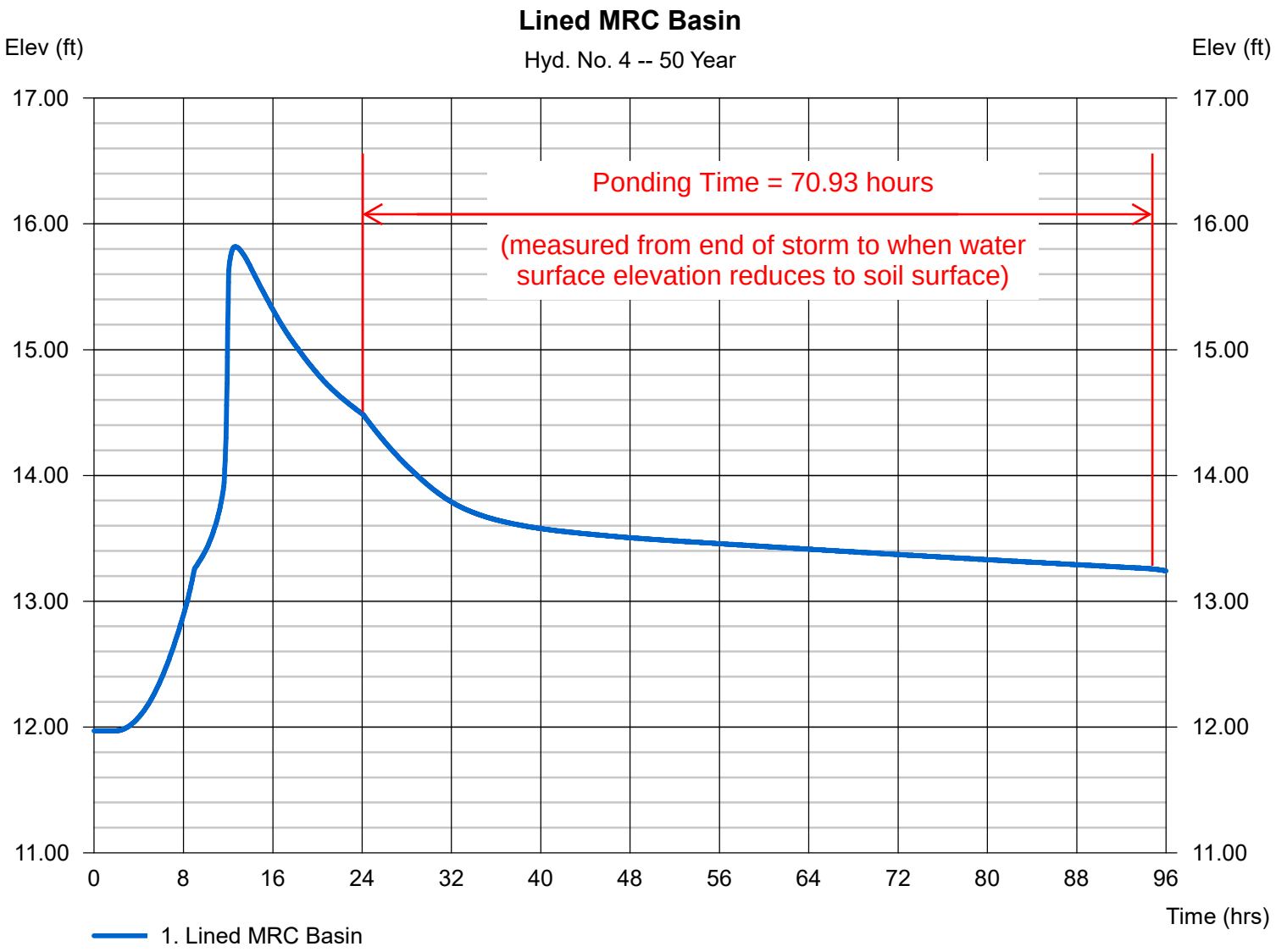
Hydraflow Hydrographs by Intelisolve v9.22 Thursday, Oct 3, 2019

## Hyd. No. 4

Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 5.246 cfs |
| Storm frequency | = | 50 yrs | Time to peak | = | 756 min |
| Time interval | = | 2 min | Hyd. volume | = | 185,934 cuft |
| Inflow hyd. No. | = | 3 - Post-Dev to Lined MRC Basin | Max. Elevation | = | 15.82 ft |
| Reservoir name | = | Lined MRC Basin | Max. Storage | = | 136,024 cuft |

Storage Indication method used. Wet pond routing start elevation = 11.97 ft.



# Hydrograph Report

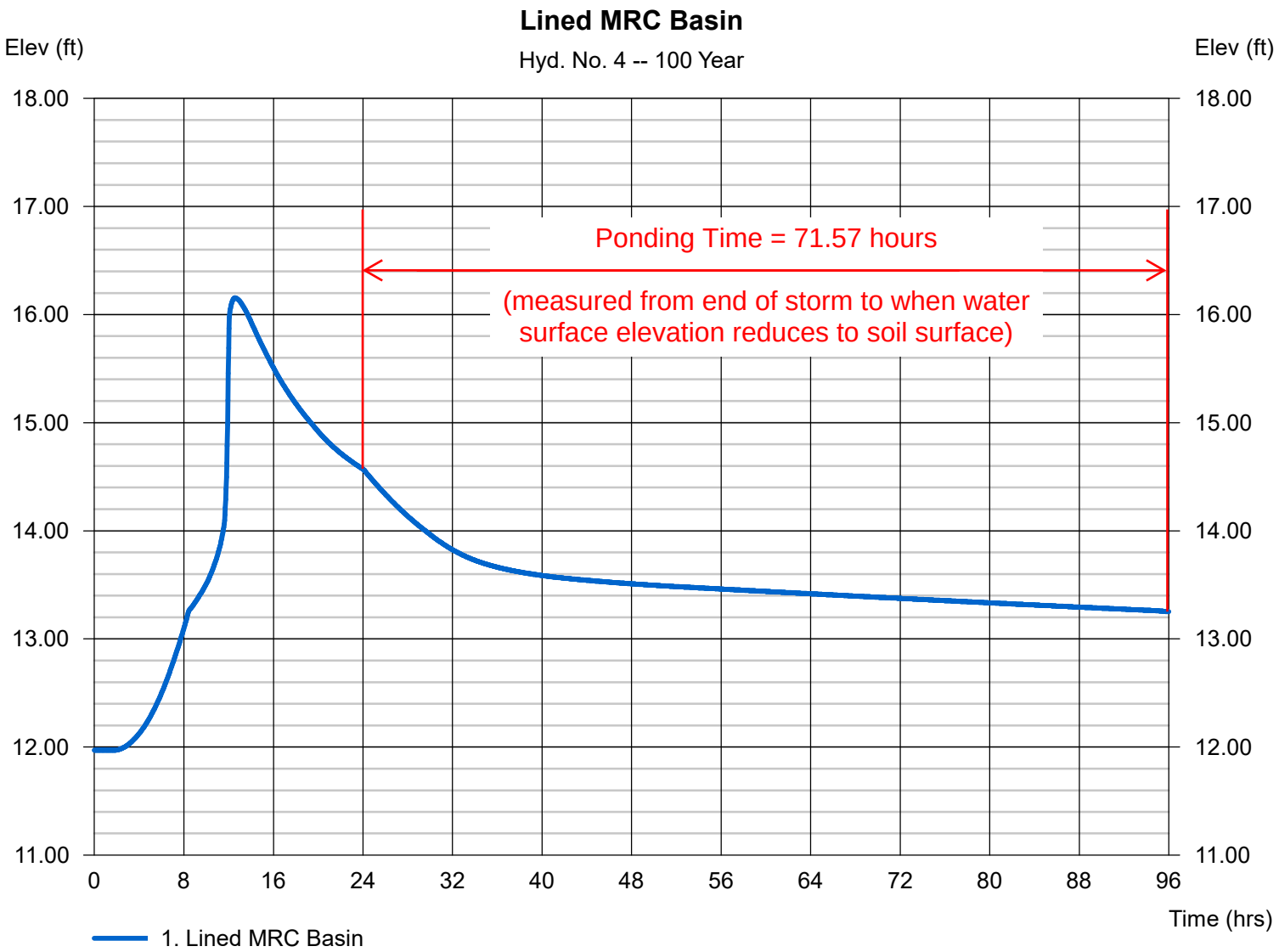
Hydraflow Hydrographs by Intelisolve v9.22 Thursday, Oct 3, 2019

## Hyd. No. 4

Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 6.377 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 752 min |
| Time interval | = | 2 min | Hyd. volume | = | 213,856 cuft |
| Inflow hyd. No. | = | 3 - Post-Dev to Lined MRC Basin | Max. Elevation | = | 16.15 ft |
| Reservoir name | = | Lined MRC Basin | Max. Storage | = | 152,136 cuft |

Storage Indication method used. Wet pond routing start elevation = 11.97 ft.



## 8.4 BMP STORAGE CALCULATIONS

**Project Name:** Elcon Recycling
**Project Number:** 2012-07083
**Date:** October 2, 2019

**Lined MRC Basin Volume Calculations**

**Volume Permanently Removed by BMP**

From page 3 of the Managed Release Concept, dated May 15, 2019, "the volume permanently removed is the summation of losses (infiltration, ET as applicable) and the volume released through the underdrain for the 1.2-inch / 2-hour runoff event."

Infiltration:

Infiltration = N/A for this Lined MRC Basin due to specific request from PA DEP Waste Management Program personnel

Evapotranspiration (ET):

ET = 10% void space over full depth of amended soil column
$ET = (0.10) \times (39{,}894\ sf) \times (2.0\ ft)$
ET = 7,979 cf

*The calculated ET volume of 7,979 cf has been conservatively omitted from the total volume permanently removed.

Volume released through the underdrain for the 1.2-inch / 2-hour event::

This BMP has been designed so that there is no overflow in the 1.2-inch / 2-hour runoff event. The maximum water surface elevation during this event is 13.46, and the invert of the lowest BMP outlet (orifice) is at 13.50. This analysis was performed using only 50% of the Internal Water Storage (IWS) for routing (bottom of amended soils = 11.25, top of IWS = invert of underdrain outlet = 12.67, wet pond elevation = 11.97). Therefore, since there is no overflow in the 1.2-inch / 2-hour runoff event, the entire volume from this event (23,742 cf) is released through the underdrain.

Volume Permanently Removed = Inf. + ET + 1.2-in / 2-hr runoff volume
Volume Permanently Removed = 0 + 0 + 23,742
**Volume Permanently Removed = 23,742 cf**

**Total Volume Managed by BMP**

From page 3 of the Managed Release Concept, dated May 15, 2019, "The volume managed through MRC is credited as the net change in the pre- vs. post-development runoff volume from the 2-year / 24-hour storm per §102.8(g)(2)."

Based on Worksheet 4 prepared for Point of Interest A (POI-A) at the wetlands located on-site, the net change in the pre- vs. post-development runoff volume from the 2-year / 24-hour storm, and therefore the **total volume managed by the BMP, is 79,467 cf**.

**Geomorphologic Credit for BMP**

From page 1 of the Managed Release Concept, dated May 15, 2019, "Runoff above the 1.2-inch / 2-hour storm and below the 2-year / 24-hour storm are managed back to the 1-year / 24-hour peak rate in one or more BMPs to protect and improve geomorphologic processes downstream of earth disturbances."

Geomorphologic Credit = 2-yr / 24-hr runoff volume – 1.2-in / 2-hr runoff volume
Geomorphologic Credit = 79,467 – 23,742
**Geomorphologic Credit = 55,725 cf**

## 8.5 MANAGED RELEASE CONCEPT (MRC) BMP ORIFICE SIZING CALCULATIONS

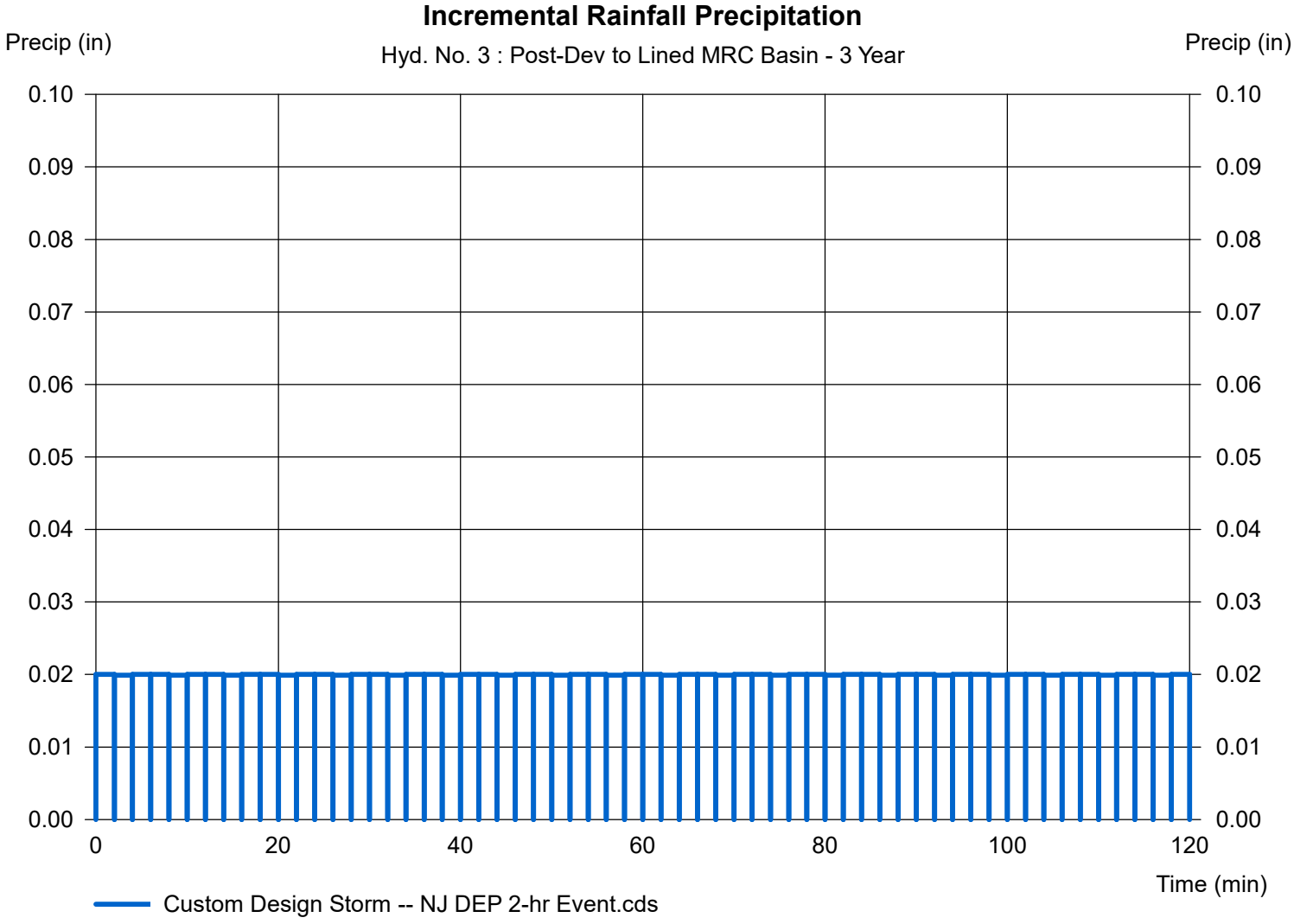
# Hydrograph Report



## Hyd. No. 3

Post-Dev to Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 5.029 cfs |
| Storm frequency | = | 3 yrs | Time to peak | = | 120 min |
| Time interval | = | 2 min | Hyd. volume | = | 23,742 cuft |
| Drainage area | = | 10.380 ac | Curve number | = | 94 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 5.00 min |
| Total precip. | = | 1.20 in | Distribution | = | Custom |
| Storm duration | = | NJ DEP 2-hr Event.cds | Shape factor | = | 484 |



# Hydrograph Report

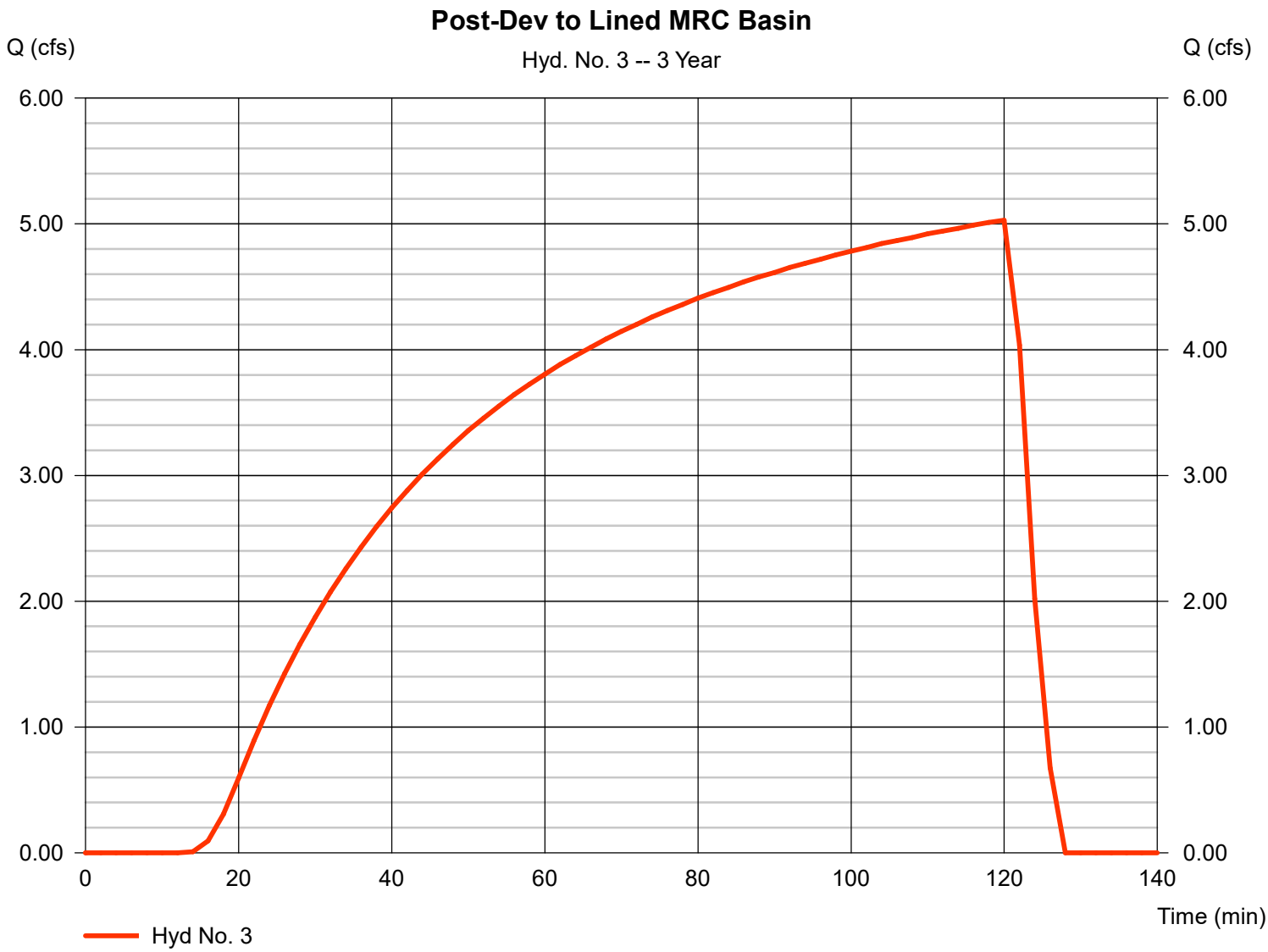


## Hyd. No. 3

Post-Dev to Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 5.029 cfs |
| Storm frequency | = | 3 yrs | Time to peak | = | 120 min |
| Time interval | = | 2 min | Hyd. volume | = | 23,742 cuft |
| Drainage area | = | 10.380 ac | Curve number | = | 94 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 5.00 min |
| Total precip. | = | 1.20 in | Distribution | = | Custom |
| Storm duration | = | NJ DEP 2-hr Event.cds | Shape factor | = | 484 |

Equivalent Contributing Impervious Area = $\frac{\text{1.2-inch/2-hour runoff volume}}{0.0833 \times 43{,}560} = \frac{23{,}742 \text{ cf}}{0.0833 \times 43{,}560} = 6.54$ ac.



# Hydrograph Report

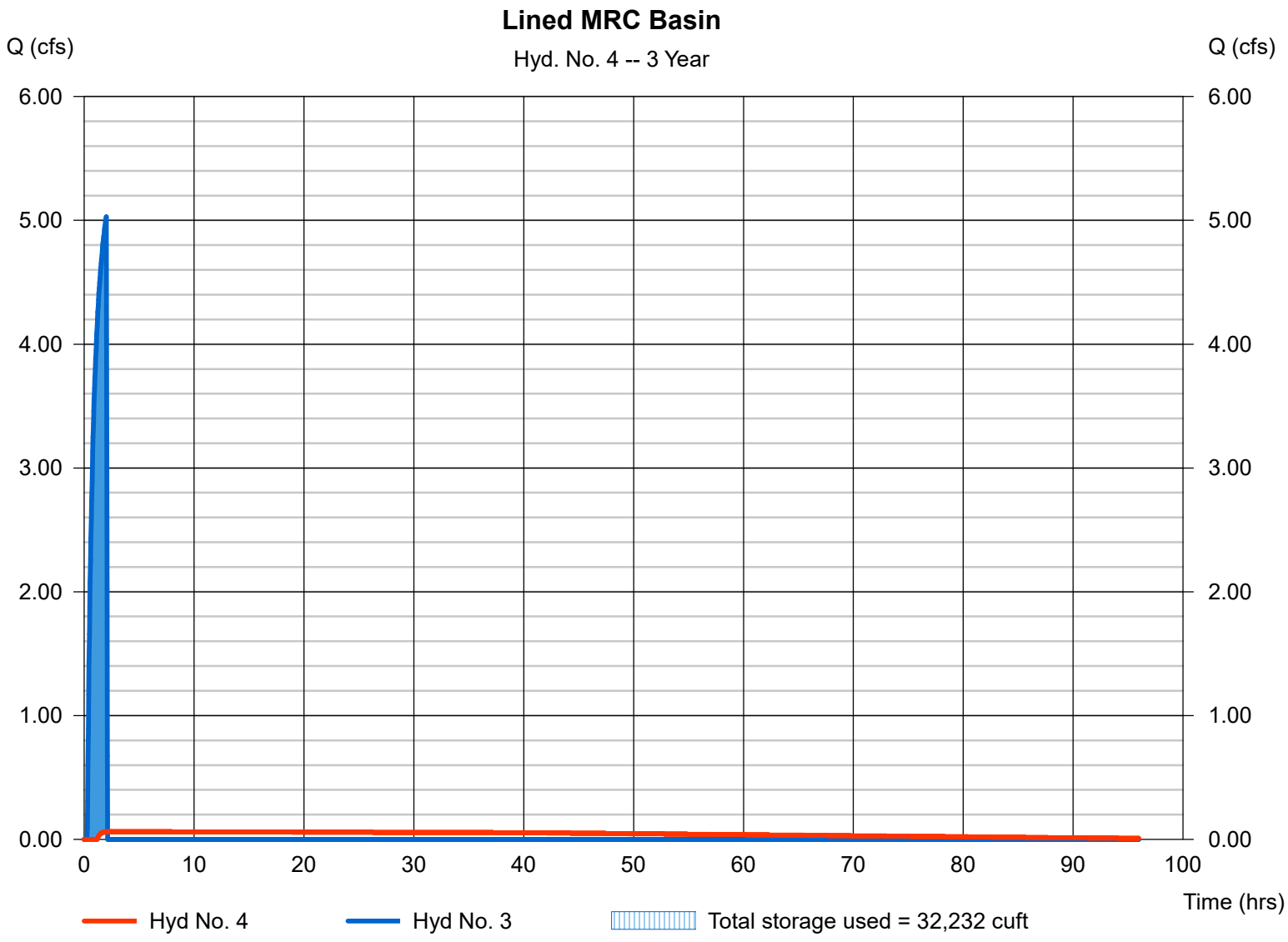
Hydraflow Hydrographs by Intelisolve v9.22 Thursday, Oct 3, 2019

## Hyd. No. 4

Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.063 cfs |
| Storm frequency | = | 3 yrs | Time to peak | = | 128 min |
| Time interval | = | 2 min | Hyd. volume | = | 14,436 cuft |
| Inflow hyd. No. | = | 3 - Post-Dev to Lined MRC Basin | Max. Elevation | = | 13.46 ft |
| Reservoir name | = | Lined MRC Basin | Max. Storage | = | 32,232 cuft |

Storage Indication method used. Wet pond routing start elevation = 11.97 ft.



## 8.6 EMERGENCY SPILLWAY CALCULATIONS

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

**Project Name:** Elcon Recycling
**Project Number:** 12-07083

**BMP Emergency Spillway Calculations**

$Q = CLH^{3/2}$
$C = 3.10$

| BMP | 100-YR DWE | TOP OF BERM ELEVATION | EMER. SPILLWAY ELEVATION | EMER. SPILLWAY WIDTH (FT.) | EMER. SPILLWAY TOP WIDTH (FT.) | $Q_{100}$ | H (FT.) | MAX. WSEL (FT.) | FREEBOARD (FT.) | SIDE SLOPE | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lined MRC Basin | 16.15 | 19.00 | 17.00 | 50 | 62 | 99.84 | 0.75 | 17.75 | 1.25 | 3 | : 1 |
| | | | | | | | | | | | |

## 8.7 CN CALCULATIONS FOR HYDROGRAPH REPORTS

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

**Project Name:** Elcon Recycling
**Project Number:** 2012-07083
**Condition:** Pre-Development
**Area:** On-Site Drainage Area A (Drainage Area to POI-A)

| Description | CN | SF | A | RCN x A |
|---|---|---|---|---|
| Impervious | 98 | 0 | 0.00 | 0 |
| Gravel (HSG-C) | 89 | 0 | 0.00 | 0 |
| Brush (HSG-C) | 65 | 99,950 | 2.29 | 149 |
| Meadow (HSG-C) | 71 | 349,431 | 8.02 | 570 |
| Grass (HSG-C) | 74 | 0 | 0.00 | 0 |
| Forest (HSG-C) | 70 | 0 | 0.00 | 0 |
| TOTAL | | 449,381 | 10.32 | 719 |

RCN 70

Time of Concentration : Use Tc = 58.5 min

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

**Project Name:** Elcon Recycling
**Project Number:** 2012-07083
**Condition:** Pre-Development
**Area:** On-Site Drainage Area B (Drainage Area to POI-B)

| Description | CN | SF | A | RCN x A |
|---|---|---|---|---|
| Impervious | 98 | 0 | 0.00 | 0 |
| Gravel (HSG-C) | 89 | 0 | 0.00 | 0 |
| Brush (HSG-C) | 65 | 9,891 | 0.23 | 15 |
| Meadow (HSG-C) | 71 | 77,698 | 1.78 | 127 |
| Grass (HSG-C) | 74 | 0 | 0.00 | 0 |
| Forest (HSG-C) | 70 | 0 | 0.00 | 0 |
| TOTAL | | 87,589 | 2.01 | 141 |

RCN 70

Time of Concentration : Use Tc = 27.6 min

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

**Project Name:** Elcon Recycling
**Project Number:** 2012-07083
**Condition:** Post-Development
**Area:** On-Site Drainage Area A1 (Drainage Area to Lined MRC Basin)

| Description | CN | SF | A | RCN x A |
|---|---|---|---|---|
| Impervious | 98 | 379,911 | 8.72 | 855 |
| Gravel (HSG-C) | 89 | 0 | 0.00 | 0 |
| Brush (HSG-C) | 65 | 0 | 0.00 | 0 |
| Meadow (HSG-C) | 71 | 0 | 0.00 | 0 |
| Grass (HSG-C) | 74 | 72,431 | 1.66 | 123 |
| Forest (HSG-C) | 70 | 0 | 0.00 | 0 |
| TOTAL | | 452,342 | 10.38 | 978 |

RCN 94

Time of Concentration : Use Tc = 5.0 min

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

**Project Name:** Elcon Recycling
**Project Number:** 2012-07083
**Condition:** Post-Development
**Area:** On-Site Drainage Area A2 (Drainage Area to Bypass Lined MRC Basin)

| Description | CN | SF | A | RCN x A |
|---|---|---|---|---|
| Impervious | 98 | 7,708 | 0.18 | 17 |
| Gravel (HSG-C) | 89 | 0 | 0.00 | 0 |
| Brush (HSG-C) | 65 | 0 | 0.00 | 0 |
| Meadow (HSG-C) | 71 | 0 | 0.00 | 0 |
| Grass (HSG-C) | 74 | 70,433 | 1.62 | 120 |
| Forest (HSG-C) | 70 | 0 | 0.00 | 0 |
| TOTAL | | 78,141 | 1.79 | 137 |

RCN 76

Time of Concentration : Use Tc = 58.5 min

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

**Project Name:** Elcon Recycling
**Project Number:** 2012-07083
**Condition:** Post-Development
**Area:** On-Site Drainage Area B (Drainage Area to POI-B)

| Description | CN | SF | A | RCN x A |
|---|---|---|---|---|
| Impervious | 98 | 1,772 | 0.04 | 4 |
| Gravel (HSG-C) | 89 | 0 | 0.00 | 0 |
| Brush (HSG-C) | 65 | 0 | 0.00 | 0 |
| Meadow (HSG-C) | 71 | 0 | 0.00 | 0 |
| Grass (HSG-C) | 74 | 4,715 | 0.11 | 8 |
| Forest (HSG-C) | 70 | 0 | 0.00 | 0 |
| TOTAL | | 6,487 | 0.15 | 12 |

RCN 81

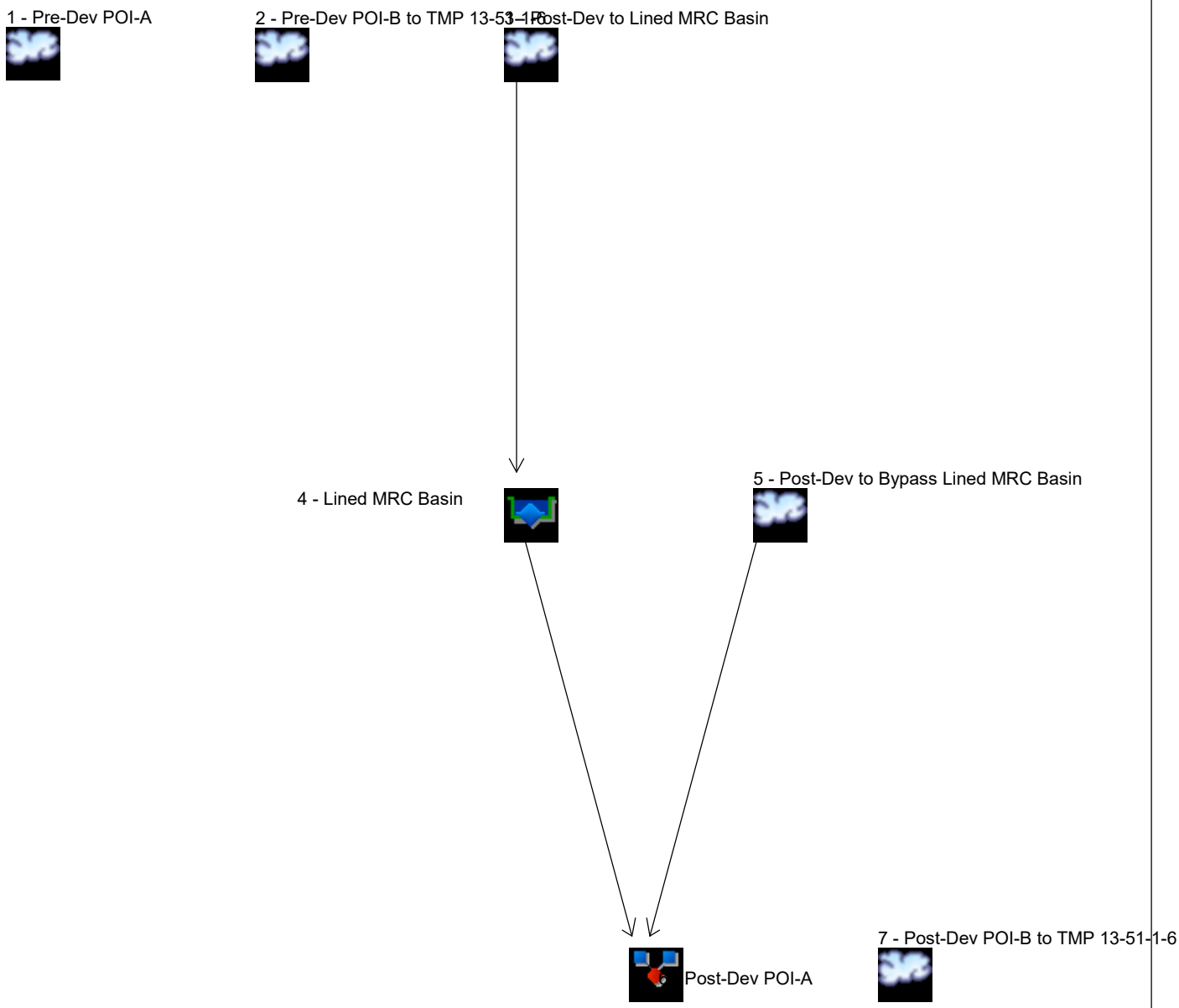
Time of Concentration : Use Tc = 15.8 min

## 8.8 1-YEAR THROUGH 100-YEAR HYDROGRAPH REPORTS

The following sheets detail the hydrologic analysis for the 1-year through 100-year storm events for the stormwater management design associated with this project.

# Watershed Model Schematic

Hydraflow Hydrographs by Intelisolve v9.22



# Hydrograph Return Period Recap

Hydraflow Hydrographs by Intelisolve v9.22

| Hyd. No. | Hydrograph type (origin) | Inflow Hyd(s) | Peak Outflow (cfs) | | | | | | | | Hydrograph description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-Yr | 2-Yr | 3-Yr | 5-Yr | 10-Yr | 25-Yr | 50-Yr | 100-Yr | |
| 1 | SCS Runoff | ------- | 2.491 | 4.454 | 0.000 | 7.949 | 11.41 | 15.08 | 17.95 | 21.87 | Pre-Dev POI-A |
| 2 | SCS Runoff | ------- | 0.805 | 1.441 | 0.000 | 2.542 | 3.622 | 4.765 | 5.656 | 6.886 | Pre-Dev POI-B to TMP 13-51-1-6 |
| 3 | SCS Runoff | ------- | 34.09 | 43.01 | 0.000 | 56.27 | 67.96 | 79.60 | 88.29 | 99.84 | Post-Dev to Lined MRC Basin |
| 4 | Reservoir | 3 | 1.045 | 1.373 | 0.000 | 2.170 | 3.230 | 4.322 | 5.246 | 6.377 | Lined MRC Basin |
| 5 | SCS Runoff | ------- | 0.742 | 1.166 | 0.000 | 1.868 | 2.534 | 3.225 | 3.755 | 4.472 | Post-Dev to Bypass Lined MRC Basi |
| 6 | Combine | 4, 5 | 1.724 | 2.483 | 0.000 | 3.920 | 5.701 | 7.517 | 8.989 | 10.85 | Post-Dev POI-A |
| 7 | SCS Runoff | ------- | 0.202 | 0.292 | 0.000 | 0.434 | 0.564 | 0.696 | 0.796 | 0.930 | Post-Dev POI-B to TMP 13-51-1-6 |

# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 2.491 | 2 | 752 | 20,759 | ---- | ------ | ------ | Pre-Dev POI-A |
| 2 | SCS Runoff | 0.805 | 2 | 732 | 4,043 | ---- | ------ | ------ | Pre-Dev POI-B to TMP 13-51-1-6 |
| 3 | SCS Runoff | 34.09 | 2 | 716 | 72,802 | ---- | ------ | ------ | Post-Dev to Lined MRC Basin |
| 4 | Reservoir | 1.045 | 2 | 830 | 59,158 | 3 | 14.07 | 57,539 | Lined MRC Basin |
| 5 | SCS Runoff | 0.742 | 2 | 752 | 5,319 | ---- | ------ | ------ | Post-Dev to Bypass Lined MRC Basi |
| 6 | Combine | 1.724 | 2 | 752 | 64,477 | 4, 5 | ------ | ------ | Post-Dev POI-A |
| 7 | SCS Runoff | 0.202 | 2 | 722 | 577 | ---- | ------ | ------ | Post-Dev POI-B to TMP 13-51-1-6 |

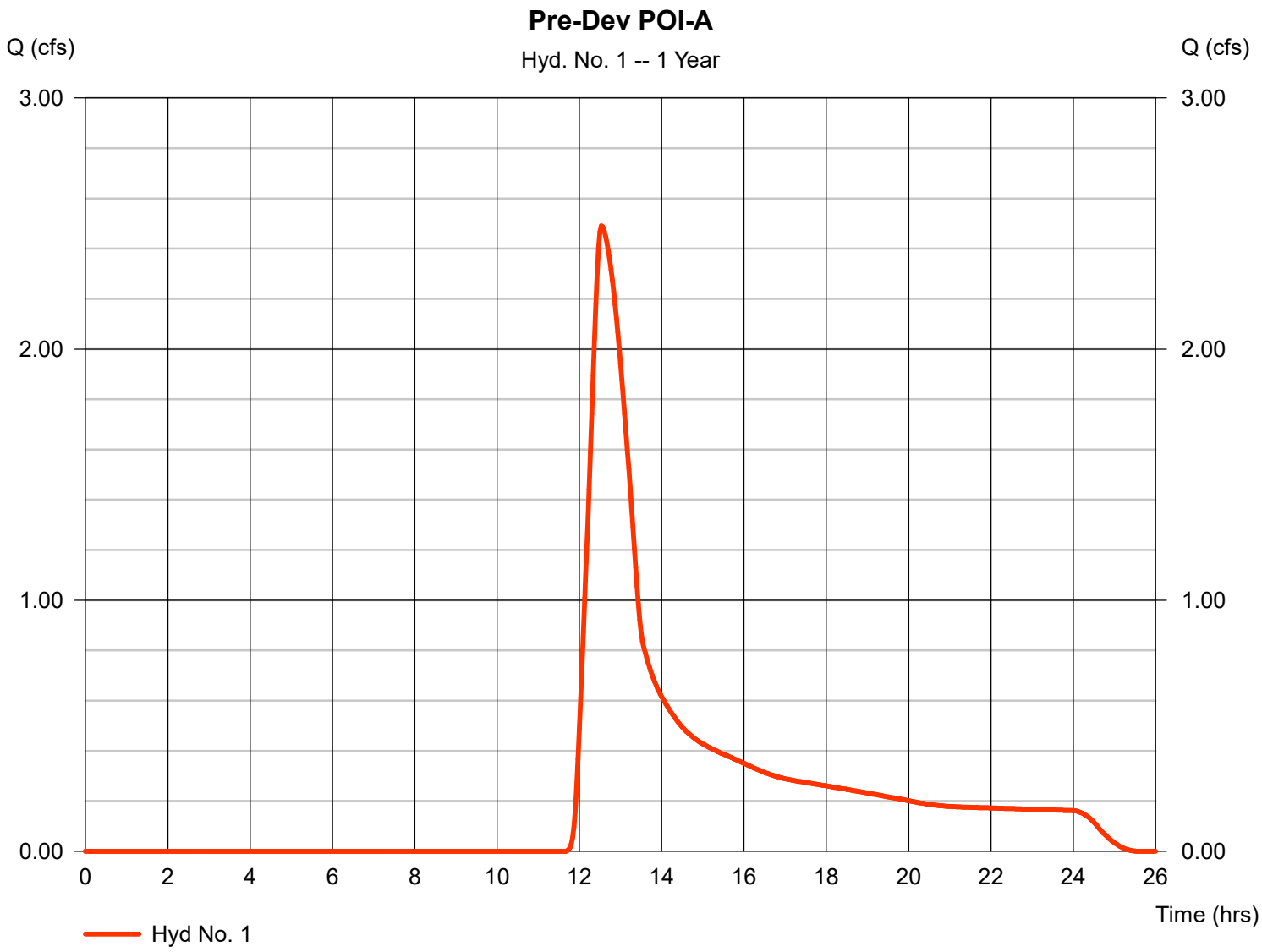
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 1

Pre-Dev POI-A

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 2.491 cfs |
| Storm frequency | = | 1 yrs | Time to peak | = | 12.53 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 20,759 cuft |
| Drainage area | = | 10.320 ac | Curve number | = | 70 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 58.50 min |
| Total precip. | = | 2.70 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



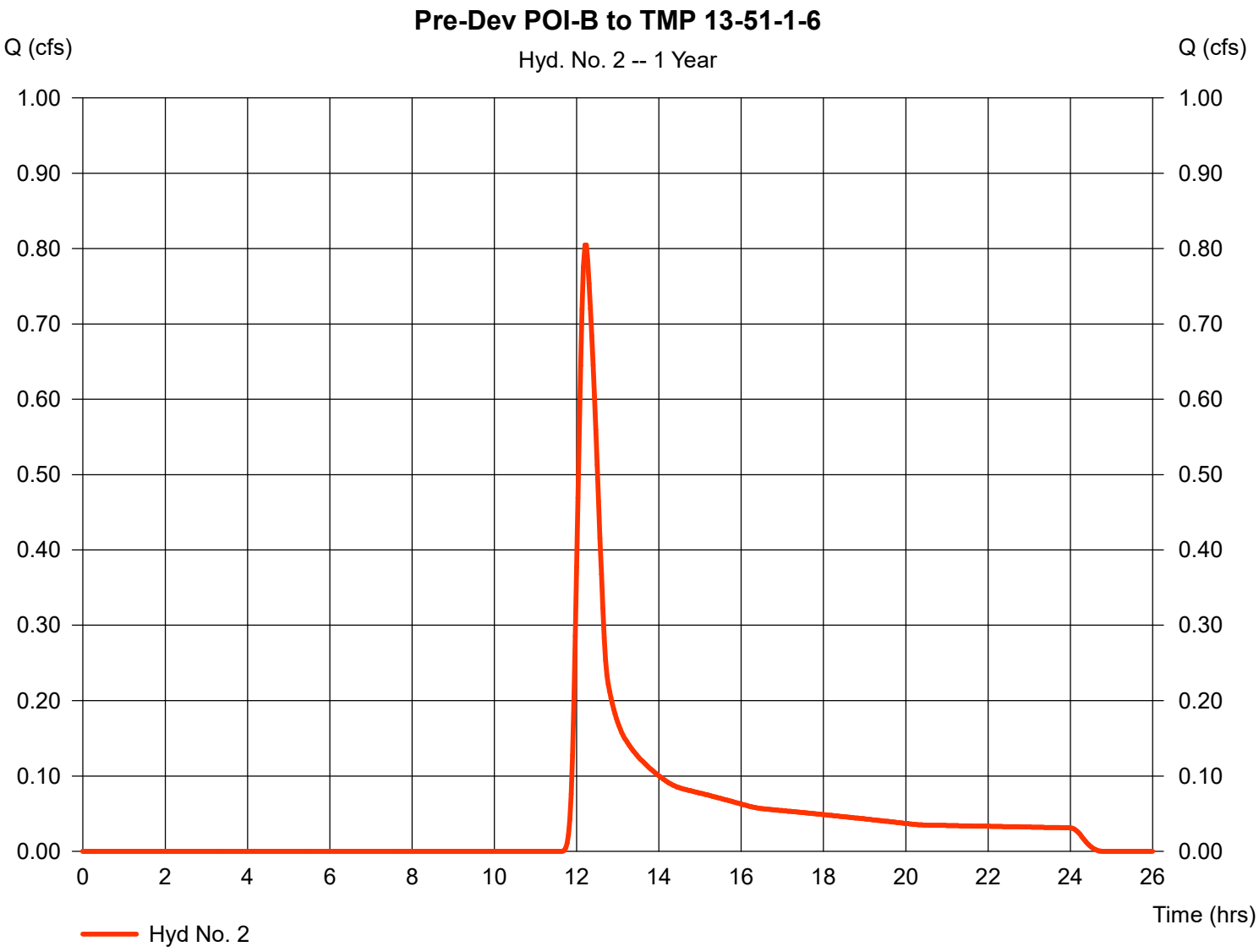
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 2

Pre-Dev POI-B to TMP 13-51-1-6

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.805 cfs |
| Storm frequency | = | 1 yrs | Time to peak | = | 12.20 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 4,043 cuft |
| Drainage area | = | 2.010 ac | Curve number | = | 70 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 27.60 min |
| Total precip. | = | 2.70 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



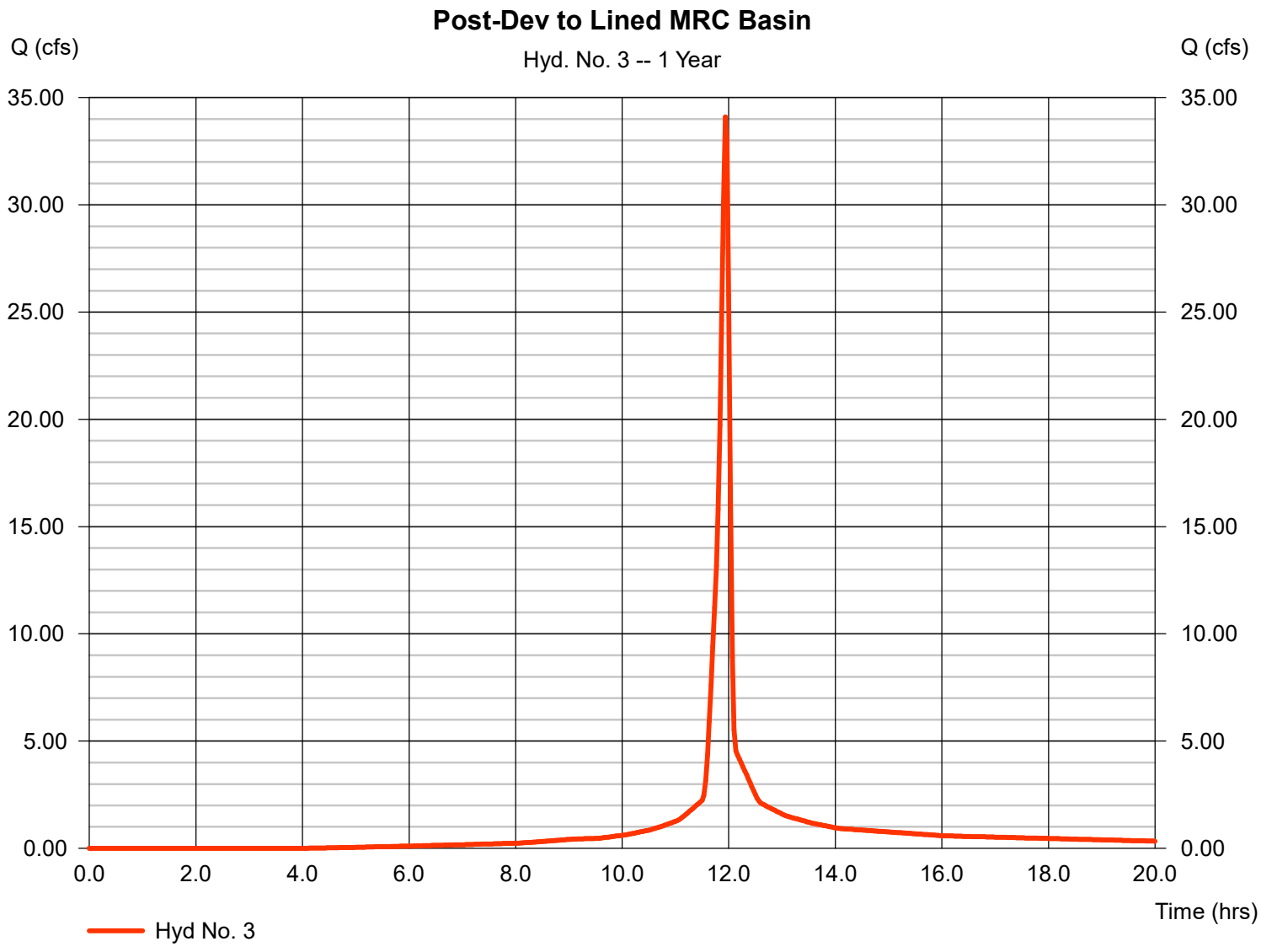
# Hydrograph Report



## Hyd. No. 3

Post-Dev to Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 34.09 cfs |
| Storm frequency | = | 1 yrs | Time to peak | = | 11.93 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 72,802 cuft |
| Drainage area | = | 10.380 ac | Curve number | = | 94 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 5.00 min |
| Total precip. | = | 2.70 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

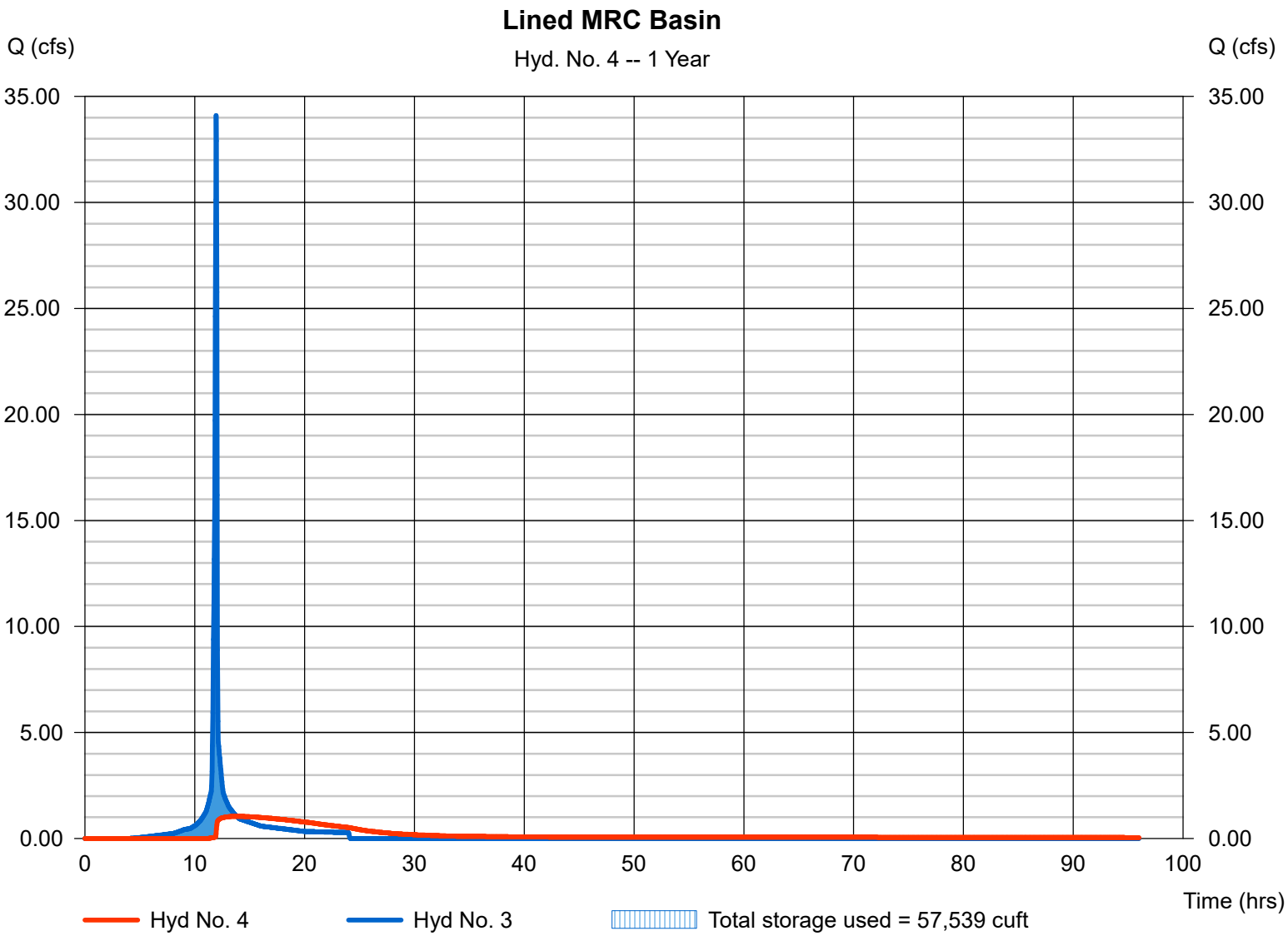
Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 4

Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 1.045 cfs |
| Storm frequency | = | 1 yrs | Time to peak | = | 13.83 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 59,158 cuft |
| Inflow hyd. No. | = | 3 - Post-Dev to Lined MRC Basin | Max. Elevation | = | 14.07 ft |
| Reservoir name | = | Lined MRC Basin | Max. Storage | = | 57,539 cuft |

Storage Indication method used. Wet pond routing start elevation = 11.97 ft.



# Pond Report



## Pond No. 1 - Lined MRC Basin

## Pond Data

**UG Chambers -** Invert elev. = 11.25 ft, Rise x Span = 0.33 x 0.33 ft, Barrel Len = 204.00 ft, No. Barrels = 5, Slope = 0.00%, Headers = No
**Encasement -** Invert elev. = 11.25 ft, Width = 39.00 ft, Height = 2.00 ft, Voids = 30.00%
**Contours -** User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 13.26 ft

## Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 11.25 | n/a | 0 | 0 |
| 0.20 | 11.45 | n/a | 2,426 | 2,426 |
| 0.40 | 11.65 | n/a | 2,410 | 4,836 |
| 0.60 | 11.85 | n/a | 2,387 | 7,223 |
| 0.80 | 12.05 | n/a | 2,387 | 9,610 |
| 1.00 | 12.25 | n/a | 2,387 | 11,997 |
| 1.20 | 12.45 | n/a | 2,387 | 14,385 |
| 1.40 | 12.65 | n/a | 2,387 | 16,772 |
| 1.60 | 12.85 | n/a | 2,387 | 19,159 |
| 1.80 | 13.05 | n/a | 2,387 | 21,547 |
| 2.00 | 13.25 | n/a | 2,387 | 23,934 |
| 2.01 | 13.26 | 39,894 | 199 | 24,133 |
| 2.75 | 14.00 | 42,065 | 30,325 | 54,458 |
| 3.75 | 15.00 | 45,011 | 43,538 | 97,996 |
| 4.75 | 16.00 | 48,012 | 46,512 | 144,508 |
| 5.75 | 17.00 | 51,071 | 49,542 | 194,049 |
| 6.75 | 18.00 | 54,186 | 52,629 | 246,678 |
| 7.75 | 19.00 | 57,357 | 55,771 | 302,449 |

## Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 15.00 | 1.69 | 3.75 | 3.00 |
| **Span (in)** | = 15.00 | 1.69 | 12.00 | 8.00 |
| **No. Barrels** | = 1 | 1 | 1 | 1 |
| **Invert El. (ft)** | = 12.50 | 12.67 | 13.50 | 14.50 |
| **Length (ft)** | = 45.00 | 0.00 | 0.00 | 0.25 |
| **Slope (%)** | = 0.60 | 0.00 | 0.00 | n/a |
| **N-Value** | = .013 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | Yes | Yes |

## Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 50.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 16.25 | 17.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 2.60 | 3.33 | 3.33 |
| **Weir Type** | = Rect | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 0.000 (by Contour)
**TW Elev. (ft)** = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

## Stage / Storage / Discharge Table

| Stage ft | Storage cuft | Elevation ft | Clv A cfs | Clv B cfs | Clv C cfs | PrfRsr cfs | Wr A cfs | Wr B cfs | Wr C cfs | Wr D cfs | Exfil cfs | User cfs | Total cfs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0 | 11.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | --- | --- | --- | --- | 0.000 |
| 0.20 | 2,426 | 11.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | --- | --- | --- | --- | 0.000 |
| 0.40 | 4,836 | 11.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | --- | --- | --- | --- | 0.000 |
| 0.60 | 7,223 | 11.85 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | --- | --- | --- | --- | 0.000 |
| 0.80 | 9,610 | 12.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | --- | --- | --- | --- | 0.000 |
| 1.00 | 11,997 | 12.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | --- | --- | --- | --- | 0.000 |
| 1.20 | 14,385 | 12.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | --- | --- | --- | --- | 0.000 |
| 1.40 | 16,772 | 12.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | --- | --- | --- | --- | 0.000 |
| 1.60 | 19,159 | 12.85 | 0.03 ic | 0.02 ic | 0.00 | 0.00 | 0.00 | 0.00 | --- | --- | --- | --- | 0.025 |
| 1.80 | 21,547 | 13.05 | 0.04 ic | 0.04 ic | 0.00 | 0.00 | 0.00 | 0.00 | --- | --- | --- | --- | 0.042 |
| 2.00 | 23,934 | 13.25 | 0.06 ic | 0.05 ic | 0.00 | 0.00 | 0.00 | 0.00 | --- | --- | --- | --- | 0.053 |
| 2.01 | 24,133 | 13.26 | 0.06 ic | 0.05 ic | 0.00 | 0.00 | 0.00 | 0.00 | --- | --- | --- | --- | 0.054 |
| 2.75 | 54,458 | 14.00 | 0.97 ic | 0.08 ic | 0.88 ic | 0.00 | 0.00 | 0.00 | --- | --- | --- | --- | 0.958 |
| 3.75 | 97,996 | 15.00 | 2.62 oc | 0.09 ic | 1.74 ic | 0.76 | 0.00 | 0.00 | --- | --- | --- | --- | 2.595 |
| 4.75 | 144,508 | 16.00 | 5.93 oc | 0.09 ic | 1.90 ic | 3.93 | 0.00 | 0.00 | --- | --- | --- | --- | 5.929 |
| 5.75 | 194,049 | 17.00 | 11.51 oc | 0.02 ic | 0.36 ic | 0.03 | 11.10 s | 0.00 | --- | --- | --- | --- | 11.50 |
| 6.75 | 246,678 | 18.00 | 13.04 ic | 0.01 ic | 0.13 ic | 0.00 | 12.89 s | 130.00 | --- | --- | --- | --- | 143.03 |
| 7.75 | 302,449 | 19.00 | 14.32 ic | 0.00 ic | 0.07 ic | 0.00 | 14.12 s | 367.70 | --- | --- | --- | --- | 381.89 |

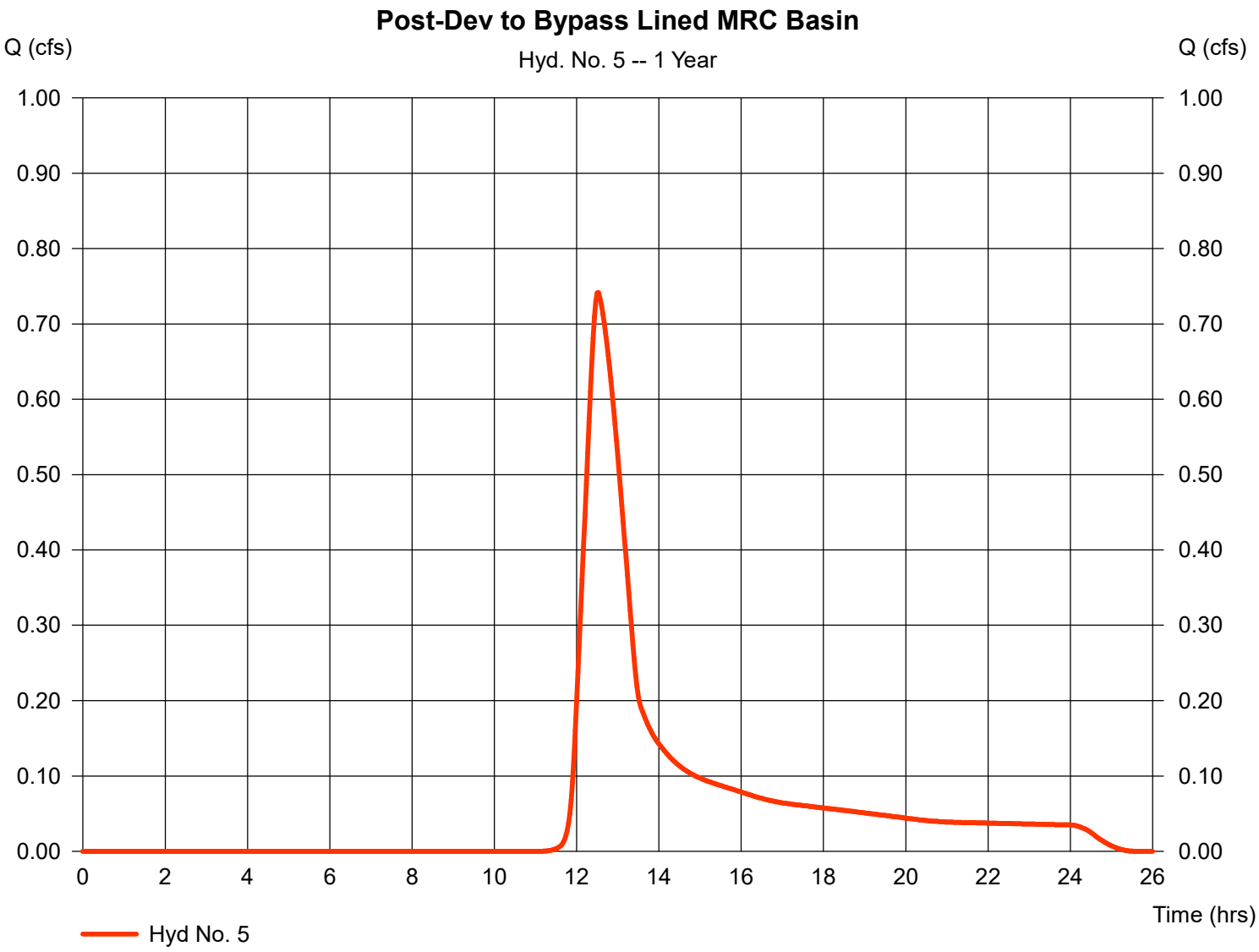
# Hydrograph Report



## Hyd. No. 5

Post-Dev to Bypass Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.742 cfs |
| Storm frequency | = | 1 yrs | Time to peak | = | 12.53 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 5,319 cuft |
| Drainage area | = | 1.790 ac | Curve number | = | 76 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 58.50 min |
| Total precip. | = | 2.70 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



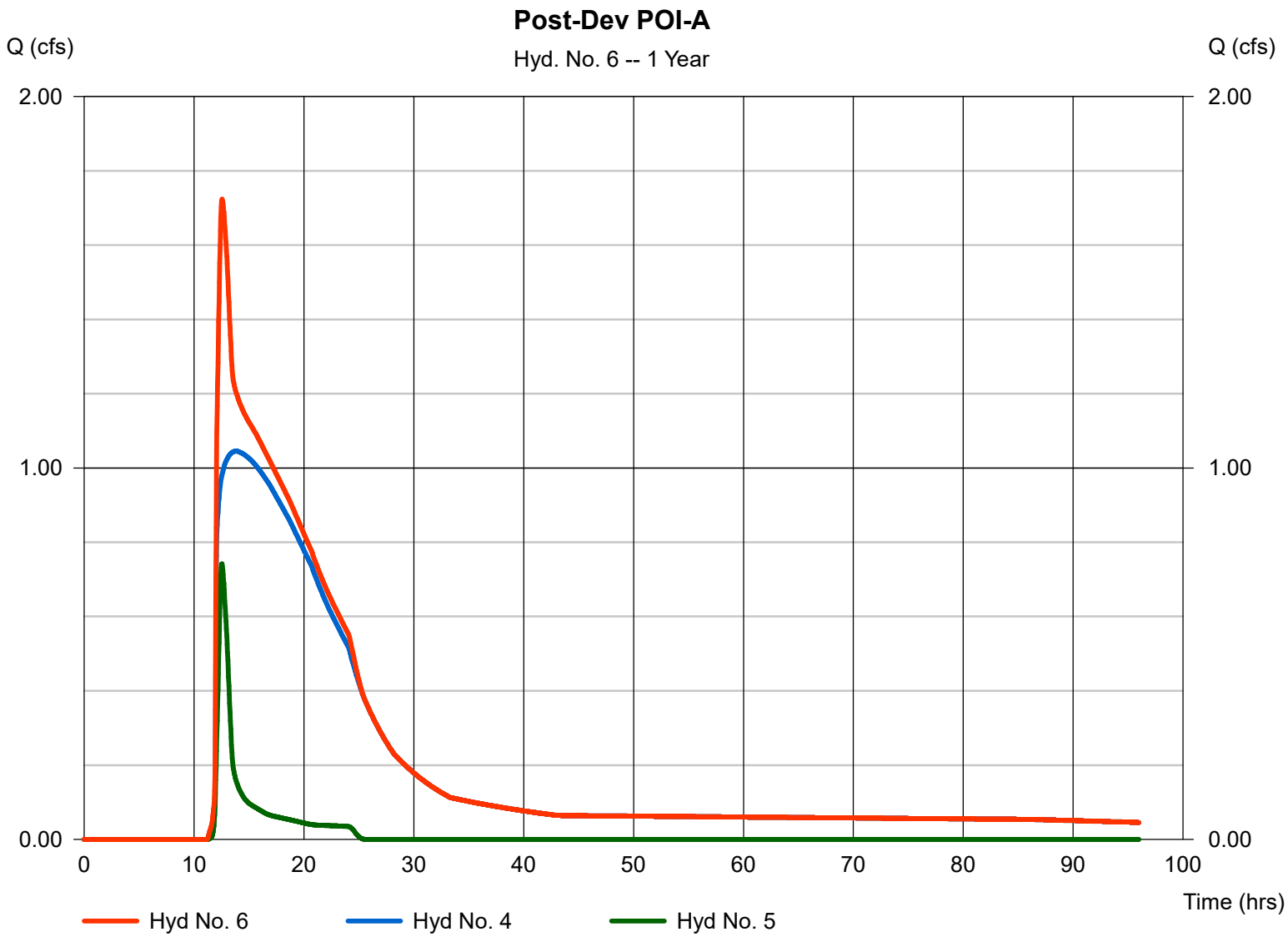
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 6

Post-Dev POI-A

| | | | |
|---|---|---|---|
| Hydrograph type | = Combine | Peak discharge | = 1.724 cfs |
| Storm frequency | = 1 yrs | Time to peak | = 12.53 hrs |
| Time interval | = 2 min | Hyd. volume | = 64,477 cuft |
| Inflow hyds. | = 4, 5 | Contrib. drain. area | = 1.790 ac |



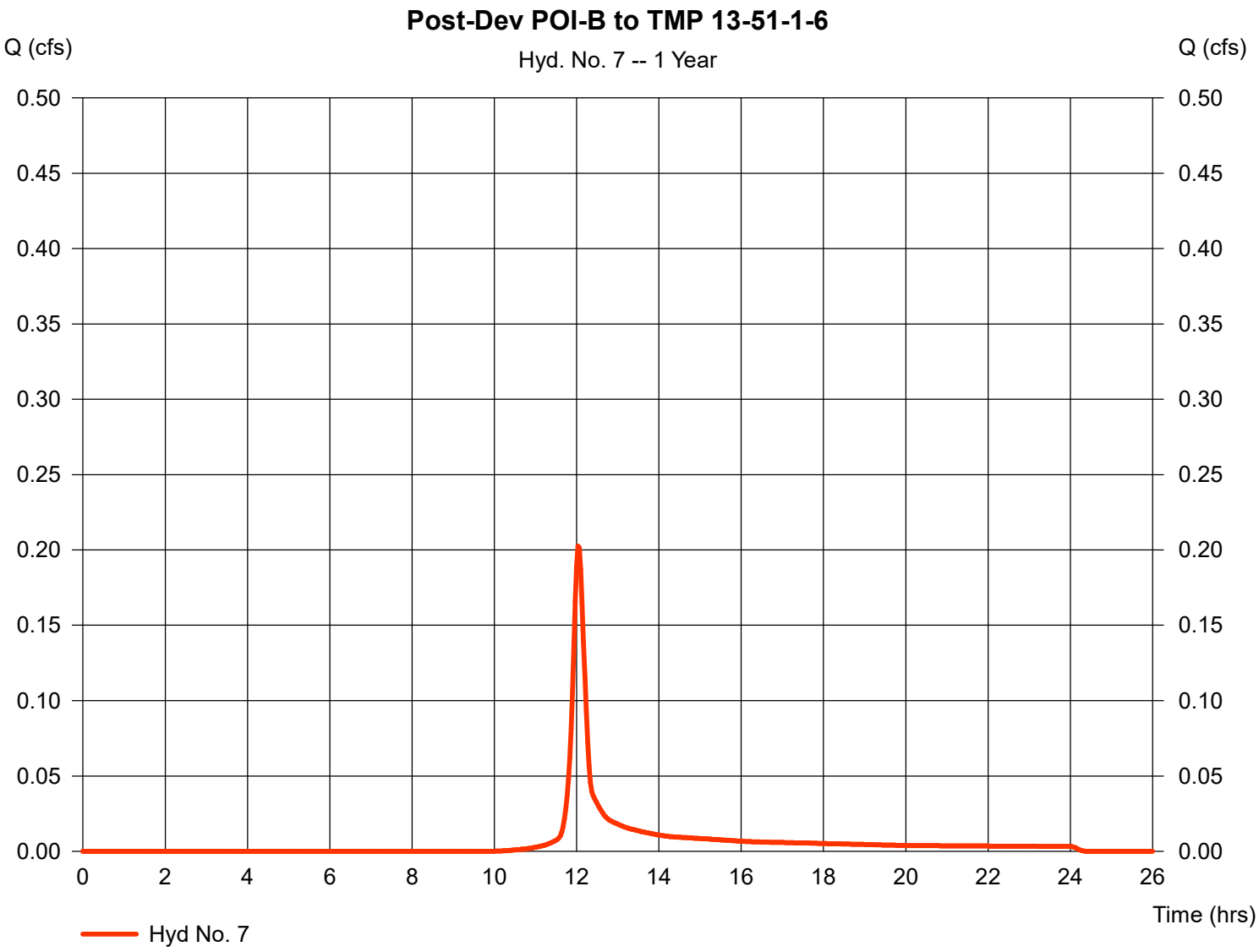
# Hydrograph Report



## Hyd. No. 7

Post-Dev POI-B to TMP 13-51-1-6

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.202 cfs |
| Storm frequency | = | 1 yrs | Time to peak | = | 12.03 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 577 cuft |
| Drainage area | = | 0.150 ac | Curve number | = | 81 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 15.80 min |
| Total precip. | = | 2.70 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 4.454 | 2 | 752 | 33,224 | ---- | ------ | ------ | Pre-Dev POI-A |
| 2 | SCS Runoff | 1.441 | 2 | 732 | 6,471 | ---- | ------ | ------ | Pre-Dev POI-B to TMP 13-51-1-6 |
| 3 | SCS Runoff | 43.01 | 2 | 716 | 93,290 | ---- | ------ | ------ | Post-Dev to Lined MRC Basin |
| 4 | Reservoir | 1.373 | 2 | 822 | 79,215 | 3 | 14.39 | 71,359 | Lined MRC Basin |
| 5 | SCS Runoff | 1.166 | 2 | 750 | 7,941 | ---- | ------ | ------ | Post-Dev to Bypass Lined MRC Basi |
| 6 | Combine | 2.483 | 2 | 752 | 87,157 | 4, 5 | ------ | ------ | Post-Dev POI-A |
| 7 | SCS Runoff | 0.292 | 2 | 722 | 822 | ---- | ------ | ------ | Post-Dev POI-B to TMP 13-51-1-6 |

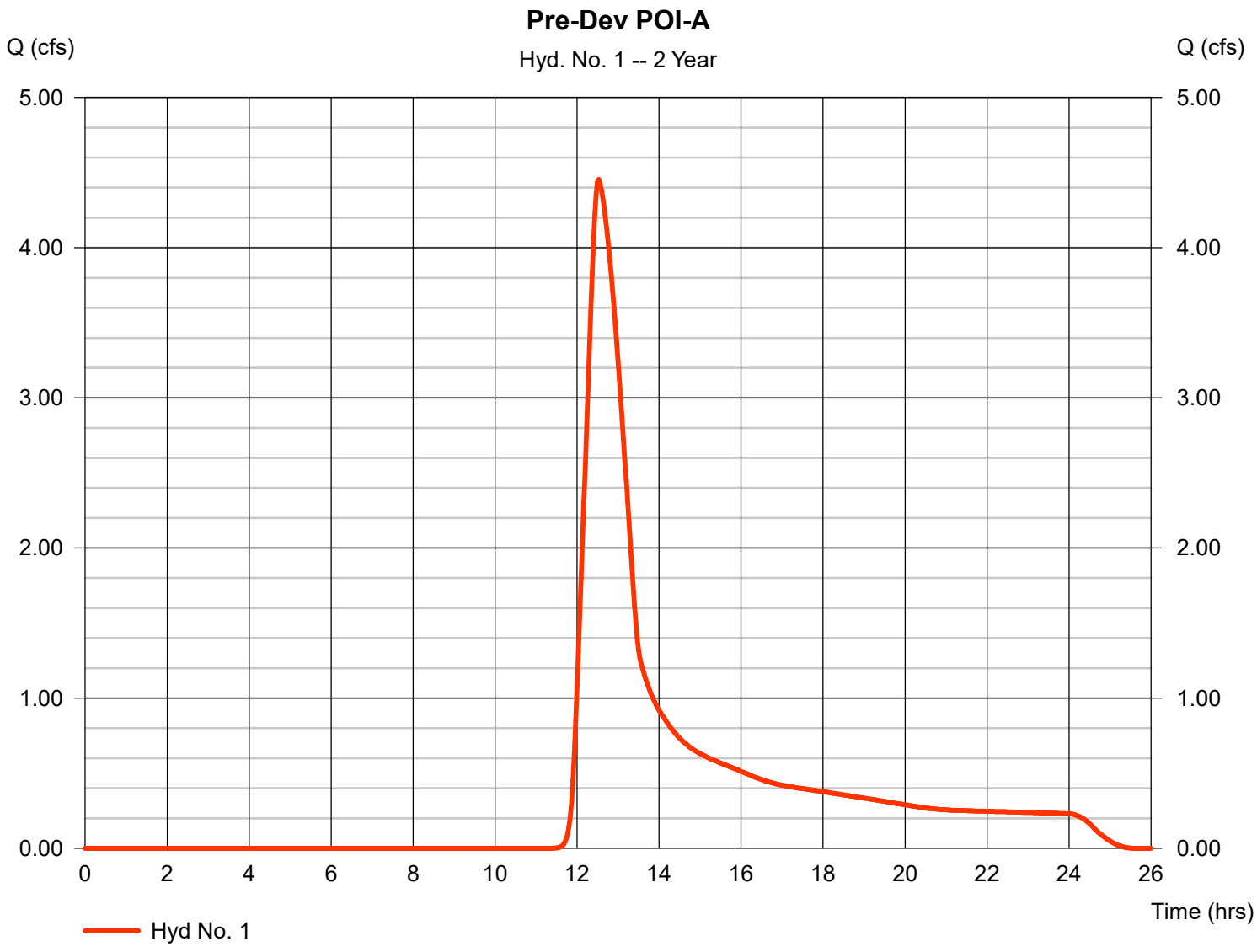
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 1

Pre-Dev POI-A

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 4.454 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 12.53 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 33,224 cuft |
| Drainage area | = | 10.320 ac | Curve number | = | 70 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 58.50 min |
| Total precip. | = | 3.30 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



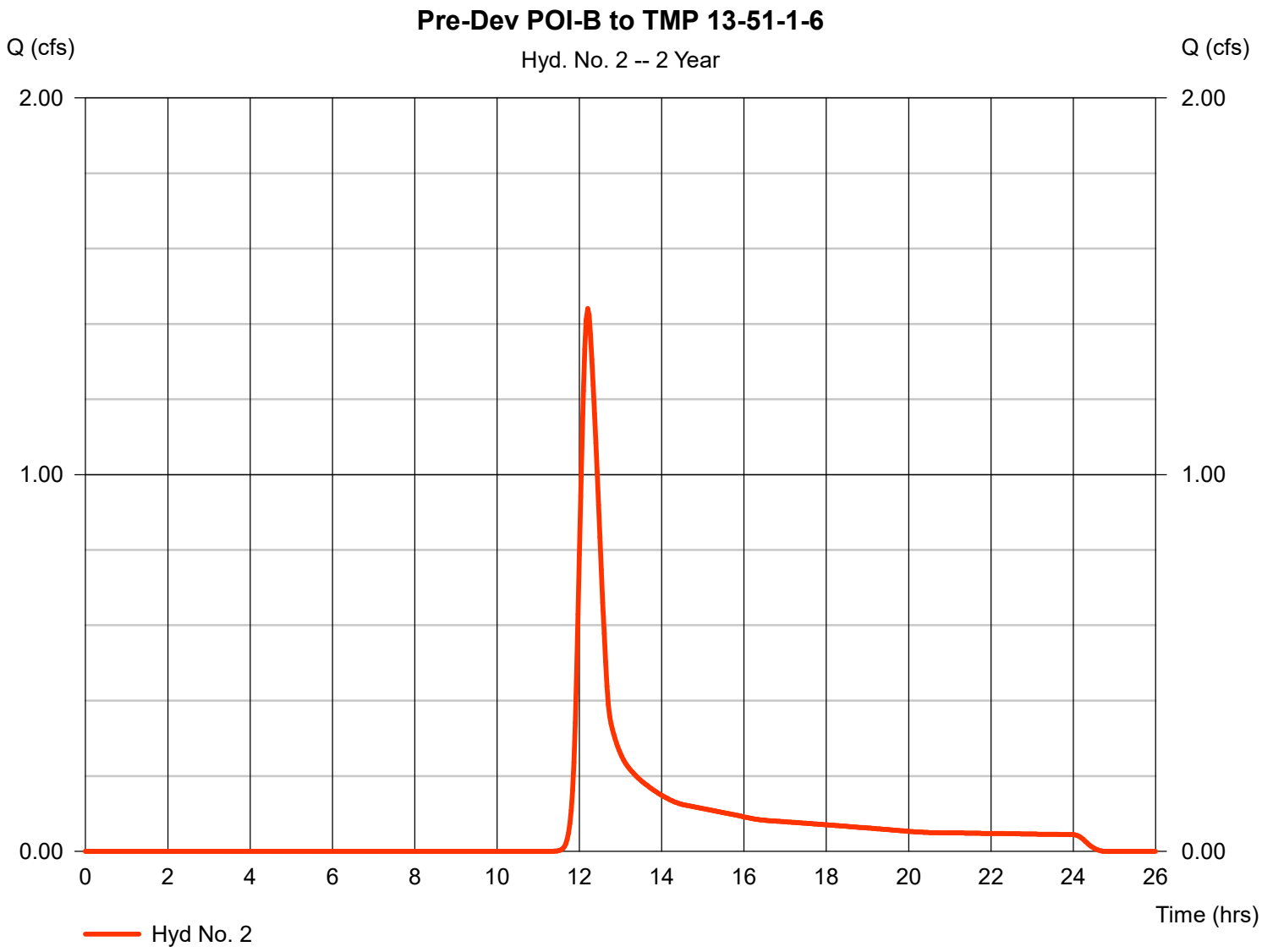
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 2

Pre-Dev POI-B to TMP 13-51-1-6

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 1.441 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 12.20 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 6,471 cuft |
| Drainage area | = | 2.010 ac | Curve number | = | 70 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 27.60 min |
| Total precip. | = | 3.30 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



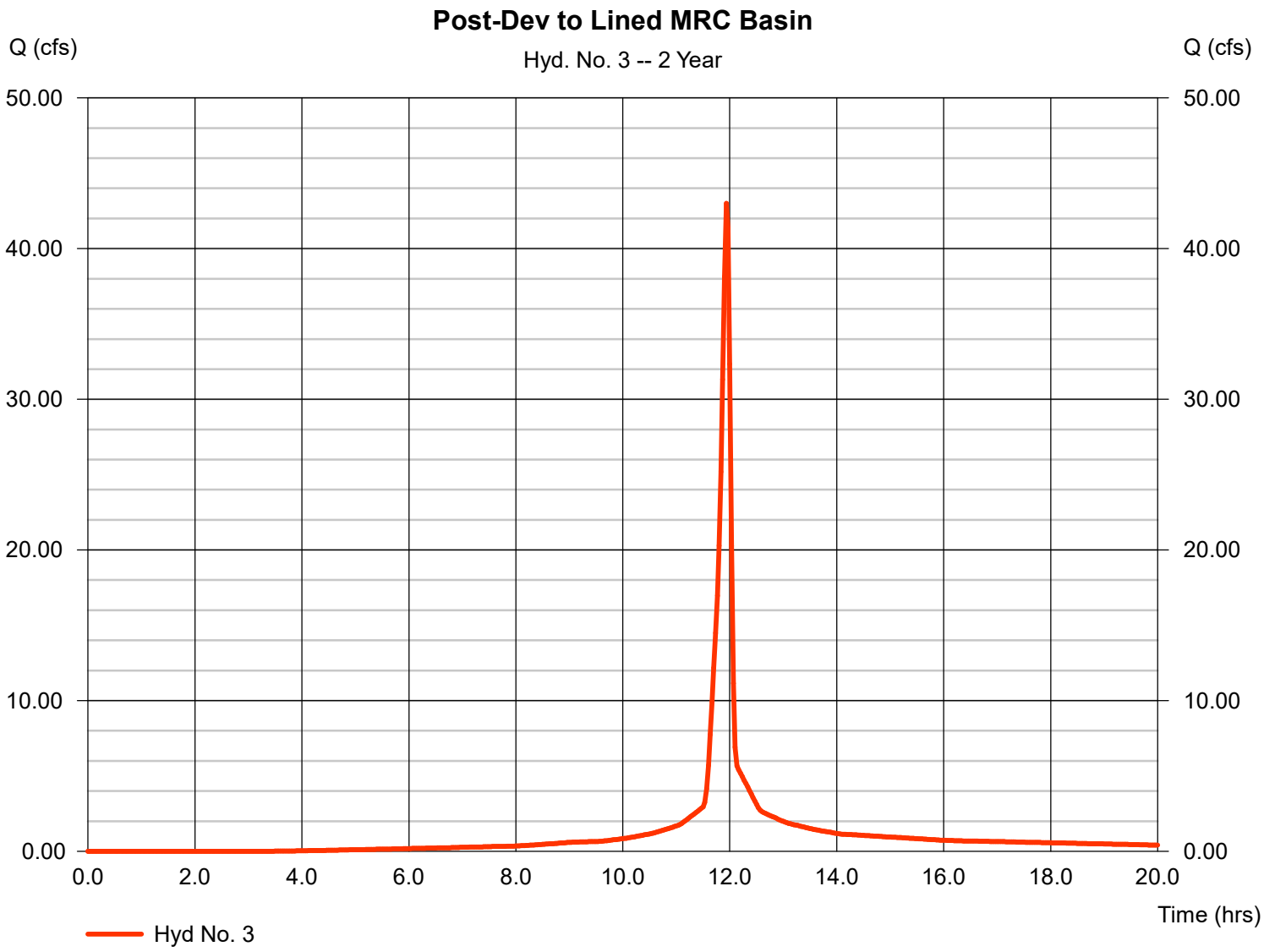
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 3

Post-Dev to Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 43.01 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 11.93 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 93,290 cuft |
| Drainage area | = | 10.380 ac | Curve number | = | 94 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 5.00 min |
| Total precip. | = | 3.30 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

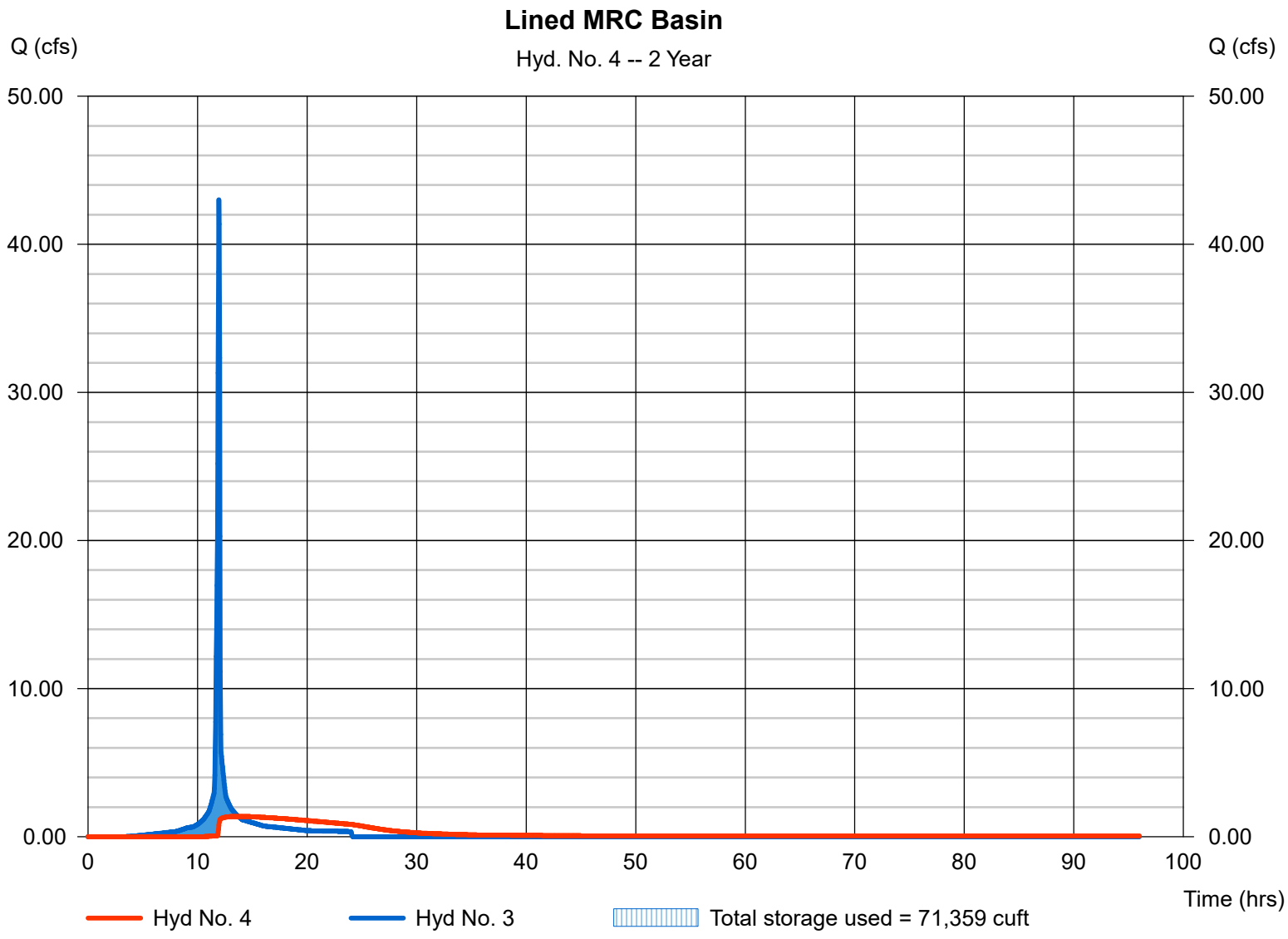
Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 4

Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 1.373 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 13.70 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 79,215 cuft |
| Inflow hyd. No. | = | 3 - Post-Dev to Lined MRC Basin | Max. Elevation | = | 14.39 ft |
| Reservoir name | = | Lined MRC Basin | Max. Storage | = | 71,359 cuft |

Storage Indication method used. Wet pond routing start elevation = 11.97 ft.



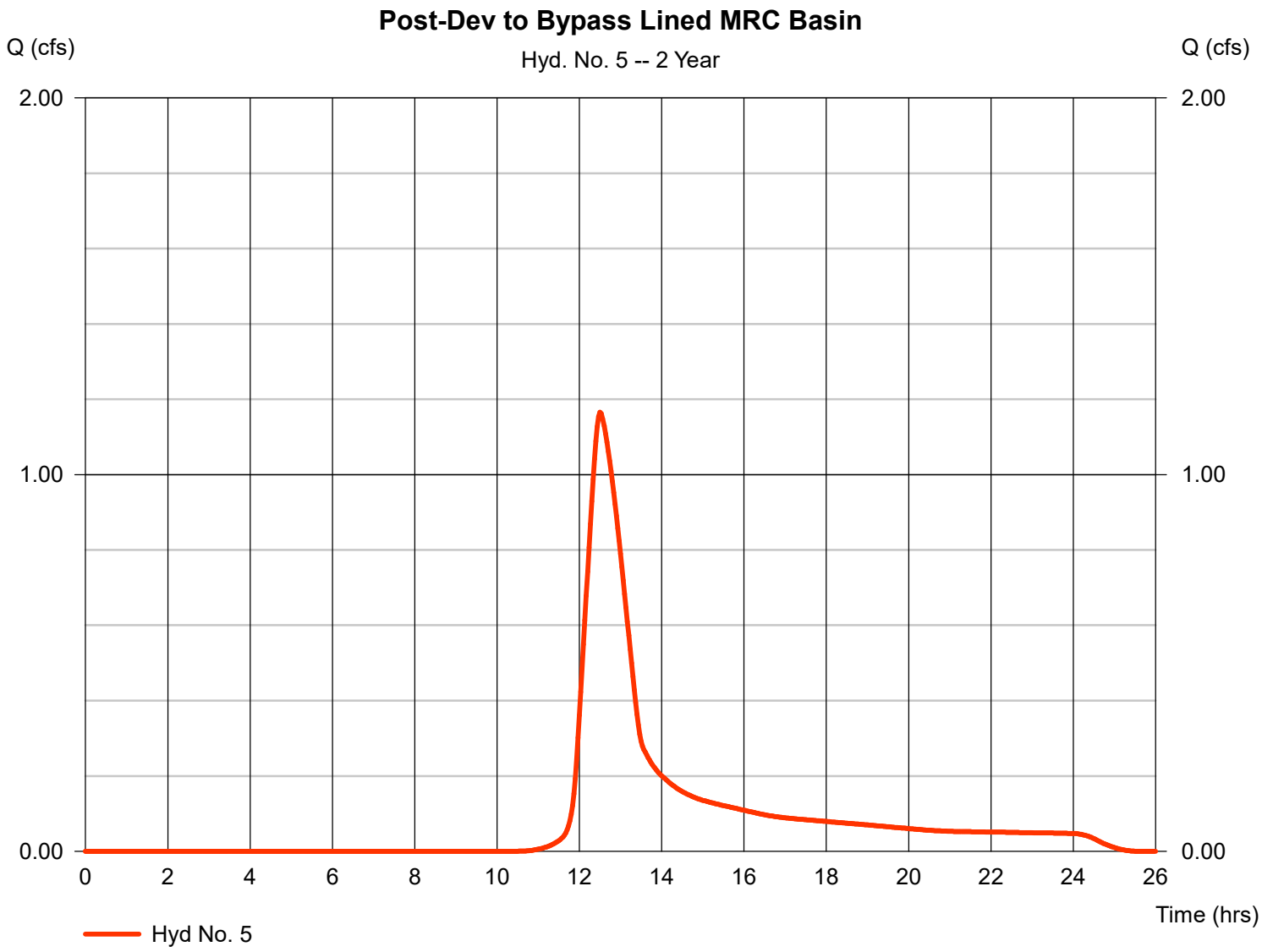
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 5

Post-Dev to Bypass Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 1.166 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 12.50 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 7,941 cuft |
| Drainage area | = | 1.790 ac | Curve number | = | 76 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 58.50 min |
| Total precip. | = | 3.30 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



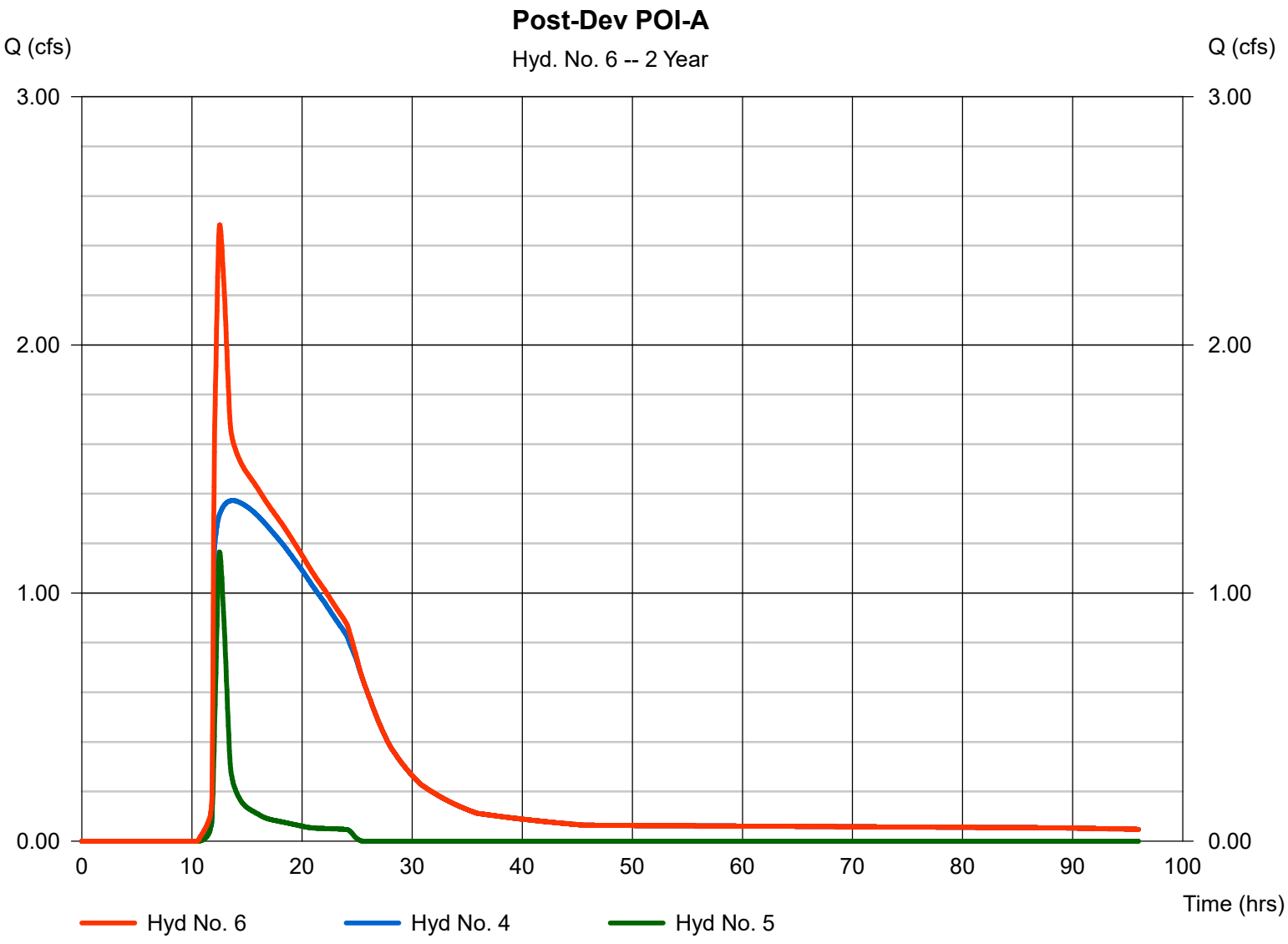
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 6

Post-Dev POI-A

| | | | |
|---|---|---|---|
| Hydrograph type | = Combine | Peak discharge | = 2.483 cfs |
| Storm frequency | = 2 yrs | Time to peak | = 12.53 hrs |
| Time interval | = 2 min | Hyd. volume | = 87,157 cuft |
| Inflow hyds. | = 4, 5 | Contrib. drain. area | = 1.790 ac |



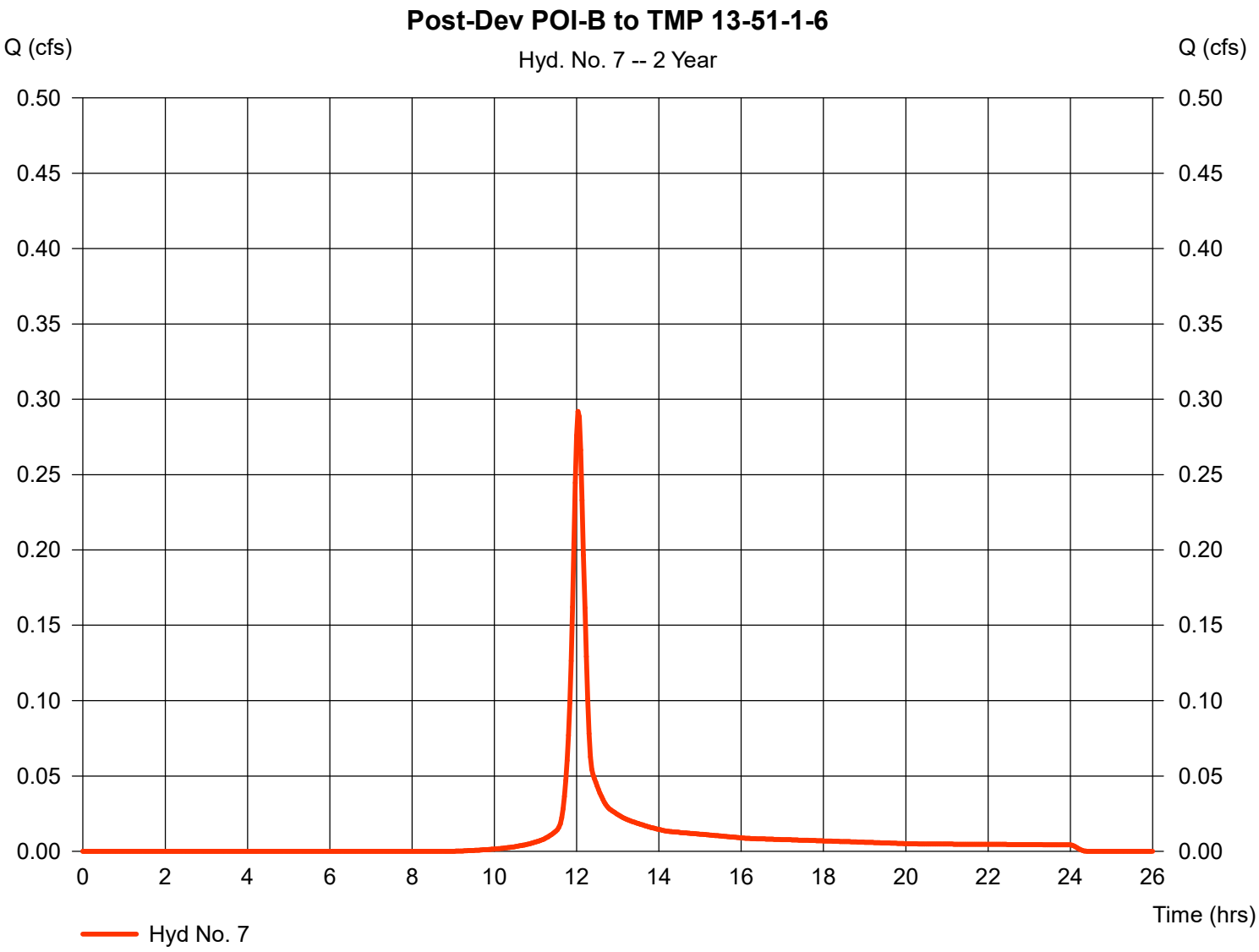
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 7

Post-Dev POI-B to TMP 13-51-1-6

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.292 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 12.03 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 822 cuft |
| Drainage area | = | 0.150 ac | Curve number | = | 81 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 15.80 min |
| Total precip. | = | 3.30 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 7.949 | 2 | 750 | 54,876 | ---- | ------ | ------ | Pre-Dev POI-A |
| 2 | SCS Runoff | 2.542 | 2 | 732 | 10,688 | ---- | ------ | ------ | Pre-Dev POI-B to TMP 13-51-1-6 |
| 3 | SCS Runoff | 56.27 | 2 | 716 | 124,361 | ---- | ------ | ------ | Post-Dev to Lined MRC Basin |
| 4 | Reservoir | 2.170 | 2 | 798 | 109,760 | 3 | 14.84 | 91,236 | Lined MRC Basin |
| 5 | SCS Runoff | 1.868 | 2 | 750 | 12,301 | ---- | ------ | ------ | Post-Dev to Bypass Lined MRC Basi |
| 6 | Combine | 3.920 | 2 | 752 | 122,061 | 4, 5 | ------ | ------ | Post-Dev POI-A |
| 7 | SCS Runoff | 0.434 | 2 | 722 | 1,216 | ---- | ------ | ------ | Post-Dev POI-B to TMP 13-51-1-6 |

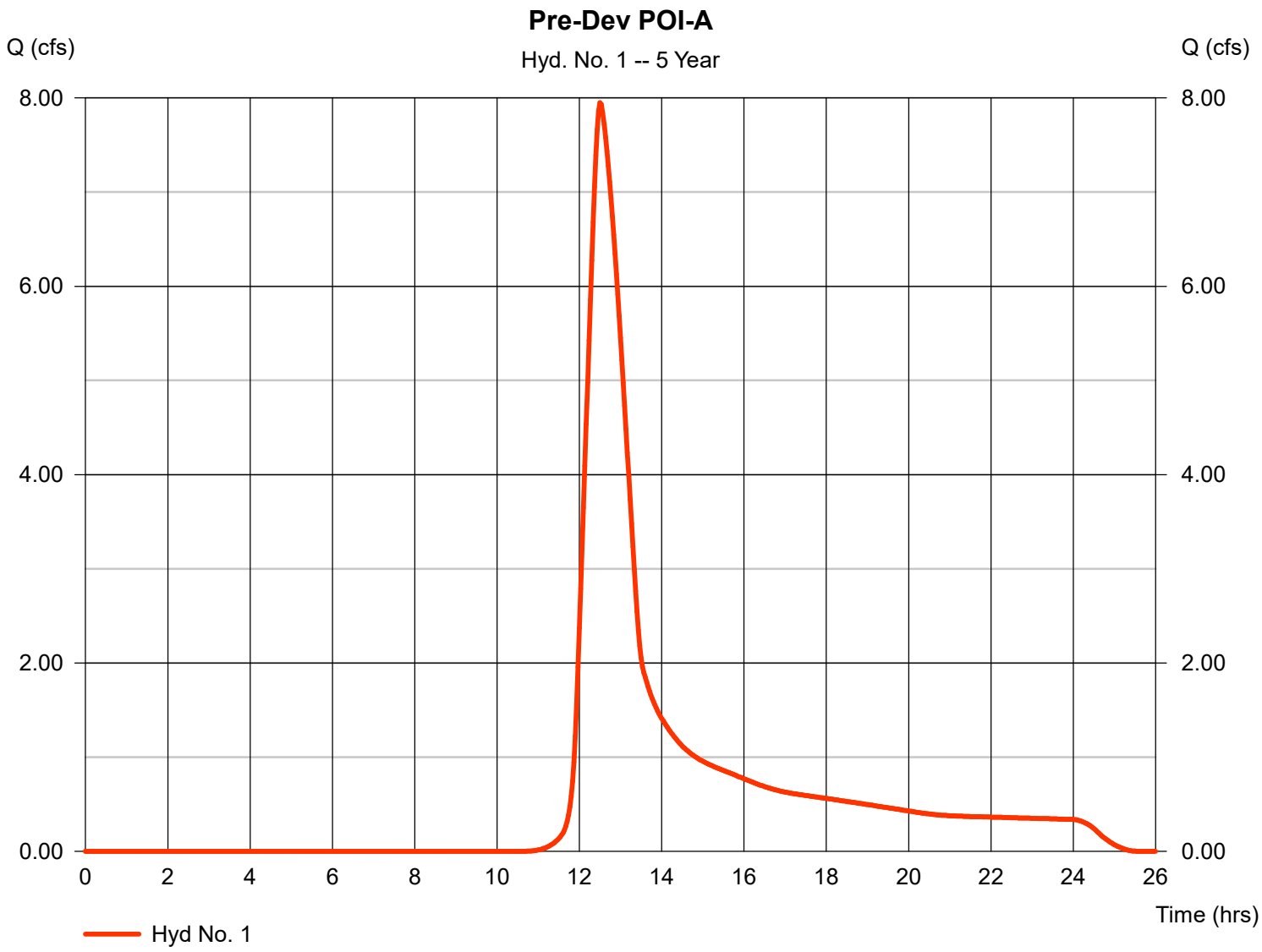
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 1

Pre-Dev POI-A

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 7.949 cfs |
| Storm frequency | = | 5 yrs | Time to peak | = | 12.50 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 54,876 cuft |
| Drainage area | = | 10.320 ac | Curve number | = | 70 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 58.50 min |
| Total precip. | = | 4.20 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



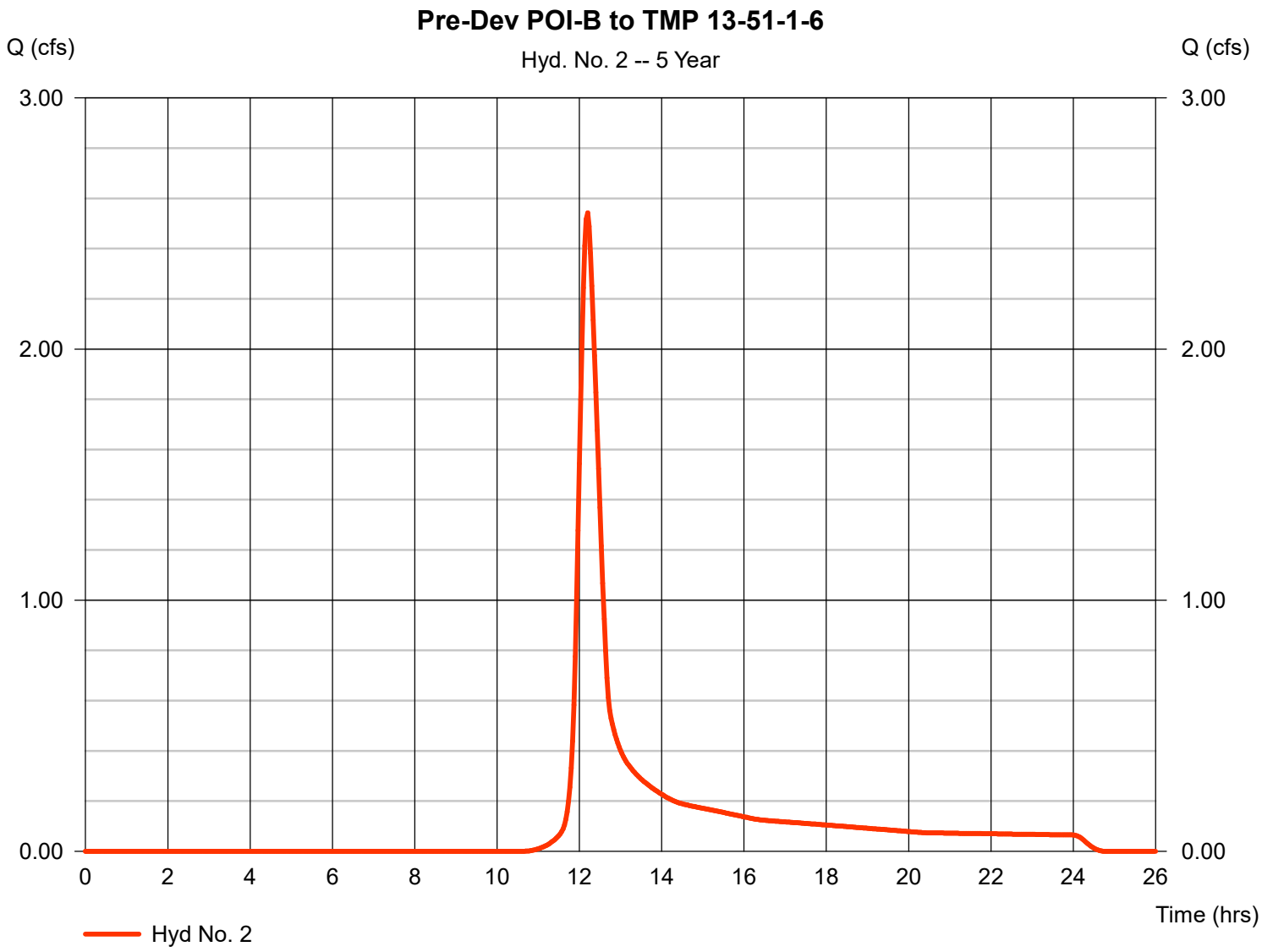
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 2

Pre-Dev POI-B to TMP 13-51-1-6

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 2.542 cfs |
| Storm frequency | = | 5 yrs | Time to peak | = | 12.20 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 10,688 cuft |
| Drainage area | = | 2.010 ac | Curve number | = | 70 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 27.60 min |
| Total precip. | = | 4.20 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



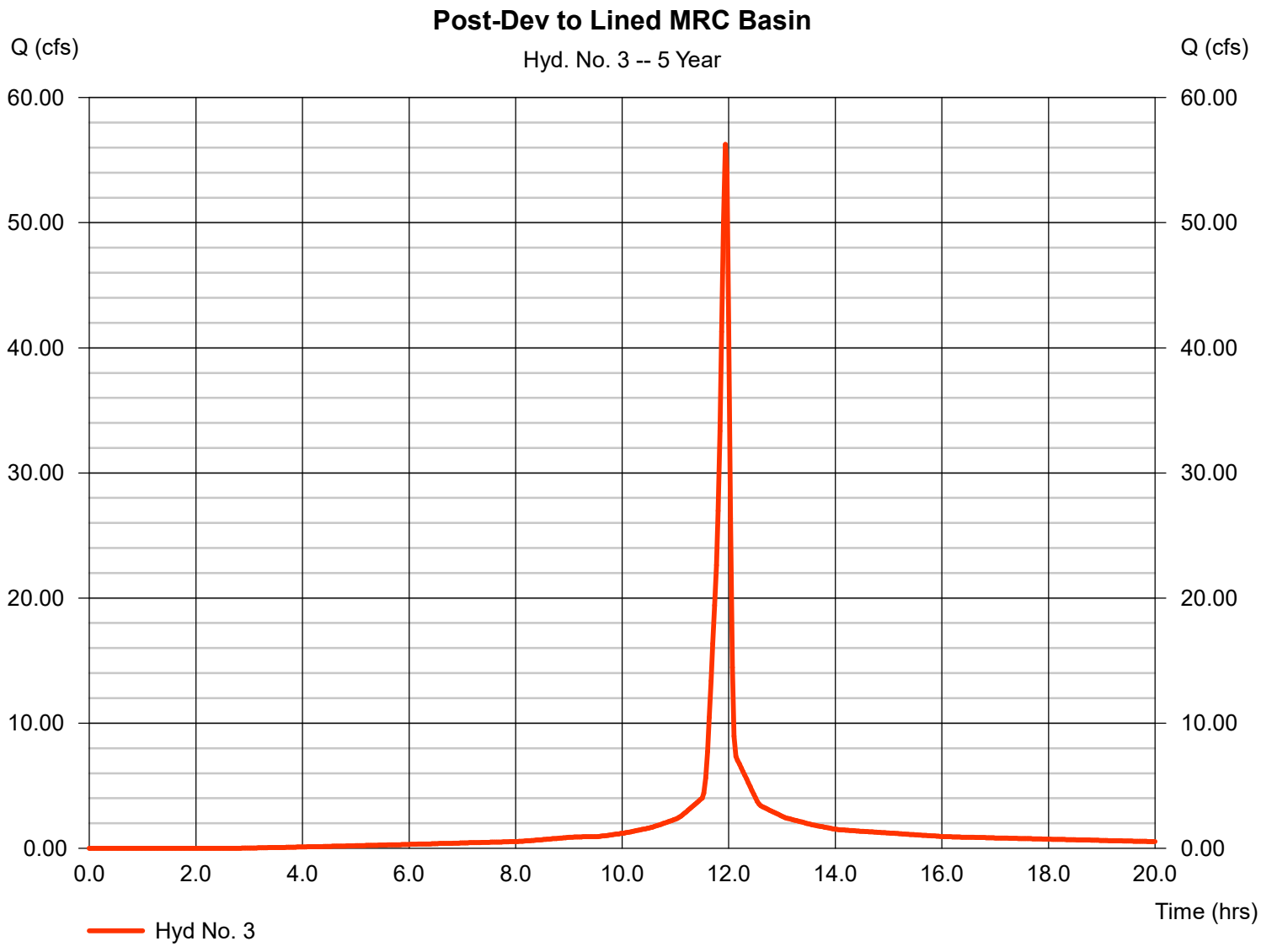
# Hydrograph Report



## Hyd. No. 3

Post-Dev to Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 56.27 cfs |
| Storm frequency | = | 5 yrs | Time to peak | = | 11.93 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 124,361 cuft |
| Drainage area | = | 10.380 ac | Curve number | = | 94 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 5.00 min |
| Total precip. | = | 4.20 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

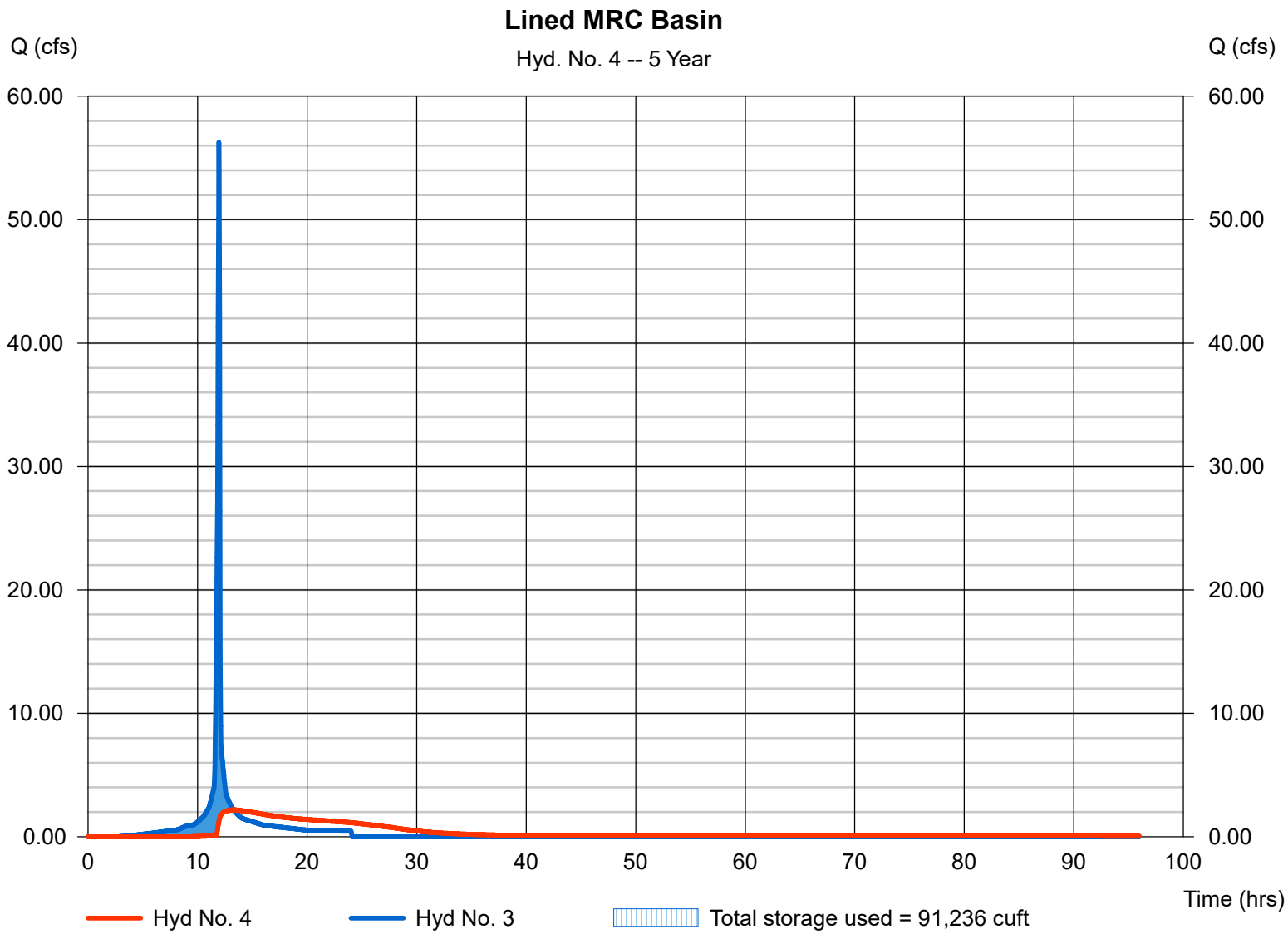
Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 4

Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 2.170 cfs |
| Storm frequency | = | 5 yrs | Time to peak | = | 13.30 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 109,760 cuft |
| Inflow hyd. No. | = | 3 - Post-Dev to Lined MRC Basin | Max. Elevation | = | 14.84 ft |
| Reservoir name | = | Lined MRC Basin | Max. Storage | = | 91,236 cuft |

Storage Indication method used. Wet pond routing start elevation = 11.97 ft.



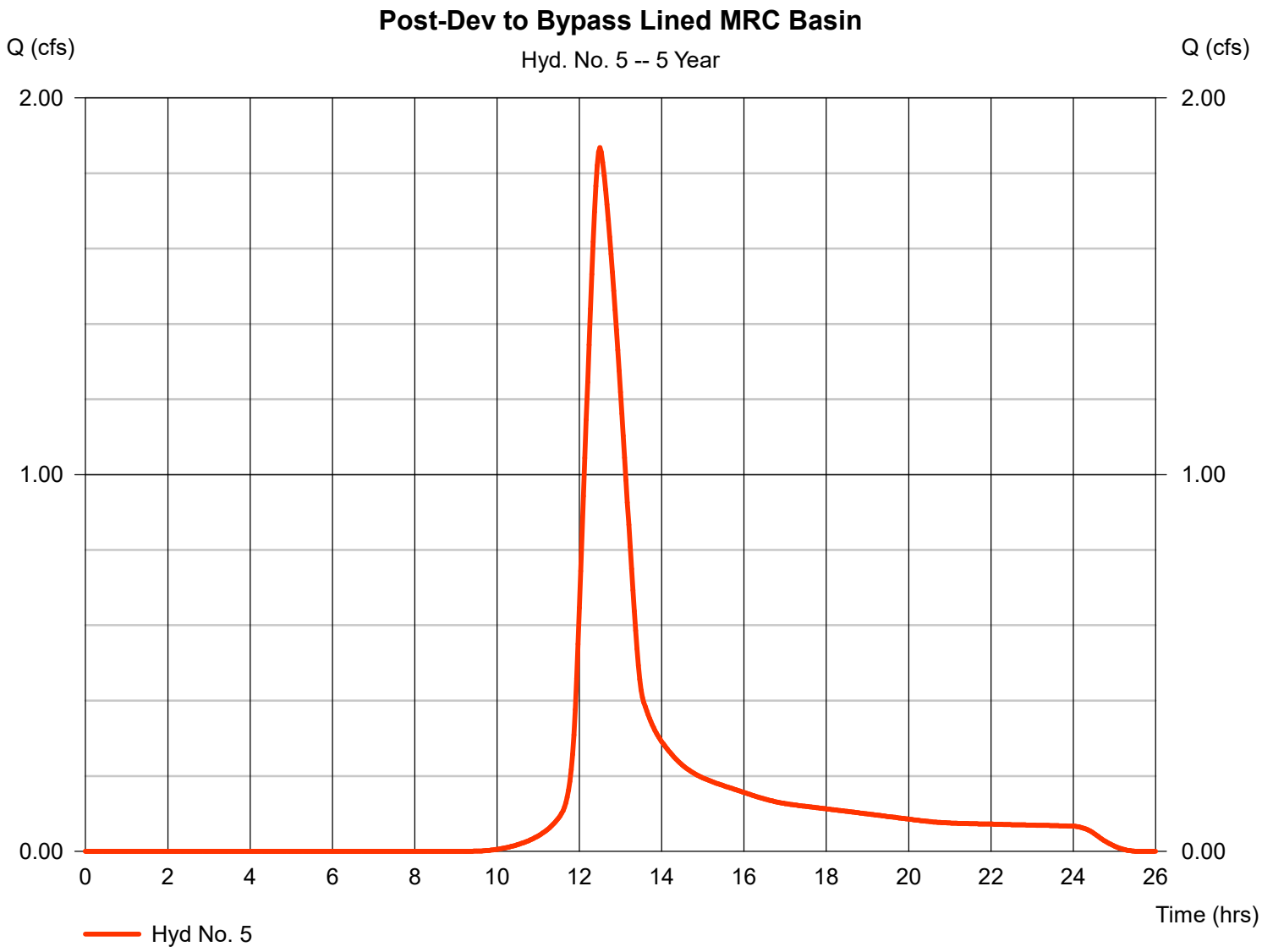
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 5

Post-Dev to Bypass Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 1.868 cfs |
| Storm frequency | = | 5 yrs | Time to peak | = | 12.50 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 12,301 cuft |
| Drainage area | = | 1.790 ac | Curve number | = | 76 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 58.50 min |
| Total precip. | = | 4.20 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



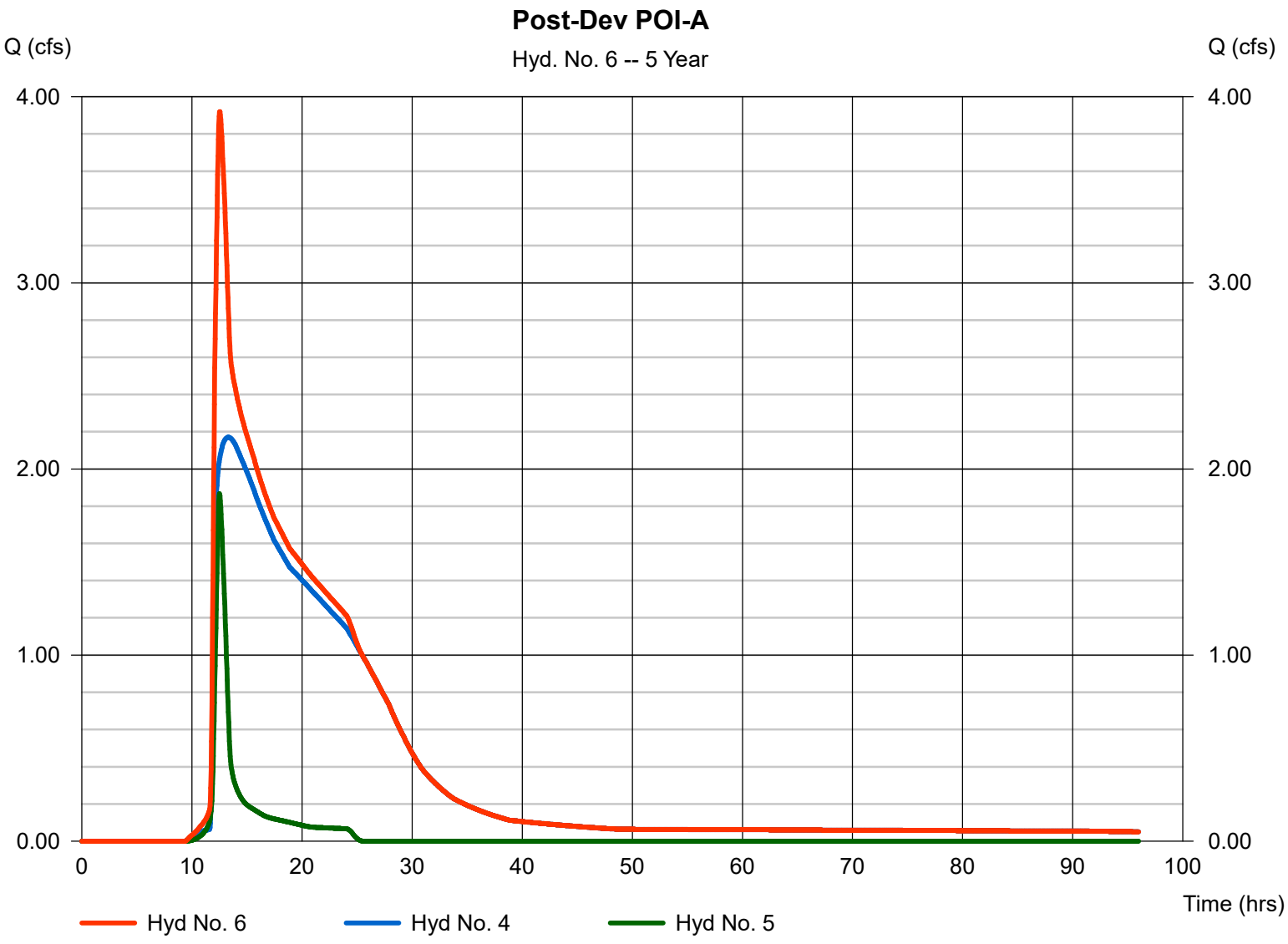
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 6

Post-Dev POI-A

| | | | |
|---|---|---|---|
| Hydrograph type | = Combine | Peak discharge | = 3.920 cfs |
| Storm frequency | = 5 yrs | Time to peak | = 12.53 hrs |
| Time interval | = 2 min | Hyd. volume | = 122,061 cuft |
| Inflow hyds. | = 4, 5 | Contrib. drain. area | = 1.790 ac |



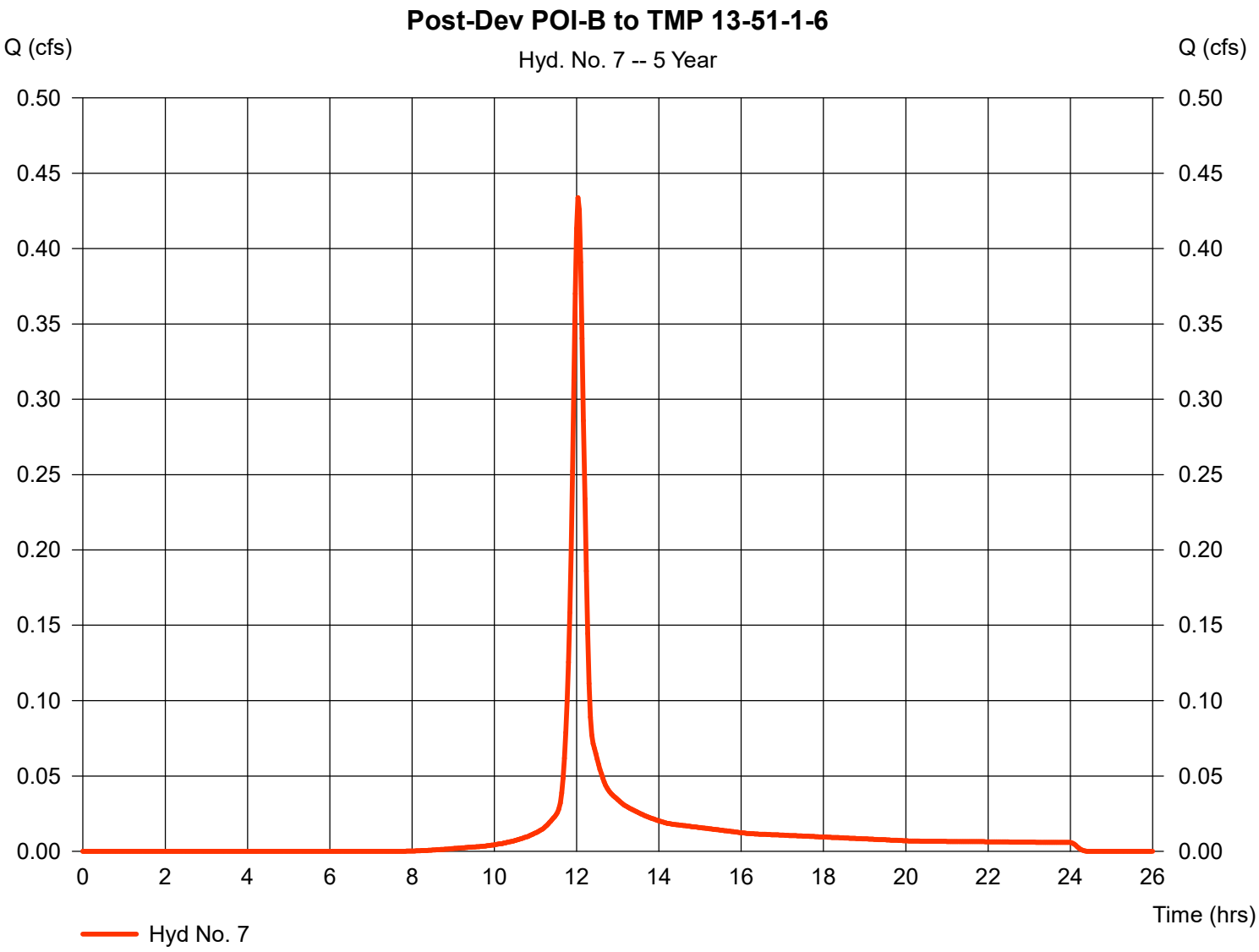
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 7

Post-Dev POI-B to TMP 13-51-1-6

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.434 cfs |
| Storm frequency | = | 5 yrs | Time to peak | = | 12.03 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 1,216 cuft |
| Drainage area | = | 0.150 ac | Curve number | = | 81 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 15.80 min |
| Total precip. | = | 4.20 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 11.41 | 2 | 750 | 76,284 | ---- | ------ | ------ | Pre-Dev POI-A |
| 2 | SCS Runoff | 3.622 | 2 | 732 | 14,858 | ---- | ------ | ------ | Pre-Dev POI-B to TMP 13-51-1-6 |
| 3 | SCS Runoff | 67.96 | 2 | 716 | 152,177 | ---- | ------ | ------ | Post-Dev to Lined MRC Basin |
| 4 | Reservoir | 3.230 | 2 | 776 | 137,313 | 3 | 15.21 | 107,547 | Lined MRC Basin |
| 5 | SCS Runoff | 2.534 | 2 | 750 | 16,475 | ---- | ------ | ------ | Post-Dev to Bypass Lined MRC Basi |
| 6 | Combine | 5.701 | 2 | 750 | 153,788 | 4, 5 | ------ | ------ | Post-Dev POI-A |
| 7 | SCS Runoff | 0.564 | 2 | 722 | 1,585 | ---- | ------ | ------ | Post-Dev POI-B to TMP 13-51-1-6 |

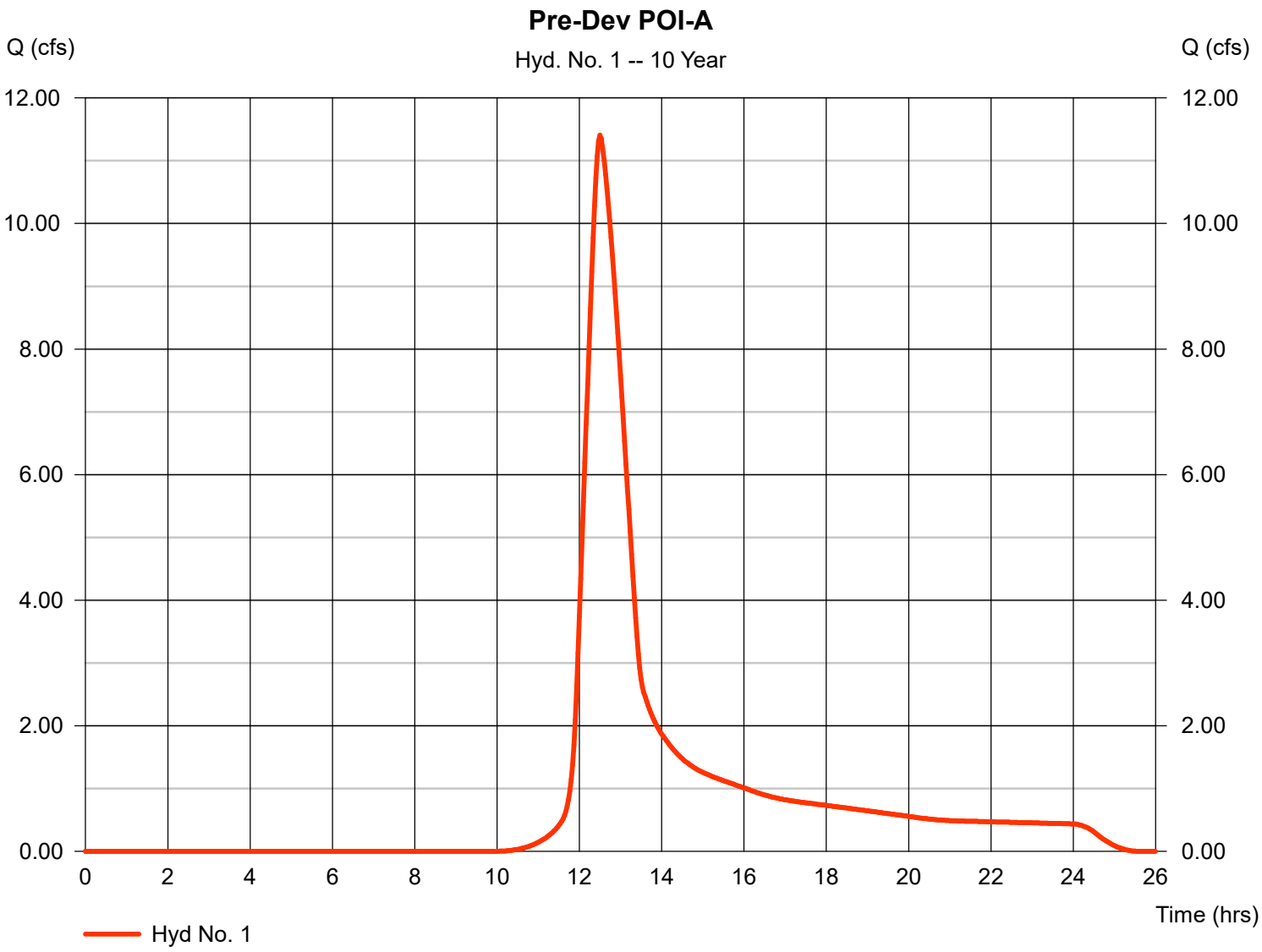
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 1

Pre-Dev POI-A

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 11.41 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 12.50 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 76,284 cuft |
| Drainage area | = | 10.320 ac | Curve number | = | 70 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 58.50 min |
| Total precip. | = | 5.00 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



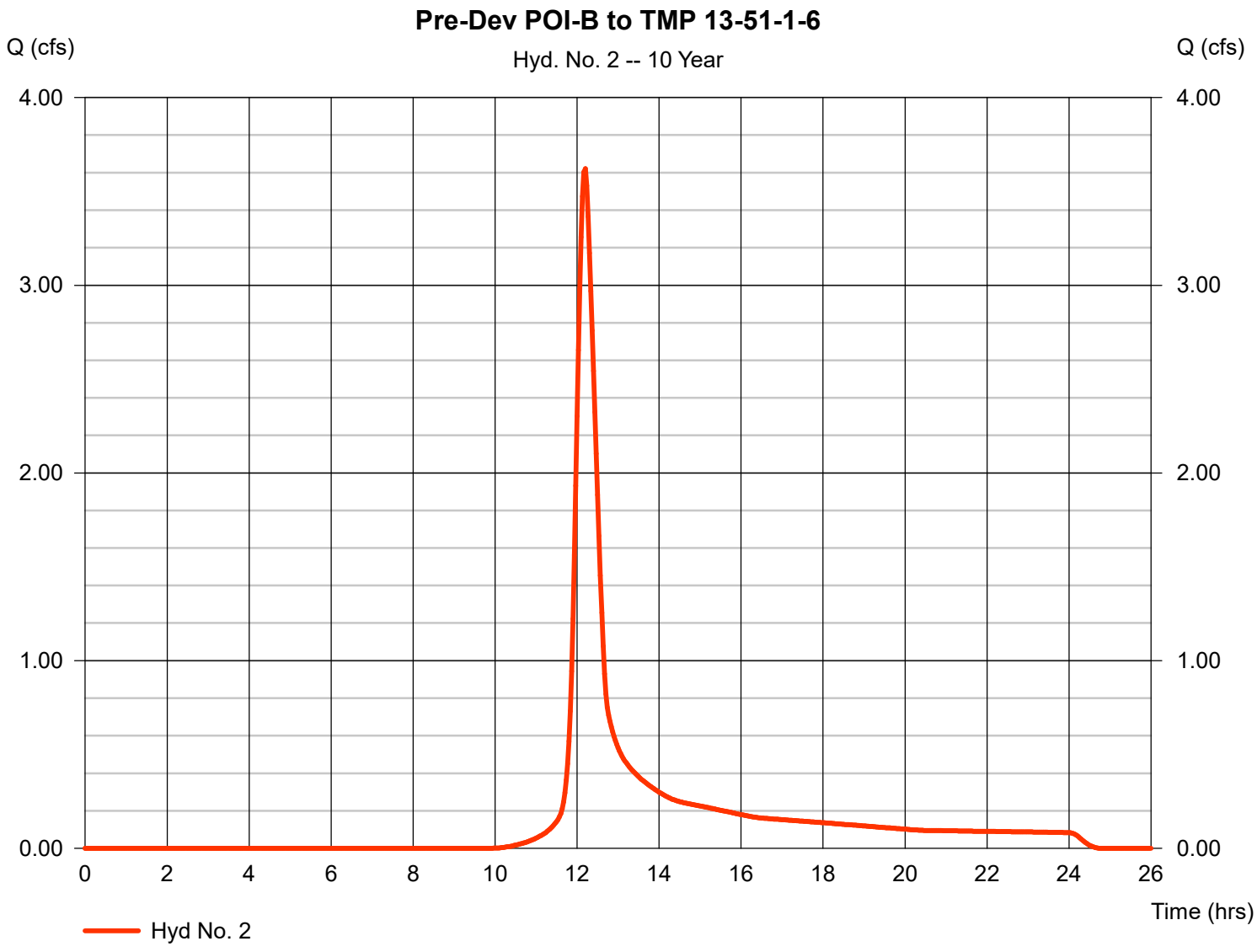
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 2

Pre-Dev POI-B to TMP 13-51-1-6

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 3.622 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 12.20 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 14,858 cuft |
| Drainage area | = | 2.010 ac | Curve number | = | 70 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 27.60 min |
| Total precip. | = | 5.00 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



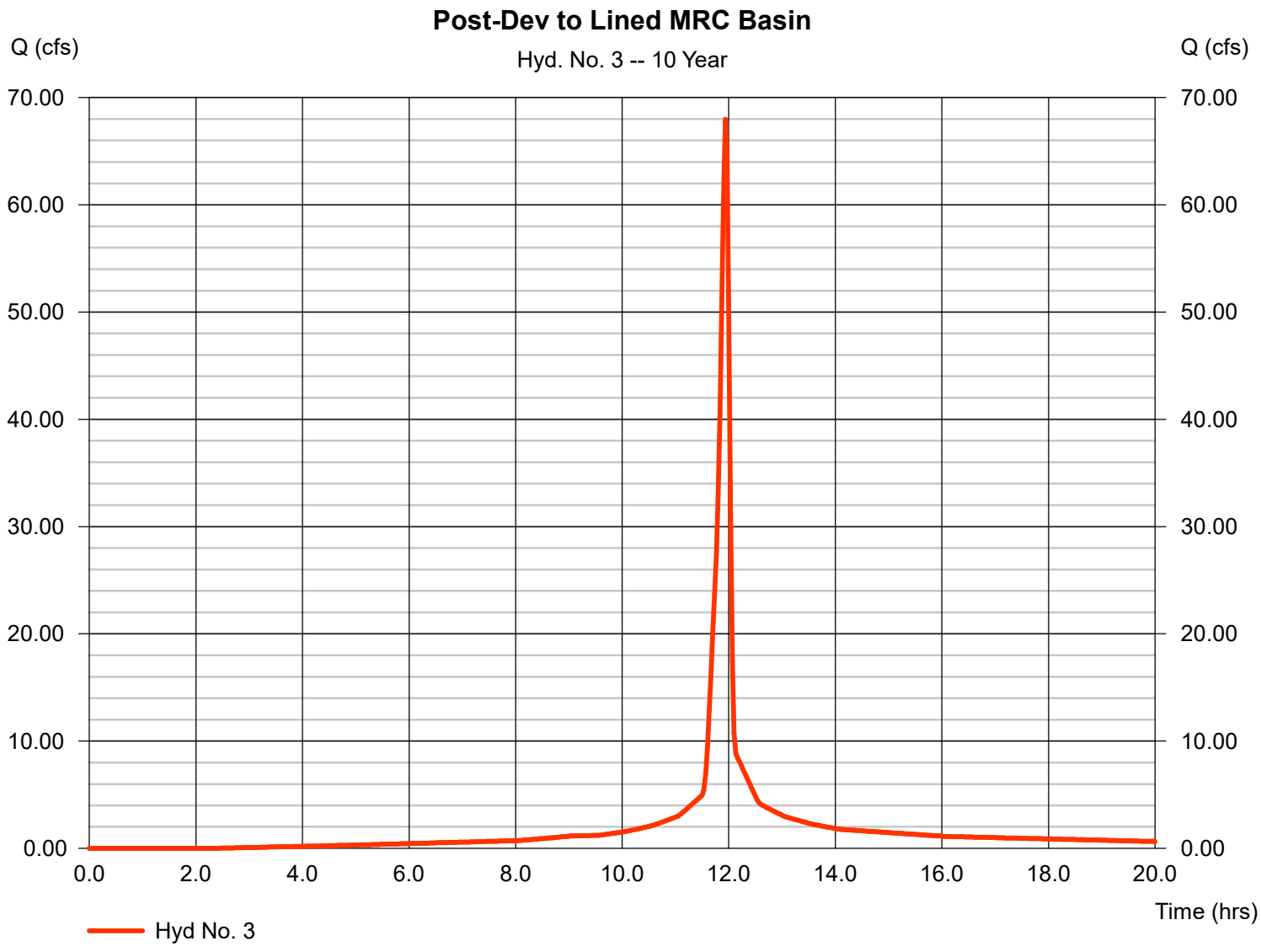
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 3

Post-Dev to Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 67.96 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 11.93 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 152,177 cuft |
| Drainage area | = | 10.380 ac | Curve number | = | 94 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 5.00 min |
| Total precip. | = | 5.00 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

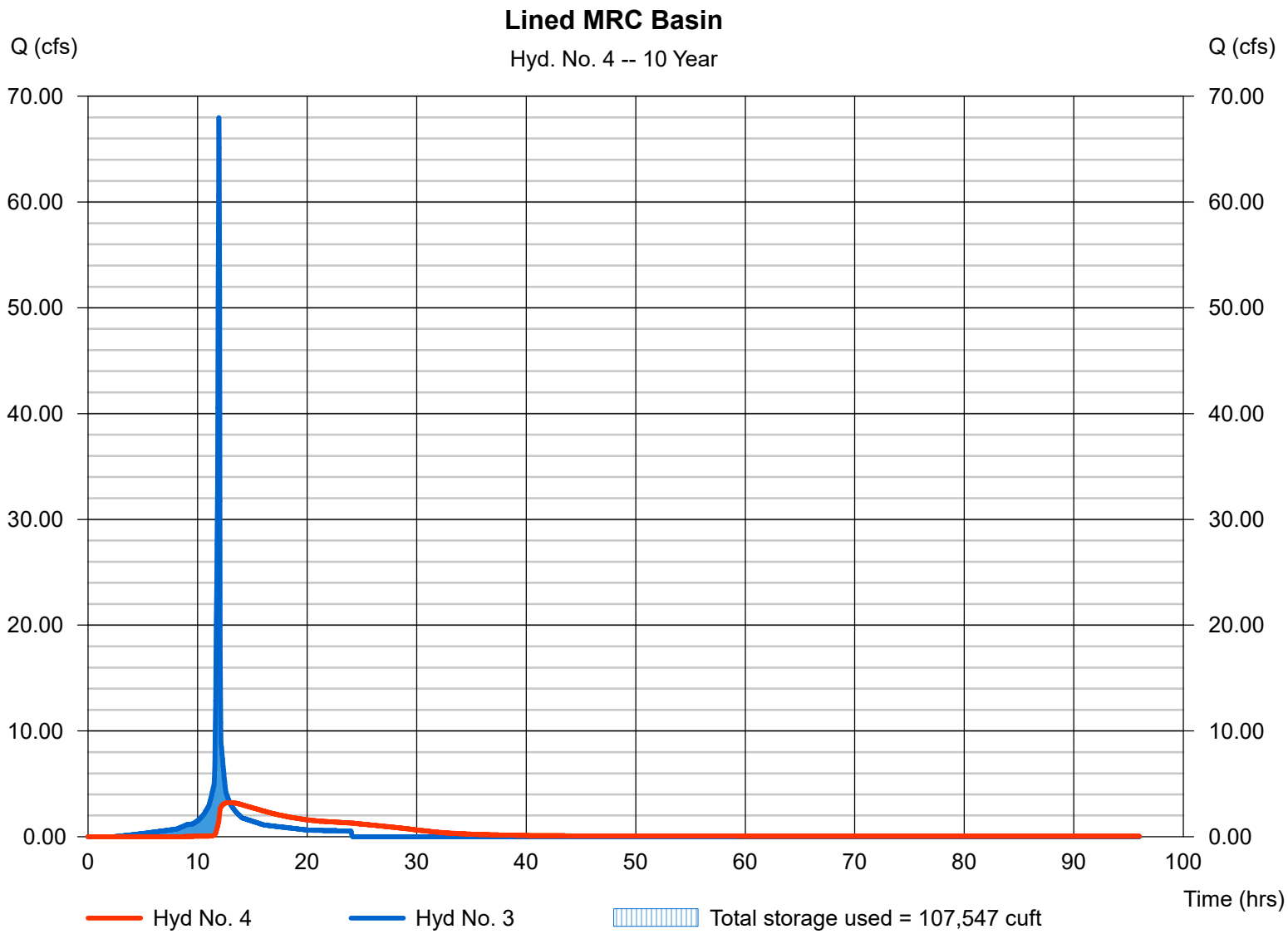
Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 4

Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 3.230 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 12.93 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 137,313 cuft |
| Inflow hyd. No. | = | 3 - Post-Dev to Lined MRC Basin | Max. Elevation | = | 15.21 ft |
| Reservoir name | = | Lined MRC Basin | Max. Storage | = | 107,547 cuft |

Storage Indication method used. Wet pond routing start elevation = 11.97 ft.



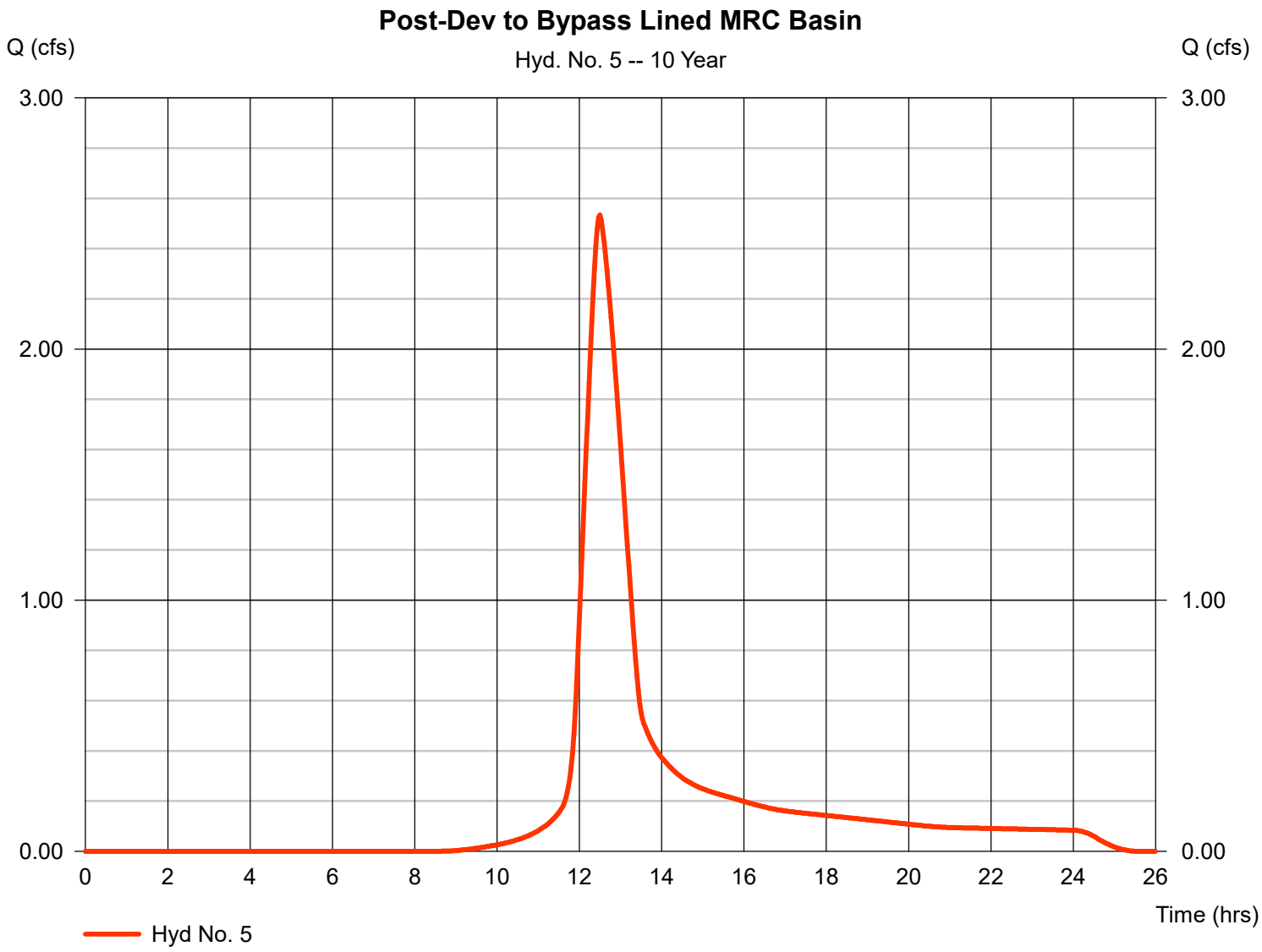
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 5

Post-Dev to Bypass Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 2.534 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 12.50 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 16,475 cuft |
| Drainage area | = | 1.790 ac | Curve number | = | 76 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 58.50 min |
| Total precip. | = | 5.00 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



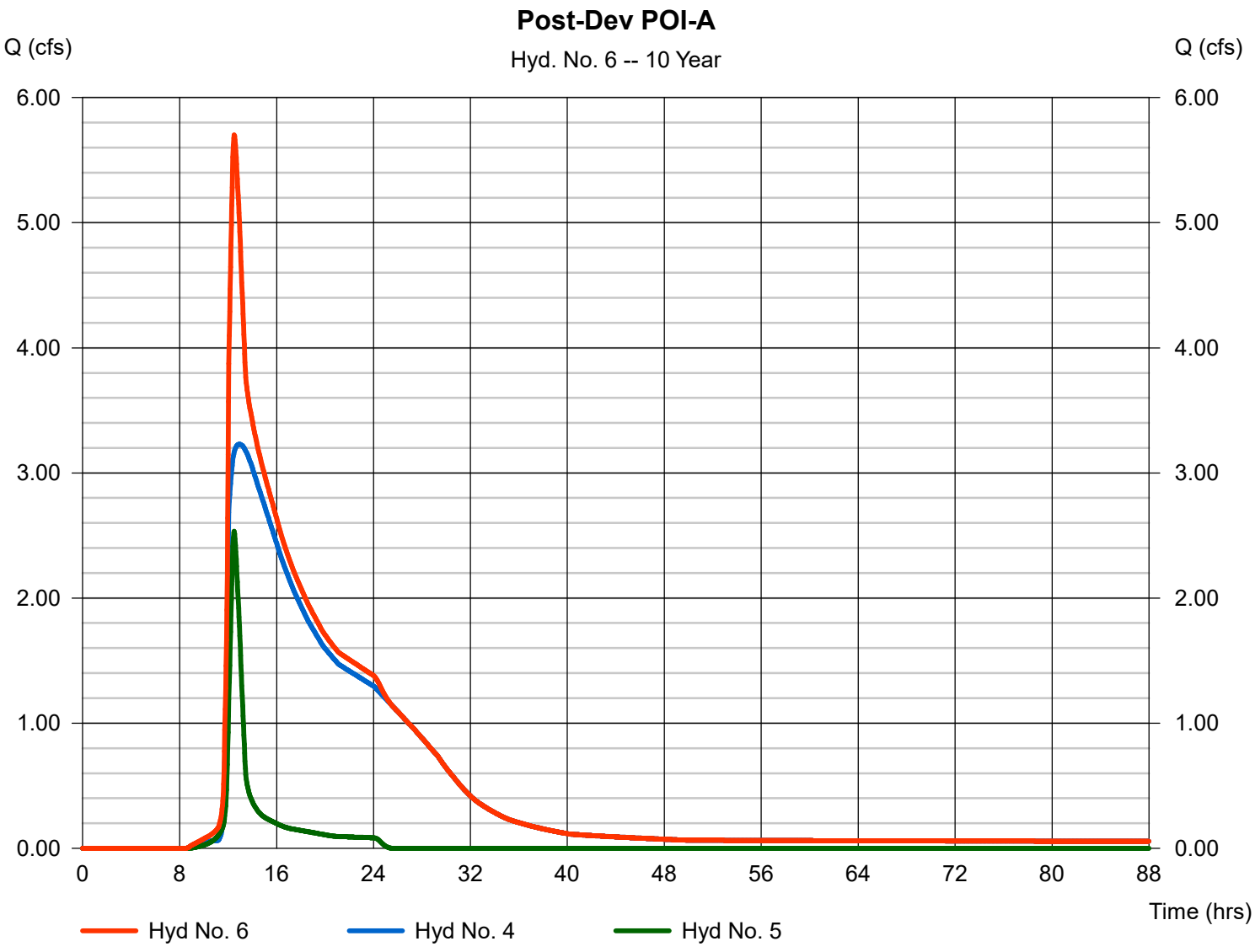
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 6

Post-Dev POI-A

| | | | |
|---|---|---|---|
| Hydrograph type | = Combine | Peak discharge | = 5.701 cfs |
| Storm frequency | = 10 yrs | Time to peak | = 12.50 hrs |
| Time interval | = 2 min | Hyd. volume | = 153,788 cuft |
| Inflow hyds. | = 4, 5 | Contrib. drain. area | = 1.790 ac |



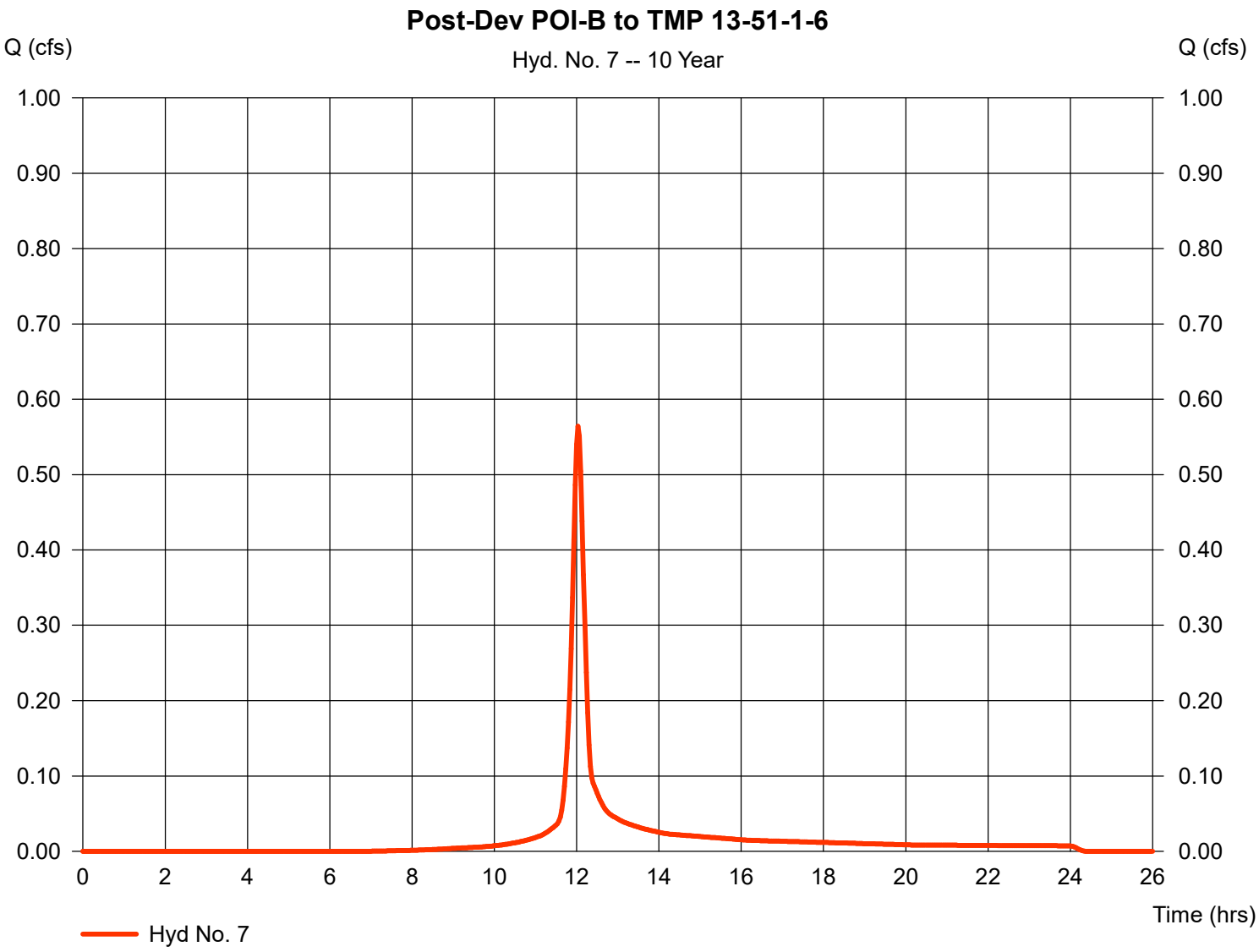
# Hydrograph Report



## Hyd. No. 7

Post-Dev POI-B to TMP 13-51-1-6

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.564 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 12.03 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 1,585 cuft |
| Drainage area | = | 0.150 ac | Curve number | = | 81 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 15.80 min |
| Total precip. | = | 5.00 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 15.08 | 2 | 750 | 99,176 | ---- | ------ | ------ | Pre-Dev POI-A |
| 2 | SCS Runoff | 4.765 | 2 | 732 | 19,316 | ---- | ------ | ------ | Pre-Dev POI-B to TMP 13-51-1-6 |
| 3 | SCS Runoff | 79.60 | 2 | 716 | 180,105 | ---- | ------ | ------ | Post-Dev to Lined MRC Basin |
| 4 | Reservoir | 4.322 | 2 | 764 | 165,048 | 3 | 15.56 | 123,953 | Lined MRC Basin |
| 5 | SCS Runoff | 3.225 | 2 | 750 | 20,846 | ---- | ------ | ------ | Post-Dev to Bypass Lined MRC Basi |
| 6 | Combine | 7.517 | 2 | 750 | 185,895 | 4, 5 | ------ | ------ | Post-Dev POI-A |
| 7 | SCS Runoff | 0.696 | 2 | 722 | 1,965 | ---- | ------ | ------ | Post-Dev POI-B to TMP 13-51-1-6 |

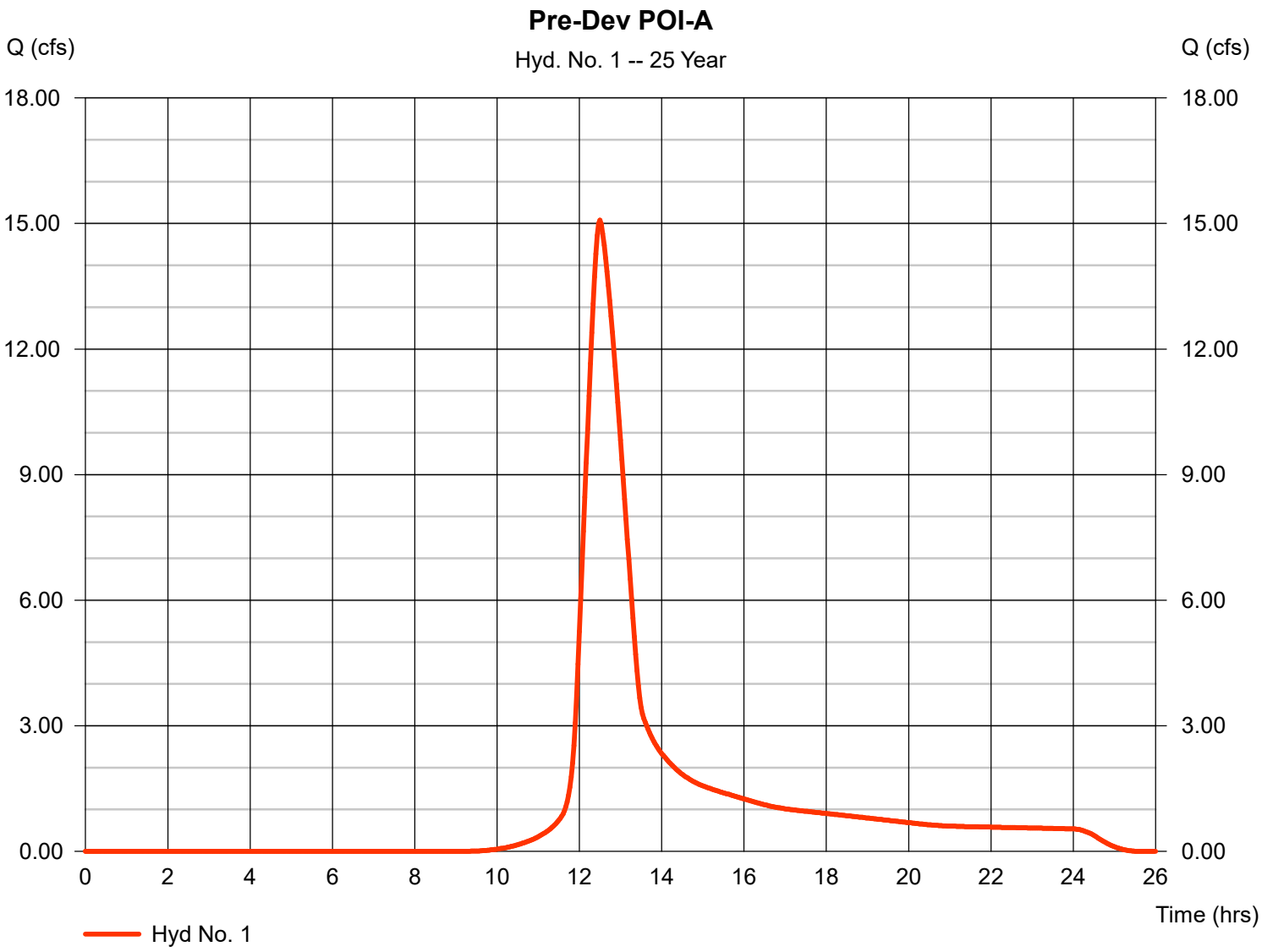
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 1

Pre-Dev POI-A

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 15.08 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 12.50 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 99,176 cuft |
| Drainage area | = | 10.320 ac | Curve number | = | 70 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 58.50 min |
| Total precip. | = | 5.80 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



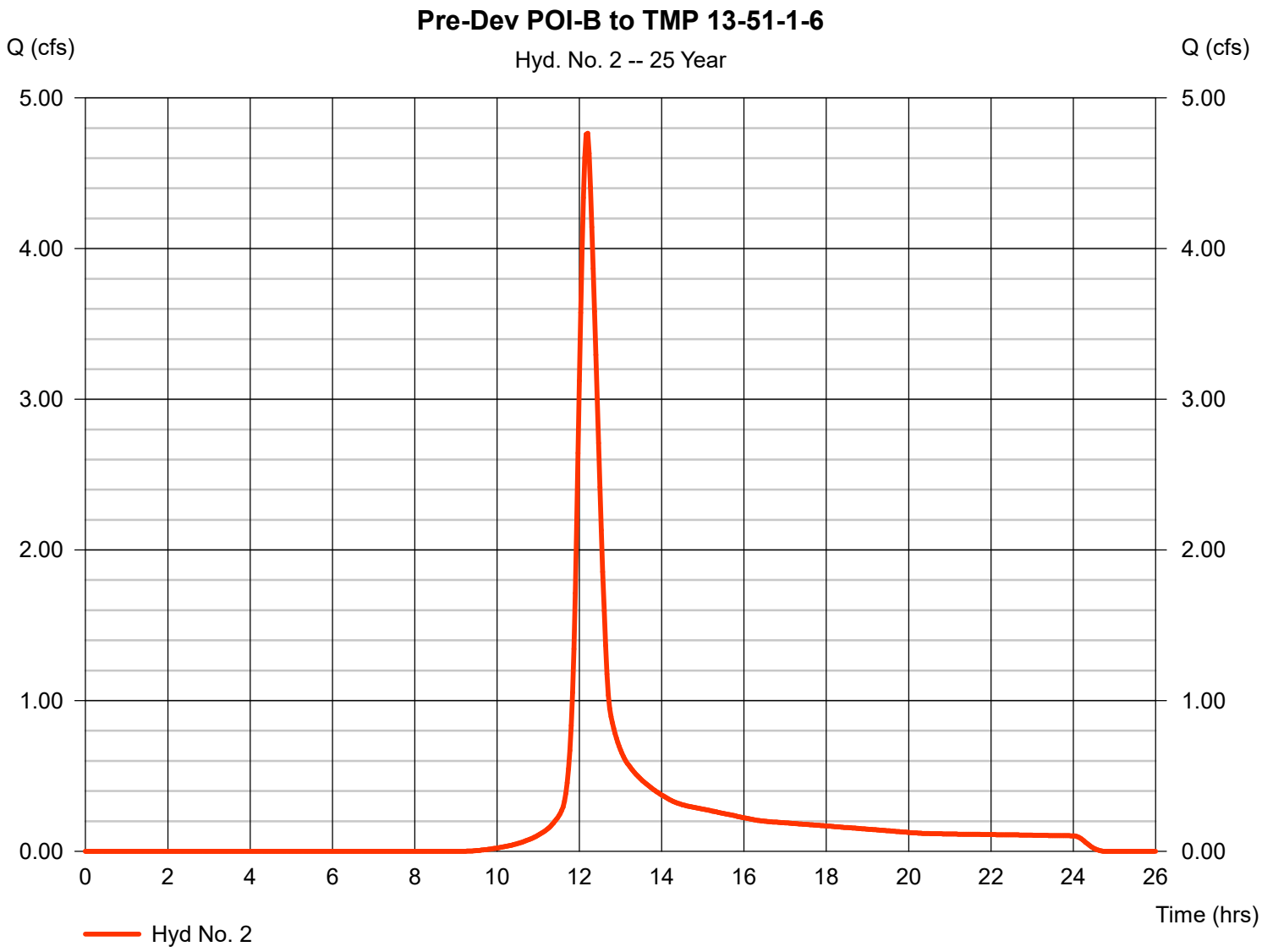
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 2

Pre-Dev POI-B to TMP 13-51-1-6

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 4.765 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 12.20 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 19,316 cuft |
| Drainage area | = | 2.010 ac | Curve number | = | 70 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 27.60 min |
| Total precip. | = | 5.80 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



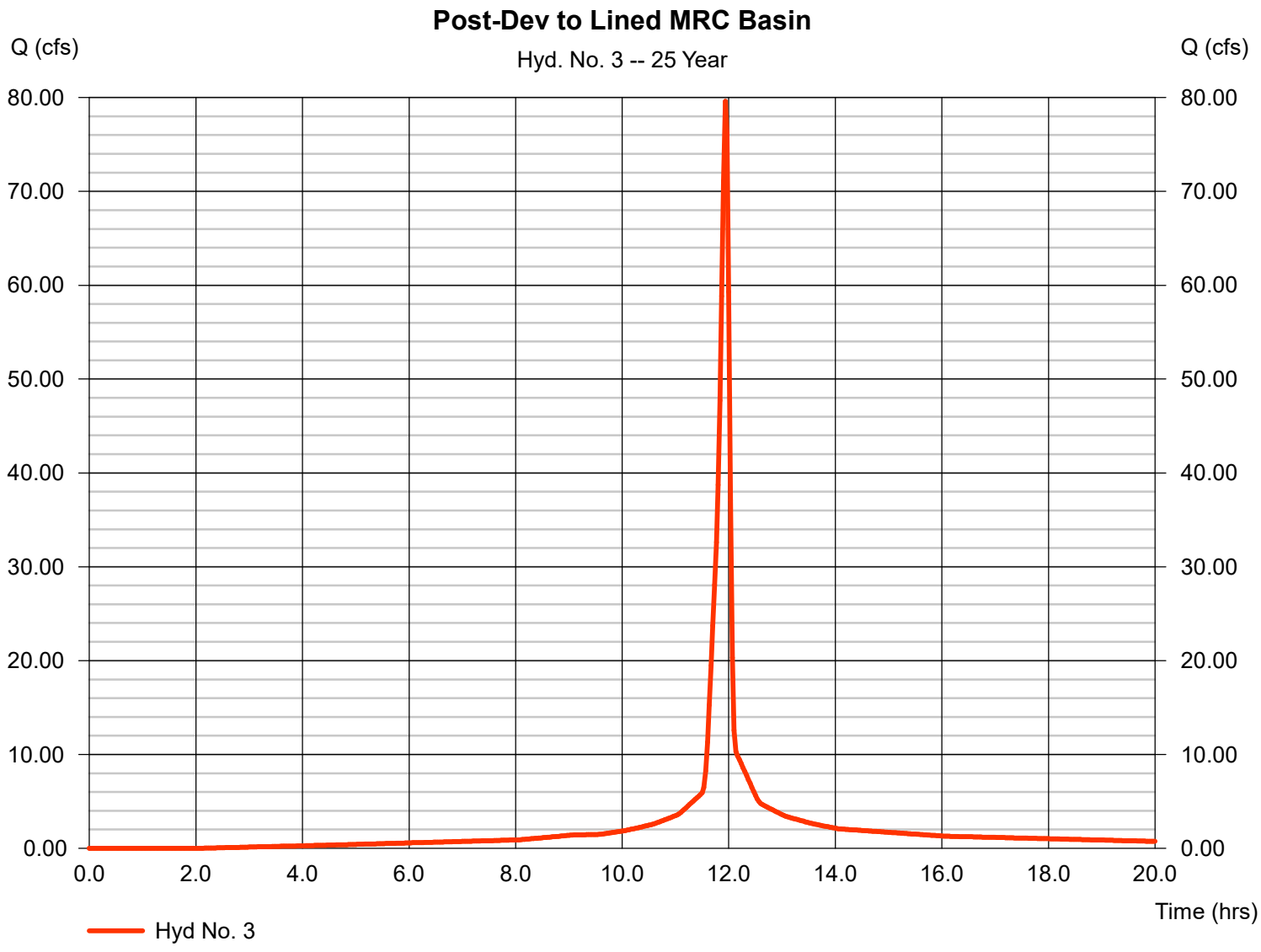
# Hydrograph Report



## Hyd. No. 3

Post-Dev to Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 79.60 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 11.93 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 180,105 cuft |
| Drainage area | = | 10.380 ac | Curve number | = | 94 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 5.00 min |
| Total precip. | = | 5.80 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

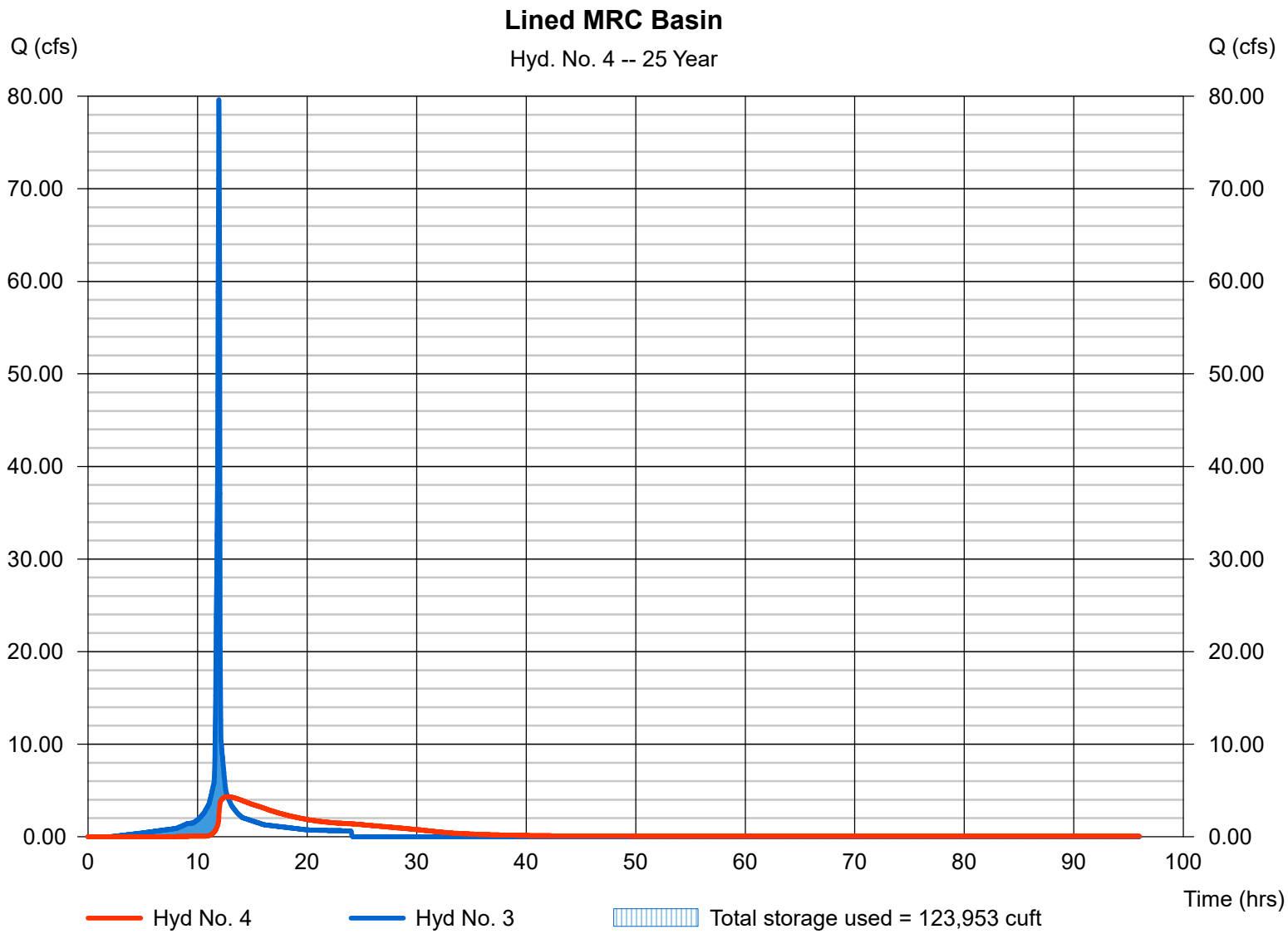
Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 4

Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 4.322 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 12.73 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 165,048 cuft |
| Inflow hyd. No. | = | 3 - Post-Dev to Lined MRC Basin | Max. Elevation | = | 15.56 ft |
| Reservoir name | = | Lined MRC Basin | Max. Storage | = | 123,953 cuft |

Storage Indication method used. Wet pond routing start elevation = 11.97 ft.



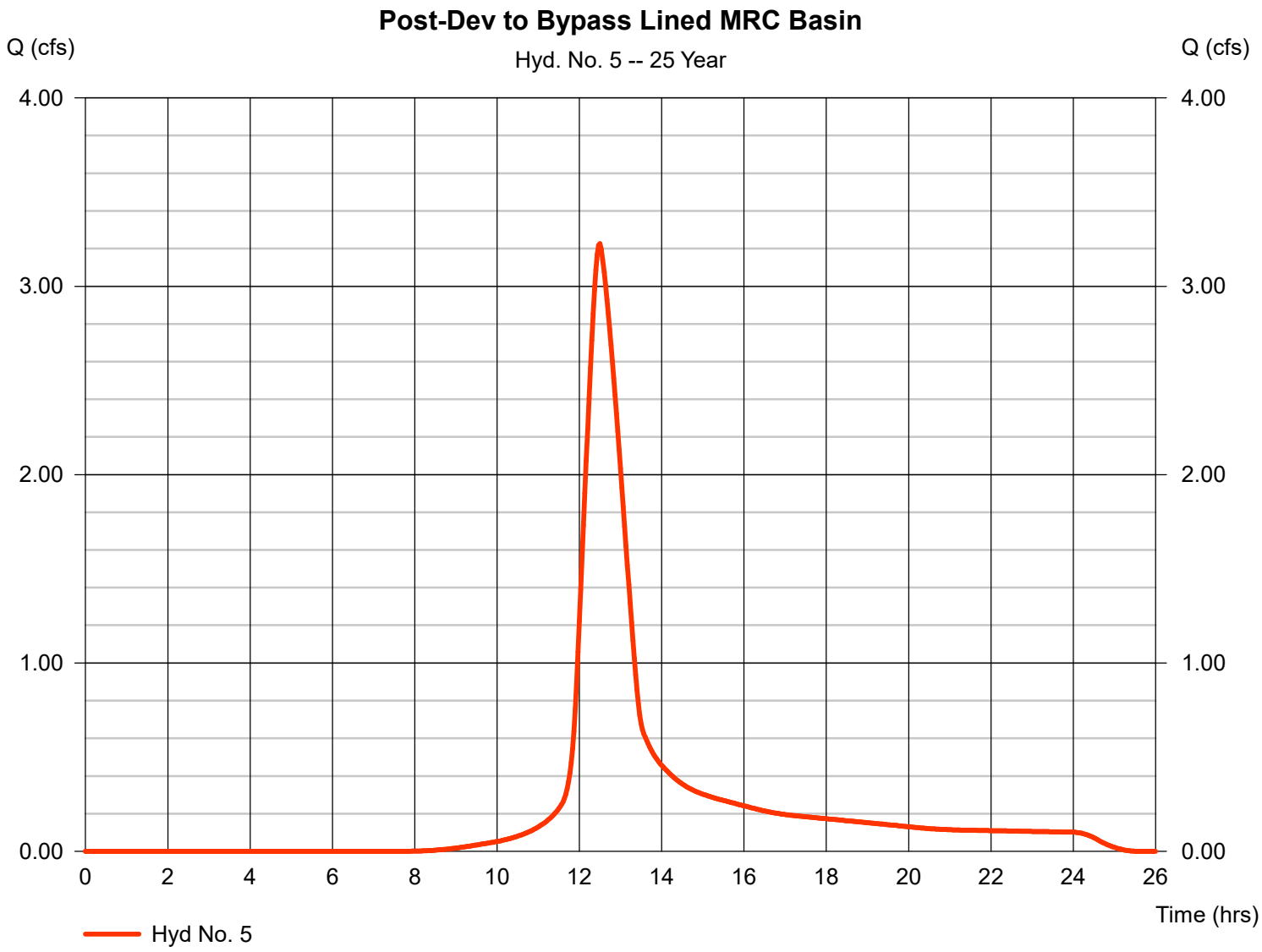
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 5

Post-Dev to Bypass Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 3.225 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 12.50 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 20,846 cuft |
| Drainage area | = | 1.790 ac | Curve number | = | 76 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 58.50 min |
| Total precip. | = | 5.80 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



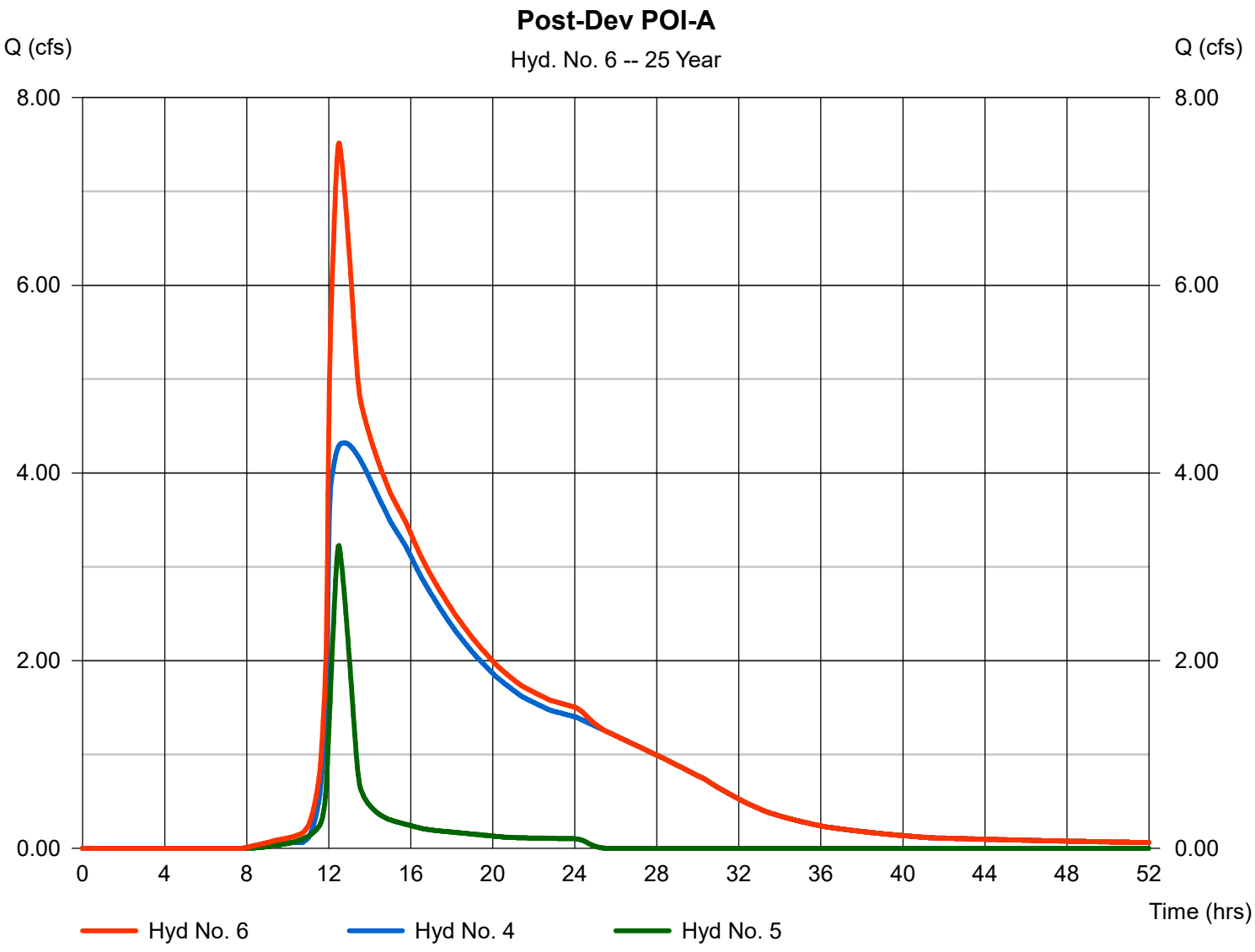
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 6

Post-Dev POI-A

| | | | |
|---|---|---|---|
| Hydrograph type | = Combine | Peak discharge | = 7.517 cfs |
| Storm frequency | = 25 yrs | Time to peak | = 12.50 hrs |
| Time interval | = 2 min | Hyd. volume | = 185,895 cuft |
| Inflow hyds. | = 4, 5 | Contrib. drain. area | = 1.790 ac |



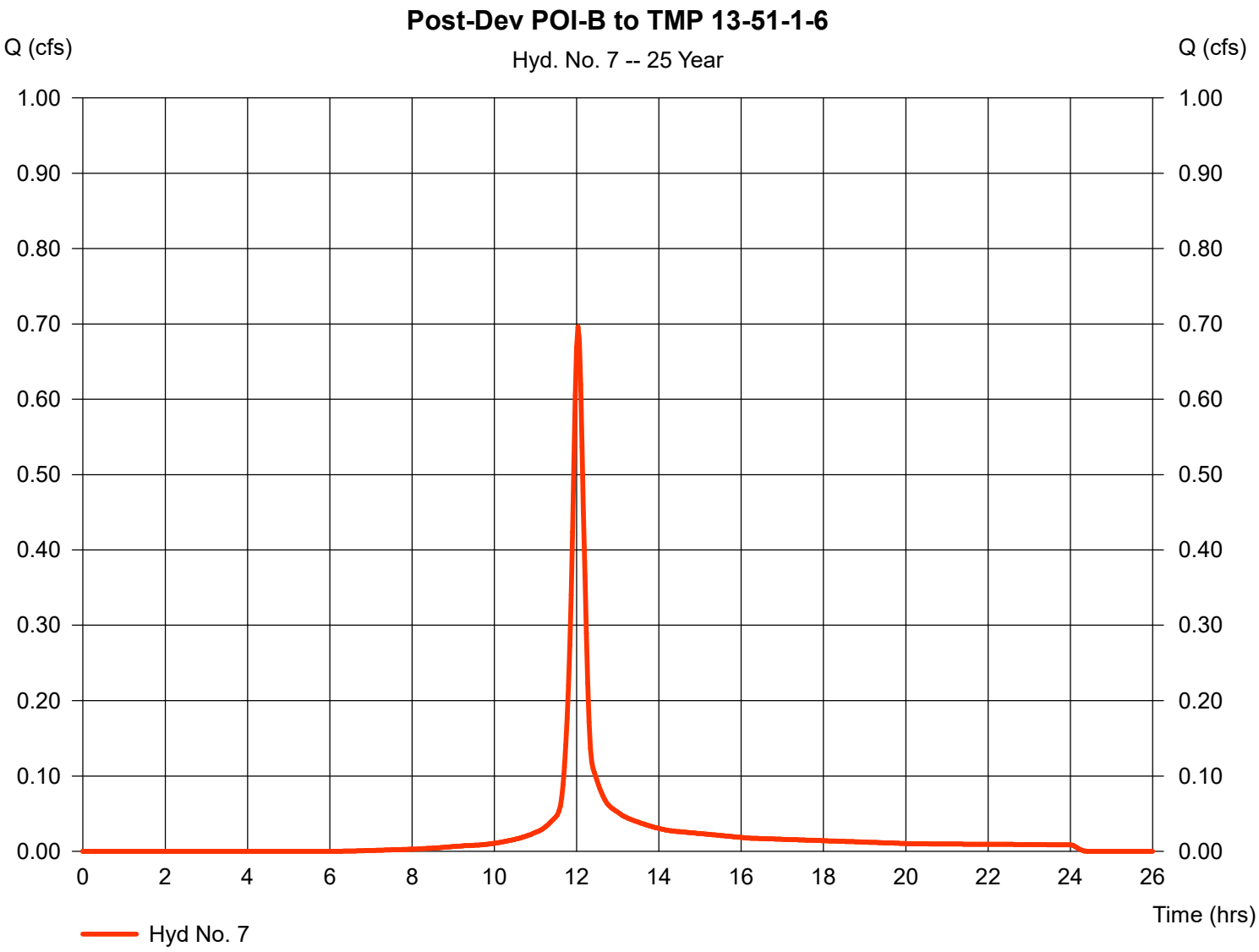
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 7

Post-Dev POI-B to TMP 13-51-1-6

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.696 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 12.03 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 1,965 cuft |
| Drainage area | = | 0.150 ac | Curve number | = | 81 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 15.80 min |
| Total precip. | = | 5.80 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 17.95 | 2 | 750 | 117,102 | ---- | ------ | ------ | Pre-Dev POI-A |
| 2 | SCS Runoff | 5.656 | 2 | 730 | 22,808 | ---- | ------ | ------ | Pre-Dev POI-B to TMP 13-51-1-6 |
| 3 | SCS Runoff | 88.29 | 2 | 716 | 201,102 | ---- | ------ | ------ | Post-Dev to Lined MRC Basin |
| 4 | Reservoir | 5.246 | 2 | 756 | 185,934 | 3 | 15.82 | 136,024 | Lined MRC Basin |
| 5 | SCS Runoff | 3.755 | 2 | 750 | 24,222 | ---- | ------ | ------ | Post-Dev to Bypass Lined MRC Basi |
| 6 | Combine | 8.989 | 2 | 750 | 210,156 | 4, 5 | ------ | ------ | Post-Dev POI-A |
| 7 | SCS Runoff | 0.796 | 2 | 722 | 2,256 | ---- | ------ | ------ | Post-Dev POI-B to TMP 13-51-1-6 |

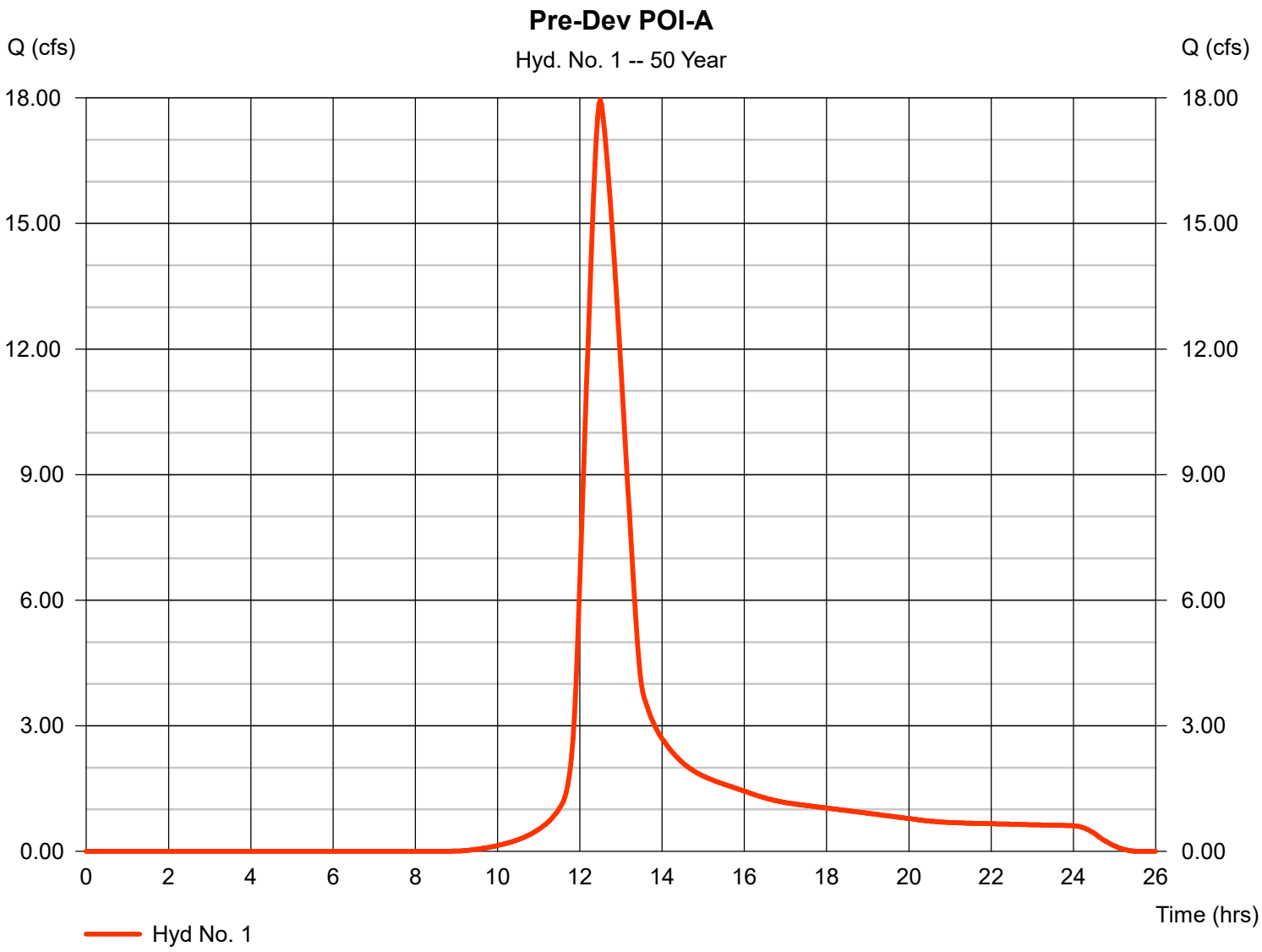
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 1

Pre-Dev POI-A

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 17.95 cfs |
| Storm frequency | = | 50 yrs | Time to peak | = | 12.50 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 117,102 cuft |
| Drainage area | = | 10.320 ac | Curve number | = | 70 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 58.50 min |
| Total precip. | = | 6.40 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



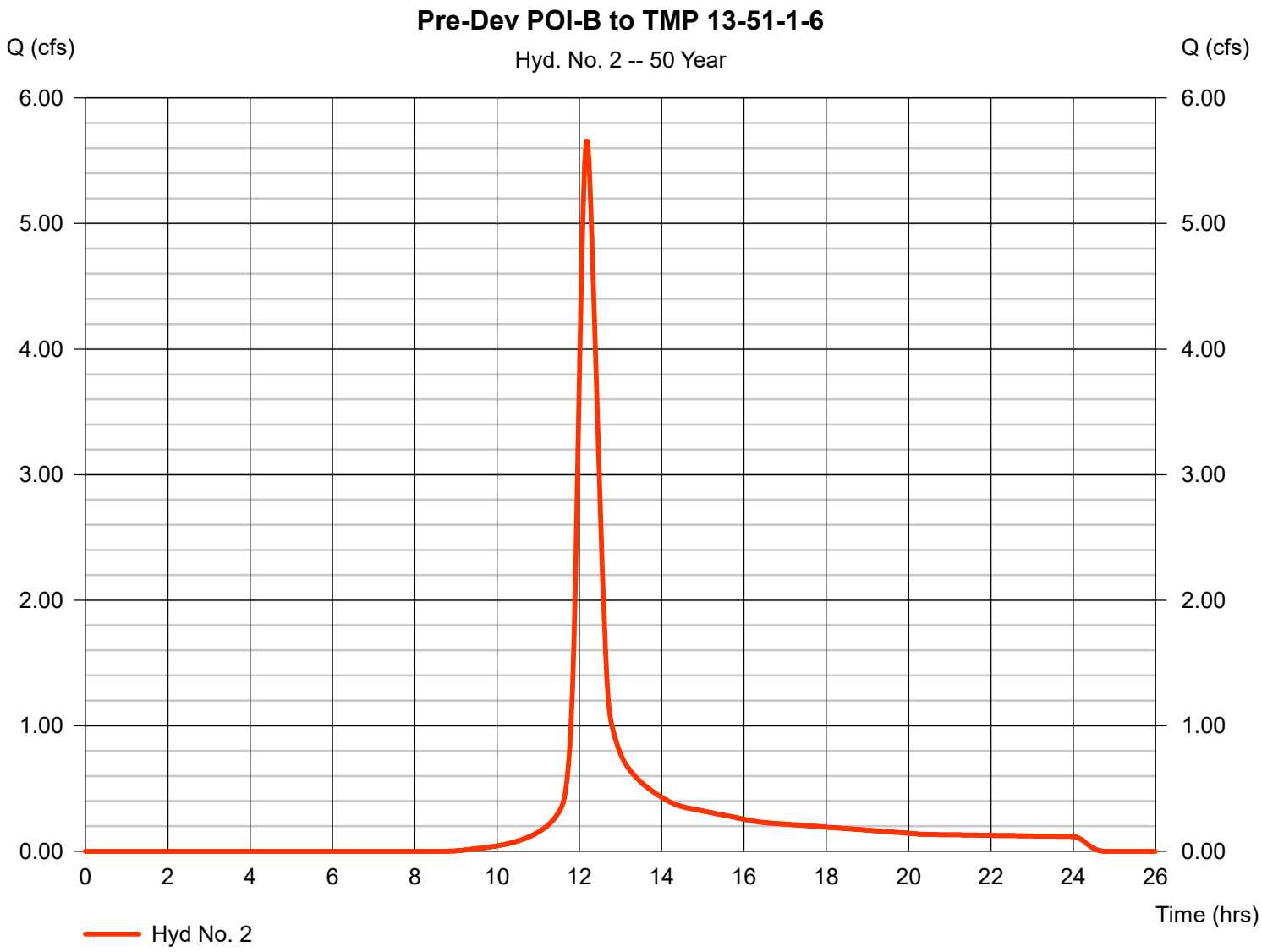
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 2

Pre-Dev POI-B to TMP 13-51-1-6

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 5.656 cfs |
| Storm frequency | = | 50 yrs | Time to peak | = | 12.17 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 22,808 cuft |
| Drainage area | = | 2.010 ac | Curve number | = | 70 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 27.60 min |
| Total precip. | = | 6.40 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



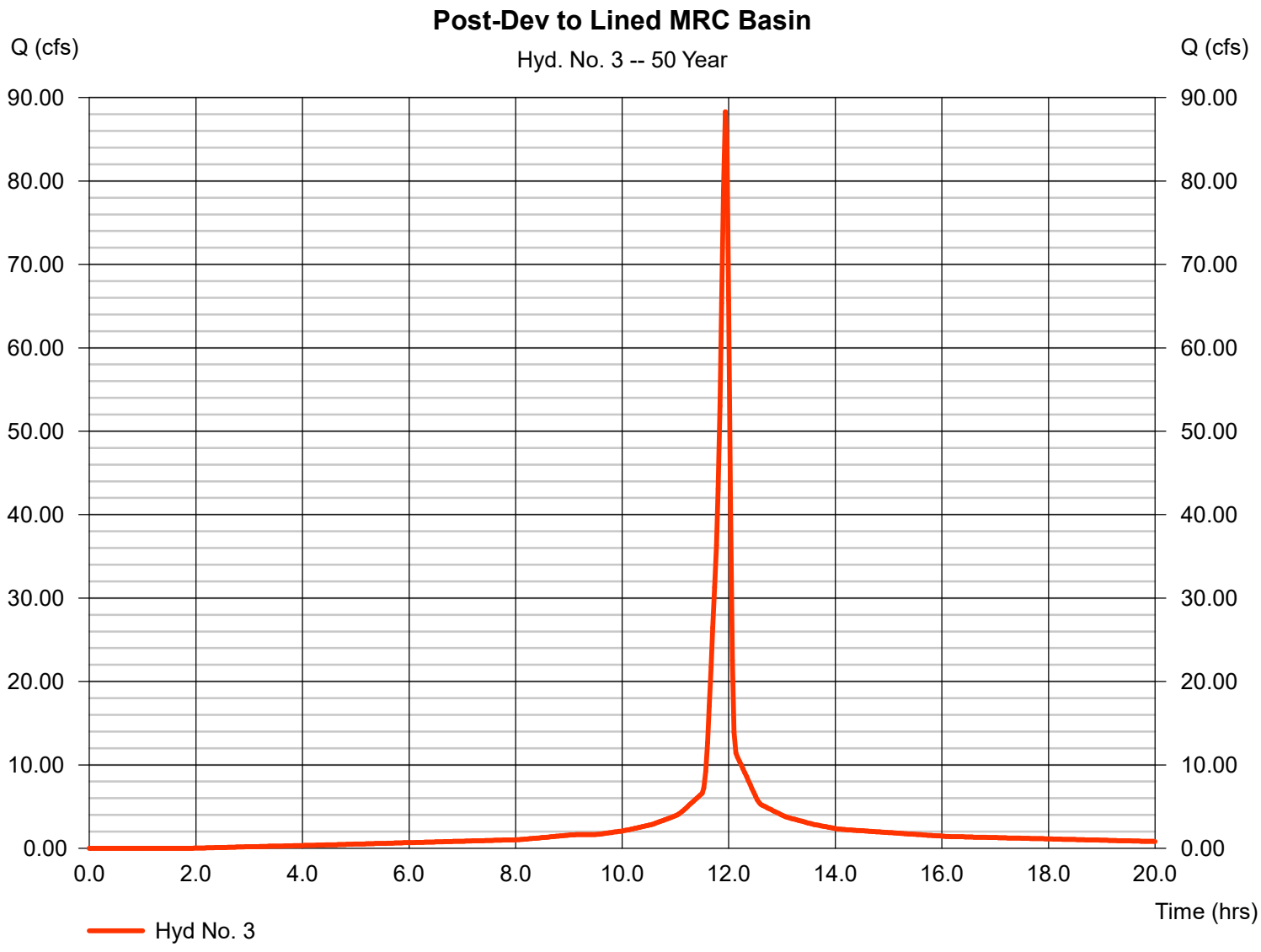
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 3

Post-Dev to Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 88.29 cfs |
| Storm frequency | = | 50 yrs | Time to peak | = | 11.93 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 201,102 cuft |
| Drainage area | = | 10.380 ac | Curve number | = | 94 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 5.00 min |
| Total precip. | = | 6.40 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

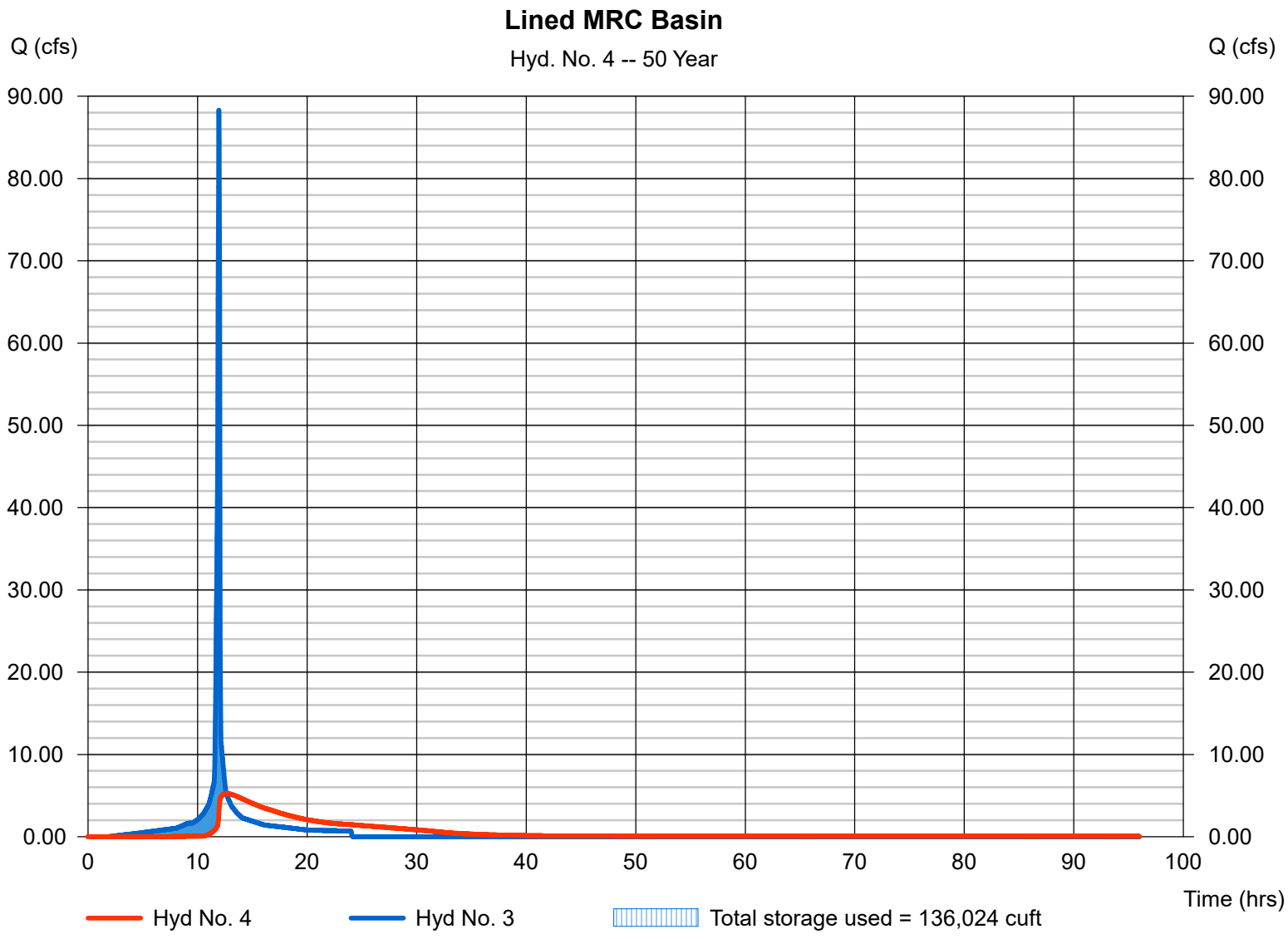
Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 4

Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 5.246 cfs |
| Storm frequency | = | 50 yrs | Time to peak | = | 12.60 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 185,934 cuft |
| Inflow hyd. No. | = | 3 - Post-Dev to Lined MRC Basin | Max. Elevation | = | 15.82 ft |
| Reservoir name | = | Lined MRC Basin | Max. Storage | = | 136,024 cuft |

Storage Indication method used. Wet pond routing start elevation = 11.97 ft.



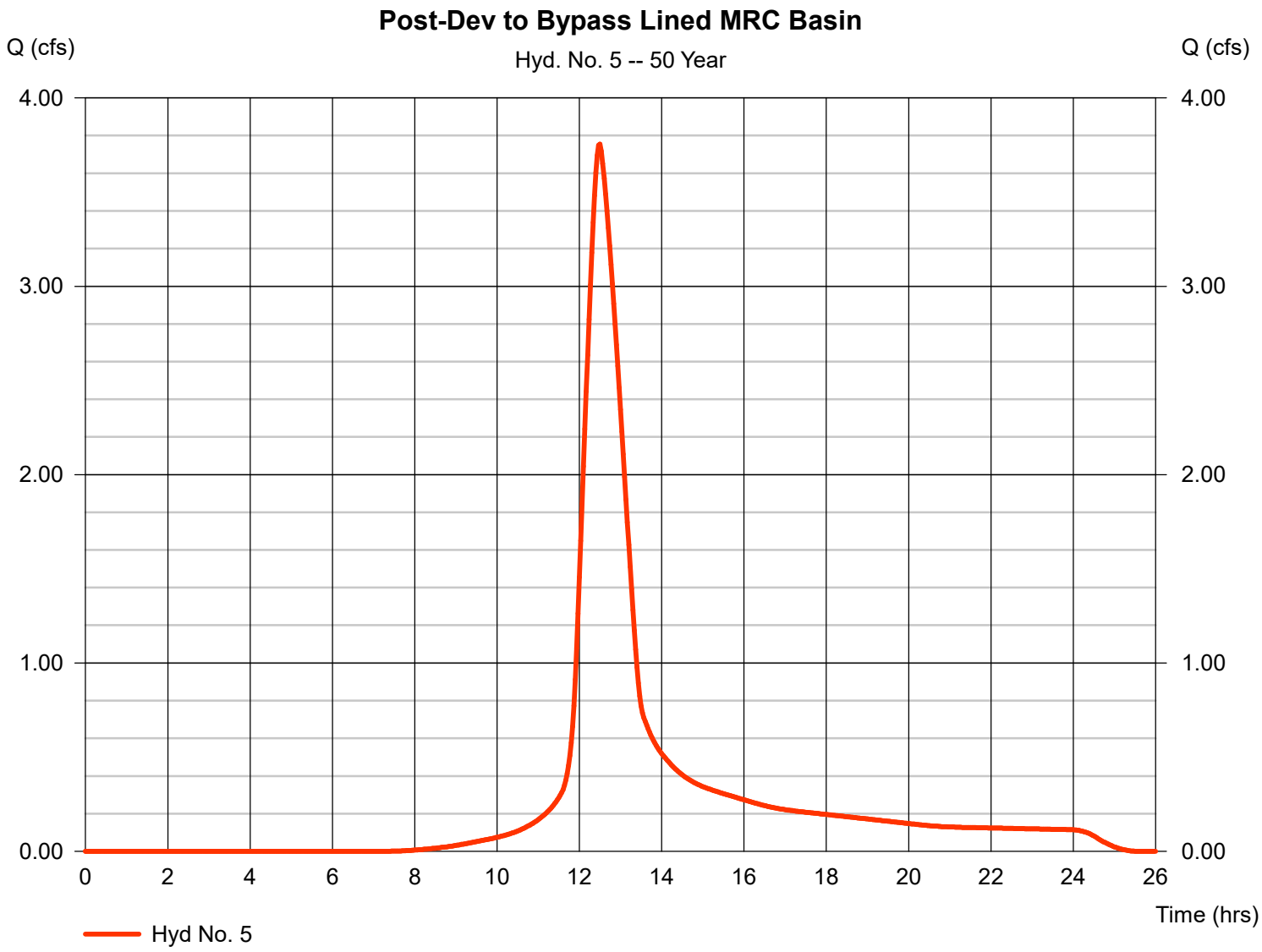
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 5

Post-Dev to Bypass Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 3.755 cfs |
| Storm frequency | = | 50 yrs | Time to peak | = | 12.50 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 24,222 cuft |
| Drainage area | = | 1.790 ac | Curve number | = | 76 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 58.50 min |
| Total precip. | = | 6.40 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



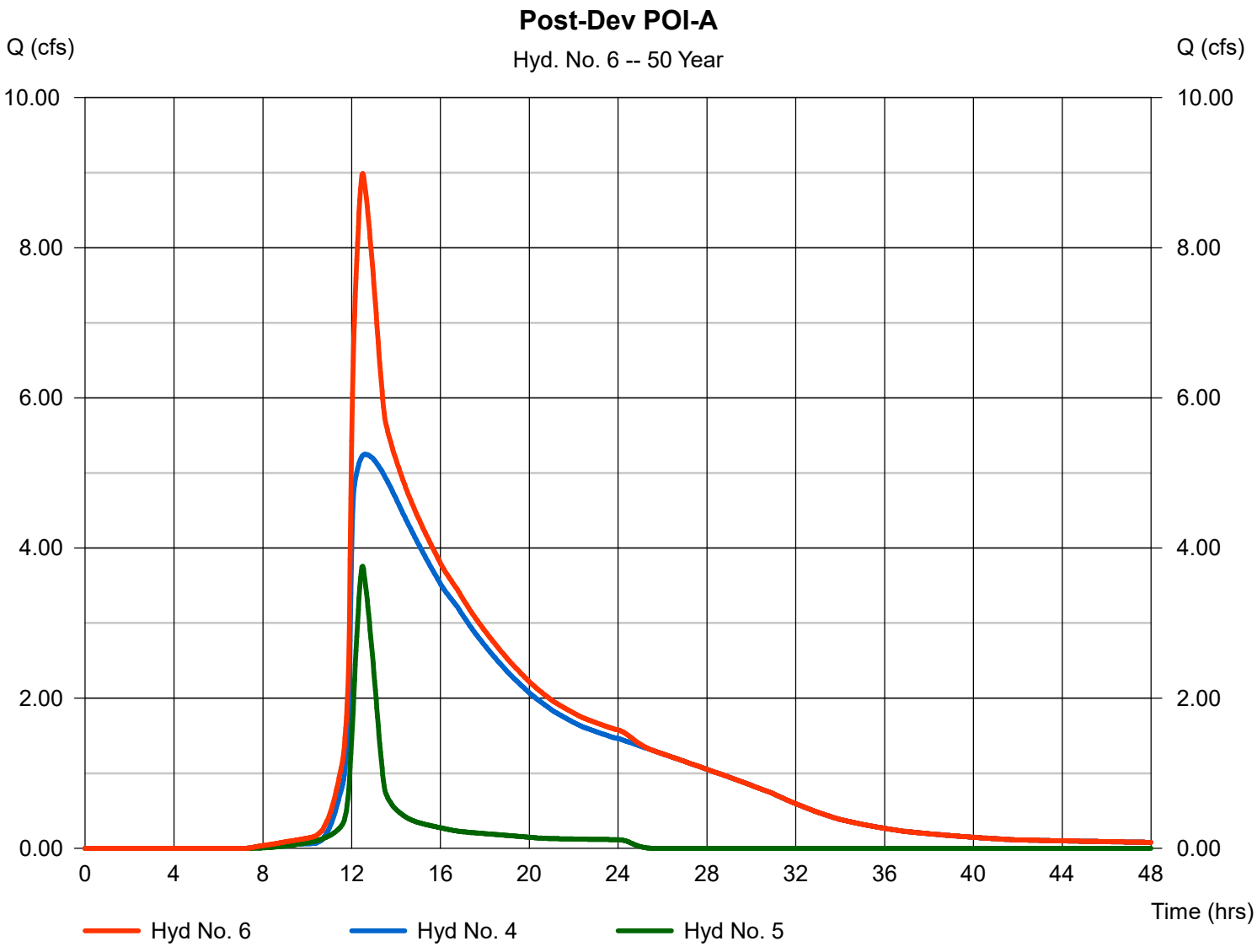
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 6

Post-Dev POI-A

| | | | |
|---|---|---|---|
| Hydrograph type | = Combine | Peak discharge | = 8.989 cfs |
| Storm frequency | = 50 yrs | Time to peak | = 12.50 hrs |
| Time interval | = 2 min | Hyd. volume | = 210,156 cuft |
| Inflow hyds. | = 4, 5 | Contrib. drain. area | = 1.790 ac |



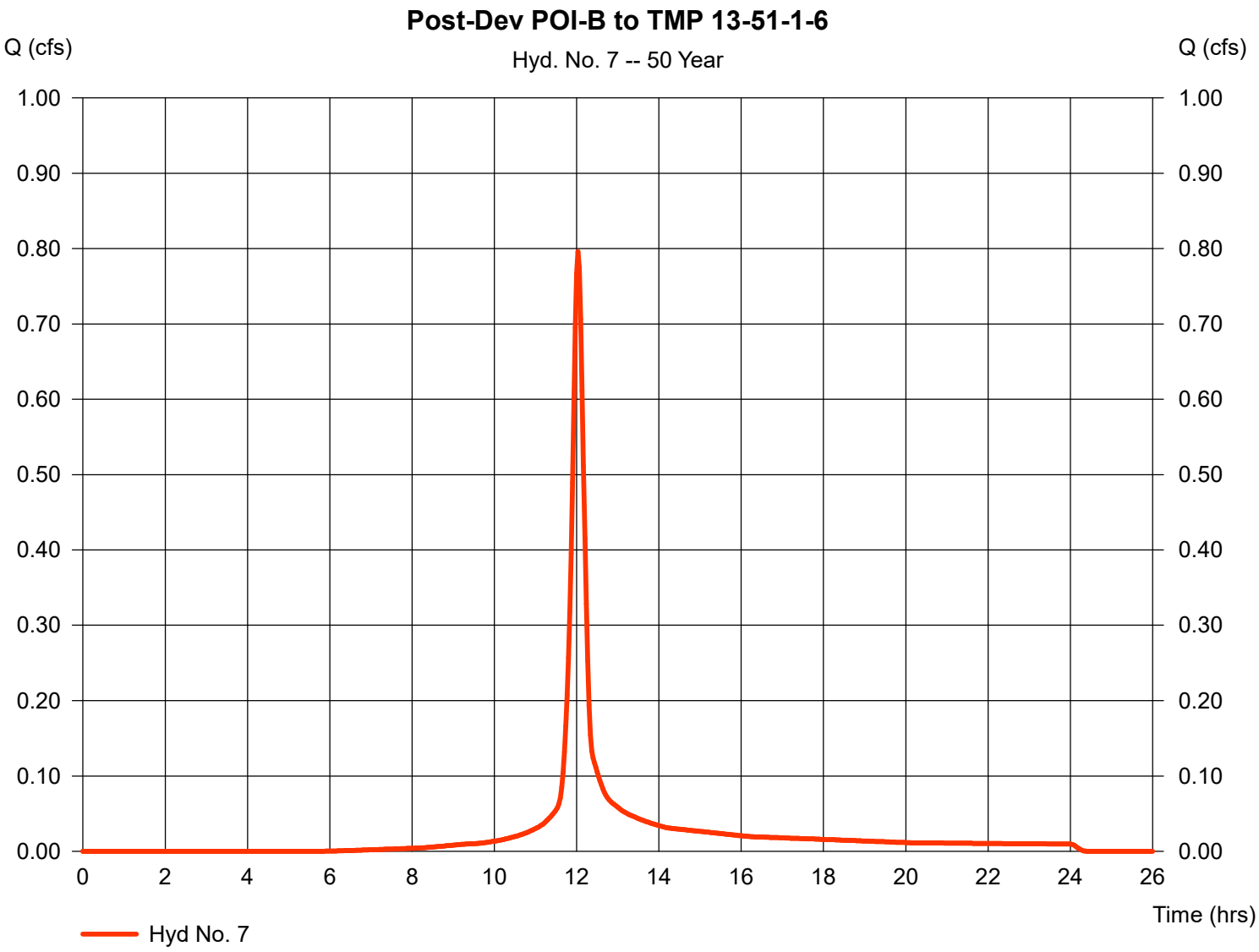
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 7

Post-Dev POI-B to TMP 13-51-1-6

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.796 cfs |
| Storm frequency | = | 50 yrs | Time to peak | = | 12.03 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 2,256 cuft |
| Drainage area | = | 0.150 ac | Curve number | = | 81 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 15.80 min |
| Total precip. | = | 6.40 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 21.87 | 2 | 750 | 141,802 | ---- | ------ | ------ | Pre-Dev POI-A |
| 2 | SCS Runoff | 6.886 | 2 | 730 | 27,618 | ---- | ------ | ------ | Pre-Dev POI-B to TMP 13-51-1-6 |
| 3 | SCS Runoff | 99.84 | 2 | 716 | 229,145 | ---- | ------ | ------ | Post-Dev to Lined MRC Basin |
| 4 | Reservoir | 6.377 | 2 | 752 | 213,856 | 3 | 16.15 | 152,136 | Lined MRC Basin |
| 5 | SCS Runoff | 4.472 | 2 | 750 | 28,823 | ---- | ------ | ------ | Post-Dev to Bypass Lined MRC Basi |
| 6 | Combine | 10.85 | 2 | 750 | 242,679 | 4, 5 | ------ | ------ | Post-Dev POI-A |
| 7 | SCS Runoff | 0.930 | 2 | 722 | 2,650 | ---- | ------ | ------ | Post-Dev POI-B to TMP 13-51-1-6 |

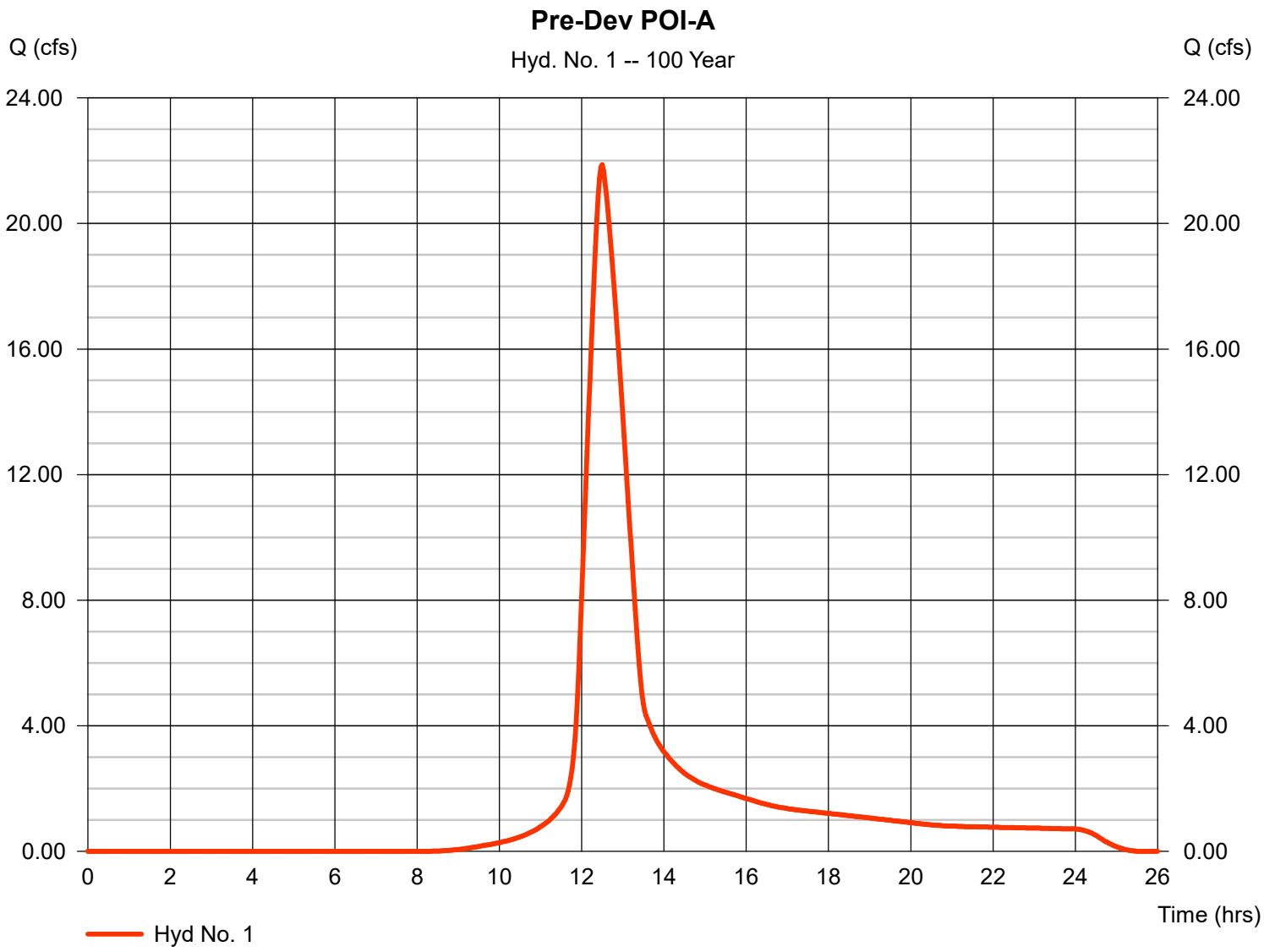
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 1

Pre-Dev POI-A

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 21.87 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.50 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 141,802 cuft |
| Drainage area | = | 10.320 ac | Curve number | = | 70 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 58.50 min |
| Total precip. | = | 7.20 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



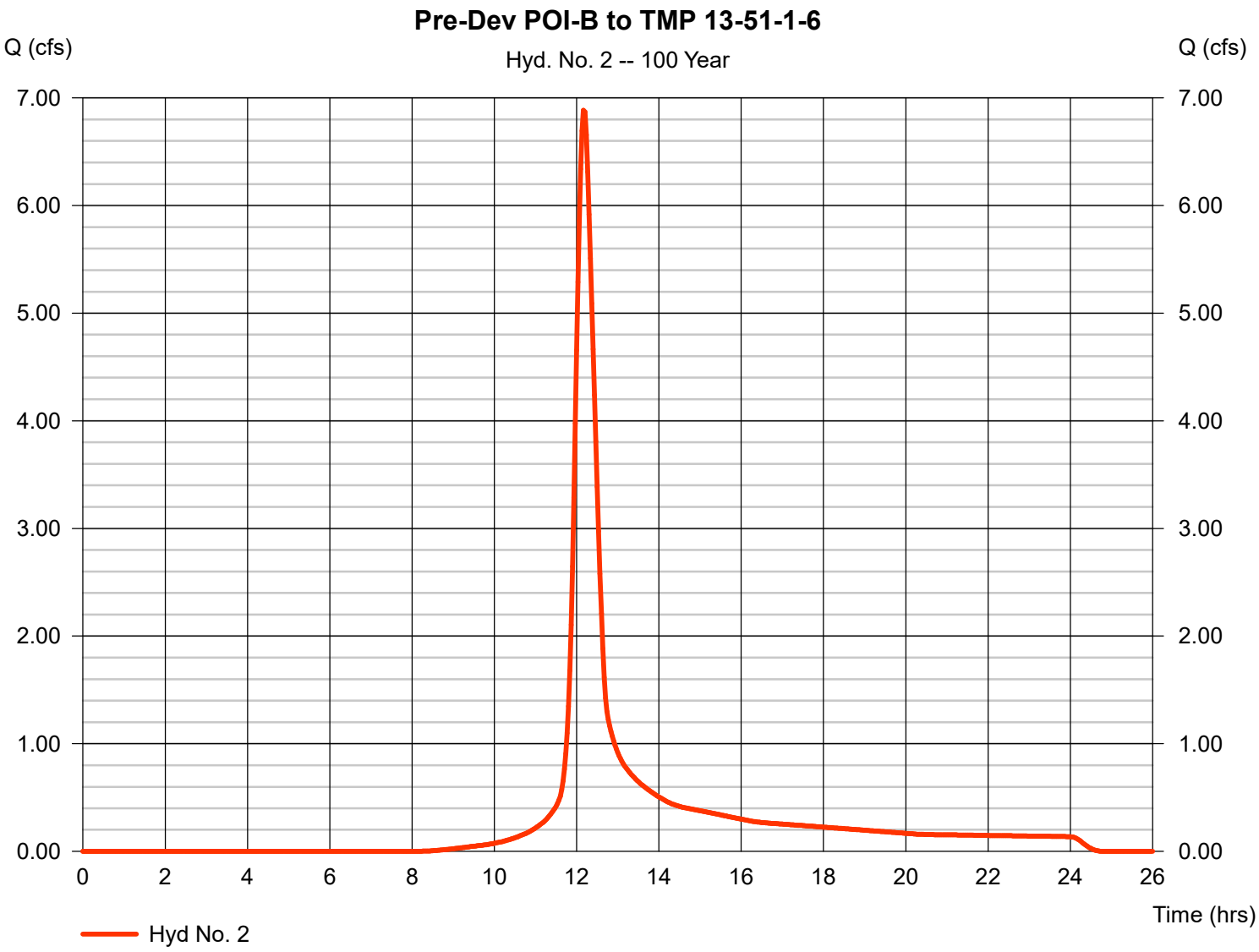
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 2

Pre-Dev POI-B to TMP 13-51-1-6

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 6.886 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.17 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 27,618 cuft |
| Drainage area | = | 2.010 ac | Curve number | = | 70 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 27.60 min |
| Total precip. | = | 7.20 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



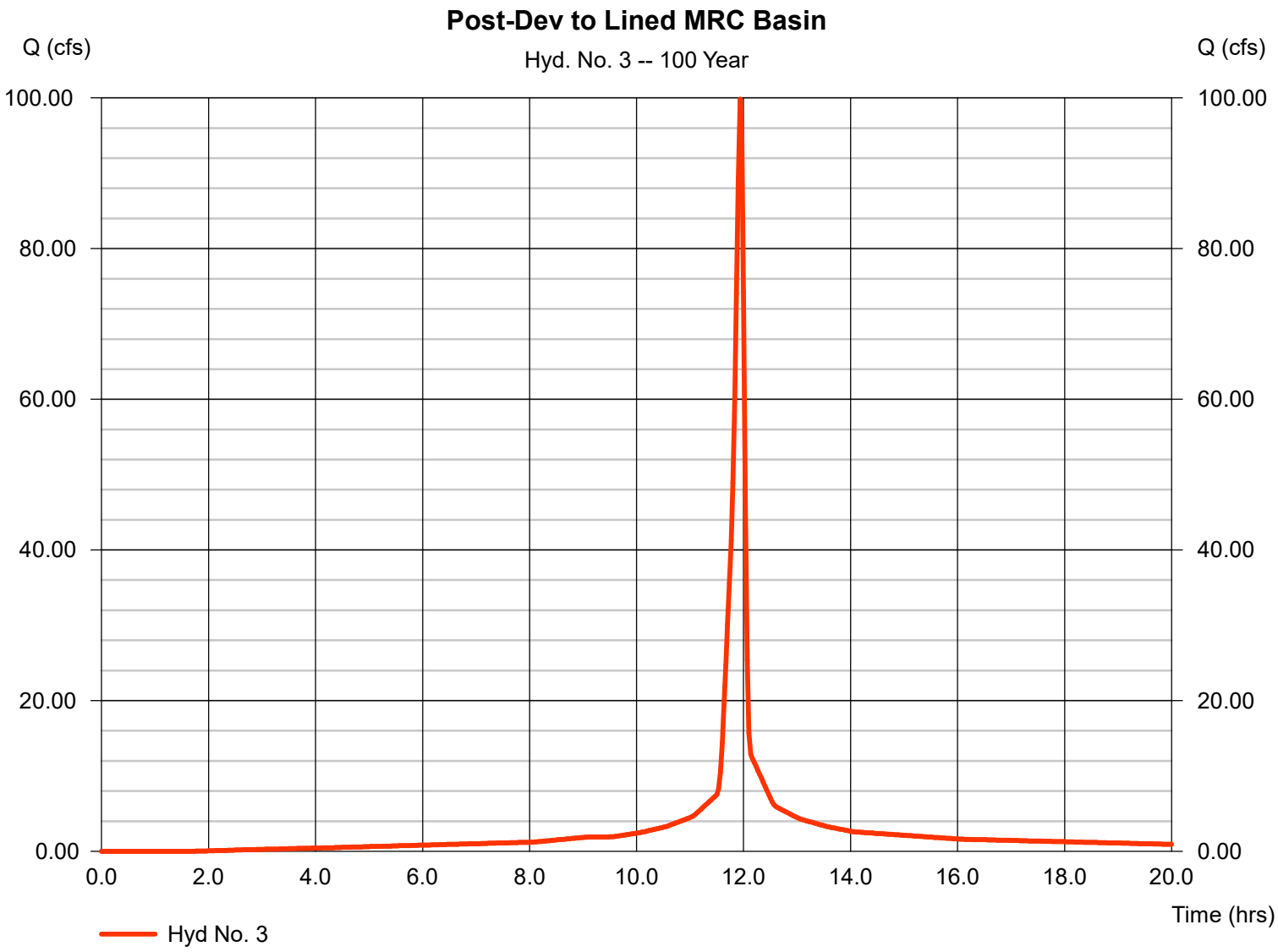
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 3

Post-Dev to Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 99.84 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 11.93 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 229,145 cuft |
| Drainage area | = | 10.380 ac | Curve number | = | 94 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 5.00 min |
| Total precip. | = | 7.20 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

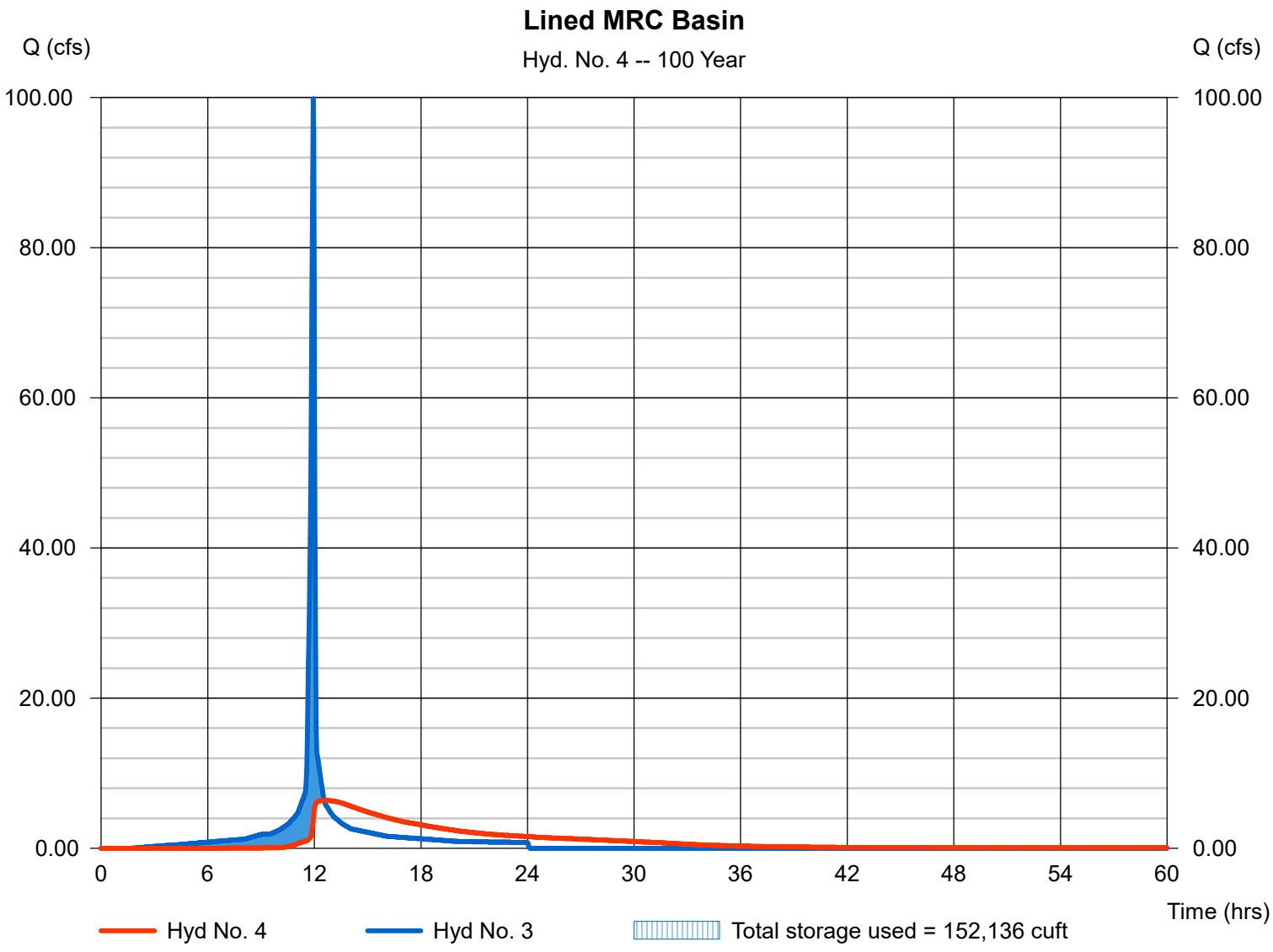
Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 4

Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 6.377 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.53 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 213,856 cuft |
| Inflow hyd. No. | = | 3 - Post-Dev to Lined MRC Basin | Max. Elevation | = | 16.15 ft |
| Reservoir name | = | Lined MRC Basin | Max. Storage | = | 152,136 cuft |

Storage Indication method used. Wet pond routing start elevation = 11.97 ft.



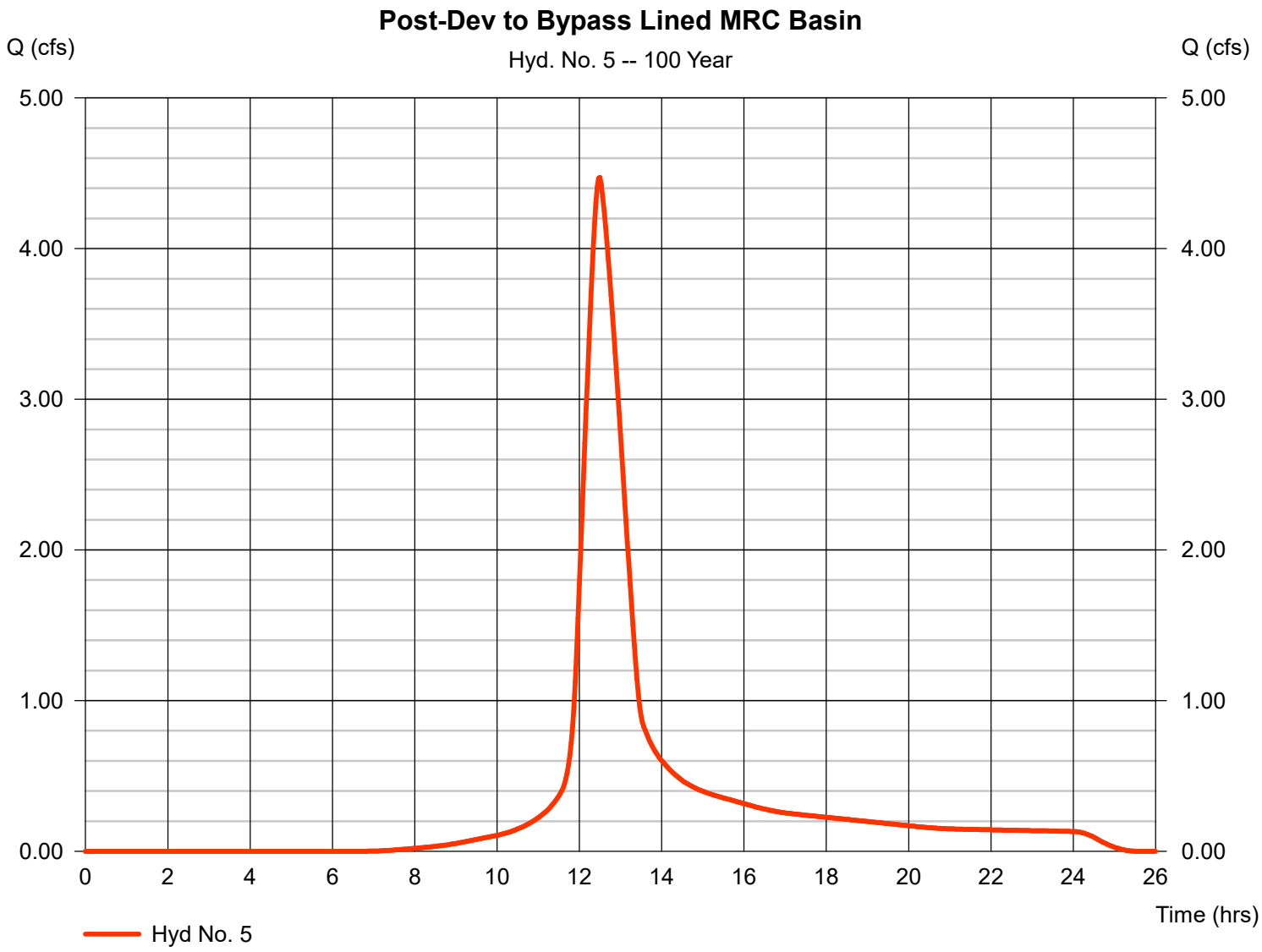
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 5

Post-Dev to Bypass Lined MRC Basin

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 4.472 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.50 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 28,823 cuft |
| Drainage area | = | 1.790 ac | Curve number | = | 76 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 58.50 min |
| Total precip. | = | 7.20 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



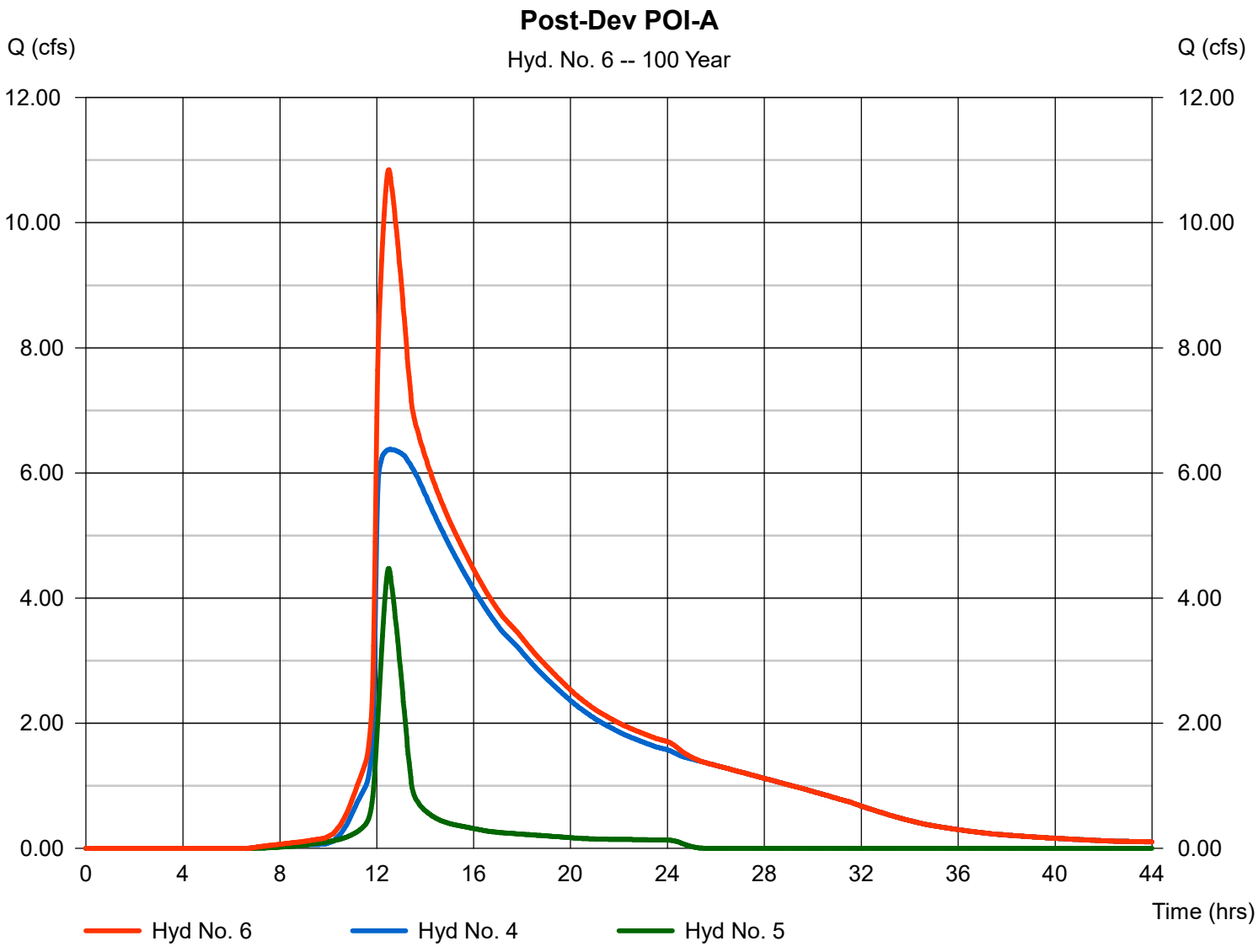
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 6

Post-Dev POI-A

| | | | |
|---|---|---|---|
| Hydrograph type | = Combine | Peak discharge | = 10.85 cfs |
| Storm frequency | = 100 yrs | Time to peak | = 12.50 hrs |
| Time interval | = 2 min | Hyd. volume | = 242,679 cuft |
| Inflow hyds. | = 4, 5 | Contrib. drain. area | = 1.790 ac |



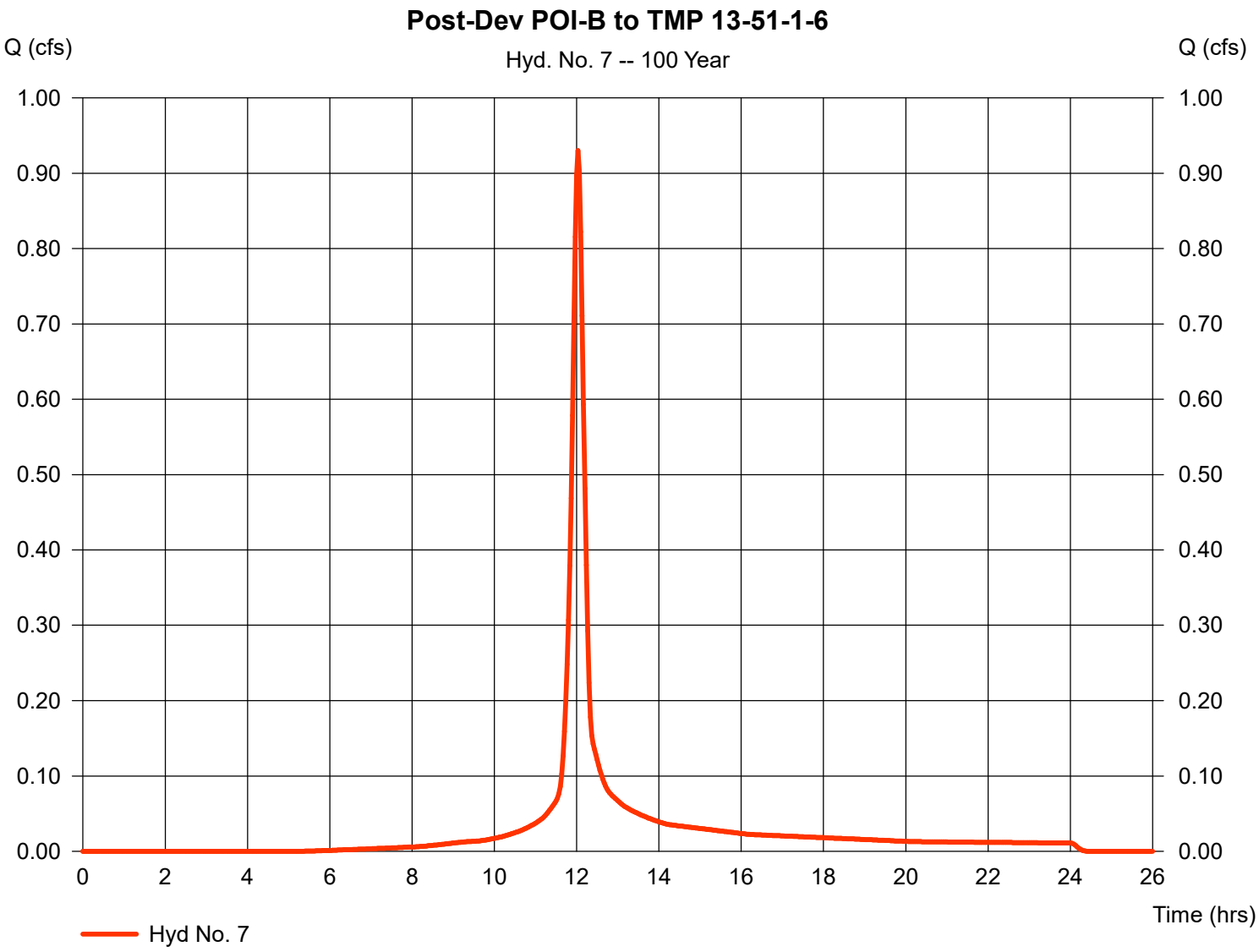
# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22 Friday, Oct 4, 2019

## Hyd. No. 7

Post-Dev POI-B to TMP 13-51-1-6

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.930 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.03 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 2,650 cuft |
| Drainage area | = | 0.150 ac | Curve number | = | 81 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 15.80 min |
| Total precip. | = | 7.20 in | Distribution | = | Type II |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# 9.0 APPENDICES

## 9.1 INFILTRATION EXPLANATION LETTER

1720 Walton Road, Blue Bell, PA 19422 610-828-3078 Fax 610-828-7842

September 17, 2019

E-MAIL
Mr. Brian M. Studer, P.E.
Project Engineer
Gilmore & Associates, Inc.
65 East Butler Ave, Suite 100
New Britain, PA 18901

Subject: Response to BCCD Letter Comments
Elcon Recycling
Permit No. PAD090044
IES Project No. EV191065.01

Dear Brian:

Pursuant to your request, IES Engineers (IES) is pleased to provide information pertaining to a question from the Bucks County Conservation District (BCCD) related to the stormwater basin at the proposed Elcon Recycling Inc. (Elcon) facility in Falls Township, Pennsylvania.

Specifically, BCCD is seeking information related to the reason Elcon is not proposing an infiltration basin as part of the proposed facility. This letter answers BCCD's question.

The original design for the basin called for the use a more traditional infiltration basin. General information on the basin was provided to the Pennsylvania Department of Environmental Protection (Department) as part of Elcon's application for a hazardous and residual waste treatment and storage permit under the Resource Conservation and Recovery Act (RCRA), commonly called a Part B permit. During its detailed technical review of the Part B application, personnel in the Department's Waste Management Program requested that Elcon not use an infiltration basin as part of the stormwater management system. The Department felt that the basin should be lined in the event a spill by-passed the legally designed secondary containment system for all waste treatment and storage operations. The Department believed that this was required as an additional layer of protection to the environment for activities at the facility.

Therefore, to satisfy the Department's request, Elcon redesigned the basin and this design is what is now presented in the application pending with BCCD. Attachment 1 to this letter provides the portion of the Department's technical comment letter requesting the change in the design of the basin. Attachment 2 to this letter provides Elcon's response to the Department's request.

If you need any additional information, please let me know.

Very truly yours,

*Marjorie J. Fitzpatrick* /e/
Marjorie J. Fitzpatrick, QEP
Principal Project Manager

Attachments
cc: M. Mazid, PADEP
Z. Elgat, Elcon
C. White, IES
A. Soni, IES

**ATTACHMENT 1**

**PORTION OF DEPARTMENT'S TECHNICAL REVIEW LETTER PERTAINING TO STORMWATER BASIN**

**(See Item 37 at the bottom of Page 14)**

b. Drawings No. USA-20200-01-102/103/104 seem missing from Appendix D-8. Provide additional drawings, as needed.

34. Many of Elcon's processes will generate hazardous waste streams by the derived-from rule. Elcon proposes to either dispose of as hazardous wastes or delist them. However, Elcon should provide adequate descriptions for both options. If not, all wastes generated by Elcon could be considered hazardous waste due to mixed-in protocol.

35. Elcon indicates in Attachment B of the October 2017 response that VOCs are treated by the thermal oxidizer, which is not subject to RCRA. Please explain how this interpretation is reached. Thermal oxidizers are 40 CFR Part 264, Subpart AA, RCRA-regulated devices that control VOC, CO, and volatile HAP emissions by combusting them to carbon dioxide (CO2) and water. Air emission control devices also need to be permitted by DEP's Bureau of Air Quality in accordance with the Federal Clean Air Act and the Pennsylvania Air Pollution Control Act. Elcon also indicated the Best Available Technology for emissions from the thermal oxidizer requires 98 percent destruction of VOCs. In a letter to Falls Township, Elcon indicated that the state-of-the-art air pollution control equipment to be used at Elcon will be able to achieve air emissions that are 99.9 percent free of contaminants. In Table D-19 (Effectiveness of Air Pollution Control Technologies Proposed for Elcon's Miscellaneous Unit Operations) of Section D, Elcon also indicated that 99.9 percent effectiveness for destruction of organic compounds by thermal oxidizer will be guaranteed by the equipment vendor. Clarification for the targeted levels of destruction in this application and coordination for compound-specific allowable emission by Elcon's air quality permit are needed.

*Section E – Groundwater Monitoring*

36. Elcon has the potential to release hazardous constituents from the proposed process area to the environment through air, land, and water pathways. Spills and contaminated surface runoff may contain hazardous constituents and enter the groundwater aquifer below the site, regardless of its nonuse status. Therefore, Elcon is subject to groundwater monitoring requirements in accordance with 40 CFR § 264.97.

*Section F – Procedures to Prevent Hazards*

37. As described in Subsection F-4.b for discharge of surface runoff, the "Infiltration Basin" may not be adequately protective of the environment, based on the geology or hydrogeology at the current location. In the event of a sizeable spill from truck(s) or overfill from secondary containment, site contaminants may quickly flow through the stormwater collection network into the infiltration basin. From the infiltration basin,

site contaminants will percolate through the porous bottom made of on-site fill material and enter the shallow groundwater aquifer or the nearby wetland and continue to migrate without much resistance or confinement. Therefore, it is preferable that Elcon design and construct the basin with an impermeable liner system and a manually and/or remotely controlled discharge shut-off valve. The basin will be designed to manage a 25-year, 24-hour storm event and be permitted by DEP in accordance with National Pollutant Discharge Elimination System ("NPDES") requirements through the Clean Stream Law. Please note that this comment regarding the concept of an infiltration basin will affect other sections throughout the application.

38. Elcon also should address precipitation on waste unloading areas in Subsection F-4.b and, when spills occur, the runoff may be contaminated. Elcon may include an unloading area within a secondary containment or install a roof or canopy over the unloading area with an impervious surface.

39. Subsection F-4.e indicates that each employee working in the production area will be issued a respirator, as needed. Elcon must issue or provide an appropriate respirator that is designed to provide protection to an employee, temporary employee, emergency responder or visitor from any airborne hazards, including dusts, organics, various vapors, etc., potentially in the work environment.

40. Appendix F-1 (Example Inspection Log Sheets) should provide supplemental checklists of equipment that are subject to inspection in accordance with various regulations, including, but not limited to, 40 CFR § 264.195 (Tank Systems), 40 CFR § 264.193 (Secondary Containment), 40 CFR § 264.174 (Containers), 40 CFR § 264.1602 (Misc. Units), 40 CFR § 264.1033 (Process Vents under Subpart AA), 40 CFR § 264.1052-1062 (Equipment Leaks under Subpart BB), and 40 CFR § 264.1088 (Air Emission Standards under Subpart CC). These supplemental checklists will guide and ensure Elcon's inspectors with proper training to inspect every piece of equipment, as required on a pre-determined schedule.

*Section G – Contingency Plan*

41. A Contingency Plan, or as more commonly named, a Preparedness, Prevention and Contingency ("PPC") Plan, should clearly refer to itself as being developed, maintained, and implemented in accordance with the "Guidelines for the Development and Implementation of Environmental Emergency Response Plans," Document No. 400-2200-001, which is more stringent than the requirements in 40 CFR 264, Subpart D – Contingency Plan and Emergency Procedures. The Contingency Plan must be periodically reviewed and updated, if necessary, in accordance with Section I.F of the Guidelines.

**ATTACHMENT 2**

**PORTION OF ELCON'S RESPONSE TO DEPARTMENT'S TECHNICAL REVIEW LETTER PERTAINING TO STORMWATER BASIN**

**(See Response to Item 37 starting in the middle of Page 33)**

thermal oxidizer chamber. The value of 99.9 percent has been consistently used in the air permit and Part B applications and in the information provided to the public.

*Regarding targeted levels destruction* – Elcon agrees that coordination between the various applicable programs will be required. Elcon believes that it has maintained an open dialog with the different program offices at the Department during its review process and has participated in several meetings involving the various program offices at the Department. If there is anything further that the Department is expecting from Elcon in this regard, please let us know.

***Part B, Section E, Item 36.**: Department believes Elcon is subject to RCRA groundwater monitoring requirements under 40 CFR §264.97.*

***Response to Item 36.**:*

40 CFR §264.97 applies to owners and operators of a surface impoundment, waste pile, and land treatment unit or landfill. Elcon is not proposing any of these types of installations; therefore, the well monitoring requirements do not apply to Elcon's proposed operations. However, Elcon has agreed to install monitoring wells. Attachment F includes a well monitoring plan, as requested by the Department during our meeting on December 13, 2018.

***Part B, Section F, Item 37.**: Requesting alternative approach for stormwater infiltration basin.*

***Response to Item 37.**:*

The stormwater management basin has been designed to reduce the peak flow rate for the 1, 2, 5, 10, 25, 50 and 100-year, 24-hour rainfall events. The basin is not a residual or hazardous waste disposal impoundment; its primary purpose is stormwater management to comply with the Department and Falls Township stormwater management requirements. While located within the hazardous waste permitted boundary, Elcon does not anticipate that any waste will enter the stormwater basin. All tanks and other waste storage, treatment, and unloading areas are equipped with the regulatory-required secondary containment systems.

To address the Department's concern and as an added measure of environmental protection, Elcon has revised the design of the stormwater management basin to be without infiltration. Clarifying language was added to Section F-4b (see Attachment B, under Tab F). The proposed stormwater management basin will be lined with an impermeable geomembrane liner. The basin will be capable of reducing peak flows from the post-development condition to pre-developed conditions for the same corresponding return period. This design is in compliance with 25 PA Code Chapter 102 and local requirements. In addition, the basin will be equipped with a control valve that may be closed by Elcon staff in the event that there would be a need to retain stormwater on site.

The stormwater management basin will be a geomembrane-lined basin. The basin will be designed in accordance with the Department's "Erosion and Sediment Pollution Control Program Manual" (Technical Guidance Number 363-2134-008, March 2012), and in accordance with the local government agencies (township or county) requirements, whichever is more stringent. The design storm frequency and the Program Manual are an integral part of Pennsylvania Clean Stream Law and Regulations at 25 Pa. Code Chapter 102.

The basin storage capacity, up to an elevation of 16 feet, is more than 900,000 gallons. This is more than adequate to contain a catastrophic failure of a tanker truck (6,000 gallons) or the largest tank (136,000 gallons).

The change in the basin design is reflected in the following portions of the application and revised pages are provided in Attachment B:

- Part A and Part B, various locations – figures and maps listed in the table at the beginning of the letter showing changes to the footprint of the basin
- Part B, Section A, Subsection A-11 – Identification of additional aspects of operations that are beyond regulatory requirements. (See Attachment B, under A tab, Page A-25a.)
- Part B, Section A, Appendix A-5, Page 17 Item 3 of Form 2610-PM-BWM008 (See Attachment B, A tab, behind slip sheet for Appendix A-5.)
- Part B, Section A, Appendix A-5, Attachment 16L-1, see Attachment B, under the A tab, behind the slip sheet for Appendix A-5, Attachment 16L-1
- Part B, Section A, Appendix A-5, Attachment 16L-3, see Attachment B, under the A tab, behind the slip sheet for Appendix A-5, Attachment 16L-3
- Part B, Part A, Appendix A-5, Attachment 16L-4, see Attachment B, under the A tab, behind the slip sheet for Appendix A-5, Attachment 16L-4
- Part B, Section A, Appendix A-9, new supplemental modeling report related to a release from the environment. As requested by the Department, the original modeling report showing a release from the infiltration basin will not be revised. See Attachment B, under the A tab, behind the slip sheet for Appendix A-9.
- Part B, Section B, Subsection B-2. See Attachment B, B tab, Page B-2
- Part B, Section D – Various locations. See Attachment B, D tab, various pages between D-50 through D-89.

In the near future, a revised National Pollutant Discharge Elimination System (NPDES) permit application will be submitted to the Department's Clean Water Program reflecting the change in the stormwater management basin. IES has been in communication with the Department's Southeast Regional Office, Clean Water Program, and this Program is aware of the proposed changes to the basin and that revisions will be submitted to the NPDES application will be forth coming.

## 9.2 WETLAND DELINEATION REPORT

CONESTOGA-ROVERS
& ASSOCIATES

410 Eagleview Blvd, Suite 110
Exton, Pennsylvania 19341
Telephone: (610) 321-1800 Fax: (610) 321-2763
http://www.craworld.com

August 13, 2014 Reference No. 085945

Marjorie J. Fitzpatrick, QEP
Principal Project Manager
IES Engineers
1720 Walton Road
Blue Bell, PA 19422

Re: Wetland Delineation Report
33-acre Elcon Parcel on KIPC
Falls Township, Bucks County County, Pennsylvania

Dear Ms. Fitzpatrick:

Conestoga-Rovers & Associates, Inc. (CRA) was retained by IES Engineers to conduct a wetland delineation on a 33-acre parcel (Site) on the Keystone Industrial Port Complex (KIPC) property located in Falls Township, Bucks County, Pennsylvania. Historically, the Site was part of the U.S. Steel Fairless Works property and was used for industrial steel manufacturing purposes. ELCON is currently proposing to redevelop the site for industrial purposes. The Site is generally located west of Dean Sievers Place and east of Steel Road South.

This report discusses the wetland delineation methodology and provides the results of CRA's field investigation. It includes copies of the United States Geologic Survey (USGS) topographic map (Figure 1), a recent aerial photograph (Figure 2), the Natural Resources Conservation Service (NRCS) web soil survey map (Figure 3), and the National Wetland Inventory (NWI) map each showing the location of the Site. The surveyed limits of the wetlands identified within the project area are shown on the Wetland Location Plan provided in Appendix A. Completed copies of the U.S. Army Corps of Engineers (COE) data forms referenced in the *Regional Supplement to the COE 1987 Wetlands Delineation Manual: Atlantic and Gulf Coast Plain Region* are provided in Appendix B. Appendix C contains color photographs of the wetlands identified during the delineation, as well as typical uplands identified on the Site.

## 1.0 REGULATORY FRAMEWORK AND WETLAND DELINEATION METHODOLOGY

In Pennsylvania, wetlands and waterways are regulated at the Federal level by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act. Wetlands and waterways are regulated at the state level by the Pennsylvania Department of Environmental Protection (PADEP) under PA Chapter 105.

The wetland delineation for the Site was conducted on June 25, 2014 using the Routine Onsite Determination Method in the *Corps 1987 Wetland Delineation Manual* and *Regional Supplement to the COE Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region*. According to this methodology, wetlands are identified by the presence of three parameters: the dominance of

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hydrophytic vegetation, the presence of hydric soils, and positive indicators of wetland hydrology. Typically, all three parameters must be present for an area to be considered jurisdictional wetlands. However, in areas where one or more of the wetland parameters have been significantly disturbed (e.g., mowed lawn areas, agricultural fields, etc.), the remaining parameters and best professional judgment were used to delineate the extent of jurisdictional wetlands.

Secondary sources of data for the Site, including the USGS topographic map, aerial photograph, NRCS soil survey, and NWI were reviewed prior to conducting the field investigation. These secondary sources of data are often useful in identifying areas that may contain wetlands based on topography, drainage ways, vegetation, and soil type.

Following the review of the secondary sources of data, wetland scientists from CRA inspected the Site and delineated the wetland and waterway boundaries based on the Corps methods. The boundaries between wetlands and uplands were flagged in the field by CRA and surveyed by Gilmore and Associates.

## 2.0 REVIEW OF SECONDARY DATA

Figure 1 shows the location of the Site on a portion of the Trenton West, PA USGS topographic quadrangle. As shown on the USGS topographic map provided as Figure 1, the Site is 33 acres, relatively flat, and is located within a highly industrial area. A small water body is indicated along the western side of the Site.

An aerial photograph provided as Figure 2 shows that the Site is sparsely vegetated with scattered trees and scrub vegetation. The waterbody along the western Site boundary is clearly visible. The Site is currently characterized by patchy wooded areas, open areas where the ground is covered by slag, and areas of herbaceous vegetation.

As shown on the NRCS Web Soil Survey (Figure 3), Site contains two soil types including Naticoke-Hatboro silt loam (Na) and Urban land, 0 to 8 percent slopes (UfuB). Urban Land comprises the vast majority of the Site and is not listed as a hydric soil. Naticoke-Hatboro silt loam is associated with the openwater boundary along the western boundary of the Site and is listed as hydric soil.

The NWI Map (Figure 4) identifies palustrine unconsolidated bottom openwater along the western Site boundary. No other wetlands or waterbodies are indicated on the NWI map.

## 3.0 RESULTS OF WETLAND DELINEATION

CRA delineated four (4) wetland areas on the Site identified as Area A, B, C, and D on the site plan in Appendix A. Each delineated area is discussed below.

### 3.1 AREAS A and C

Areas A is a 4.294 acre palustrine unconsolidated bottom (PUB) openwater with palustrine emergent (PEM1) littoral fringes. The openwater portions of Area A range from about a foot deep to a maximum of approximately 4 feet deep. The emergent littoral fringes are dominated by black willow (*Salix nigra*) saplings, poison ivy (*Toxicodendron radicans*), common reed (*Phragmites australis*), and marsh rosemallow (*Hibiscus moscheutos*). The soil from 0 to 12 inches was observed to be black (10YR 2/1) muck. Indicators of wetland hydrology included standing water and saturated soils throughout. Area A drains north through a 72-inch diameter reinforced concrete pipe to a ditch that flows north along Steel Road South. Area C is a short segment of the ditch along Steel Road South and totals 0.018. The ditch ultimately drains to Biles Creek northeast of the Site.

These wetlands are documented on Data Form 5 in Appendix B and in the color photographs provided in Appendix C.

### 3.2 AREA B

Area B is a 0.040 acre palustrine forested wetland located in an isolated sparsely vegetated topographic depression west of Area A. Area B was dominated by spice bush (Lindera benzoin). The soil was dark gray (10YR 4/1) with brown (7.5YR 4/6) concentrations. Blackened leaves were present and the soil was saturated at 12 inches.

This wetland is documented on Data Form 6 in Appendix B and in the color photographs provided in Appendix C.

### 3.2 AREA D

Area D is a 0.414-acre palustrine emergent wetland located north of the Ashland Rail easement along the northern property boundary. Area D is a historically disturbed area. Area D is dominated by common reed. The soil from 0 to 14 inches was dark grayish brown (10YR 4/2) with brown (7.5YR 5/4) concentrations. The soil was saturated at near surface at the time of the field investigation.

These wetlands are documented on Data Form 8 in Appendix B and in the color photographs provided in Appendix C.

### 3.3 UPLANDS

Almost all of the uplands on the Site are previously disturbed industrial areas of varying plant community succession on variable fill soil. The majority of the surface soils contain a large percentage of steel slag. The uplands are dominated by eastern cottonwood (*Populus deltoides*), box elder (*Acer*

*negundo*), black locust (*Robinia pseudoacacia*), staghorn sumac (*Rhus typhina*), mugwort (*Artemisia vulgaris*), spotted knapweed (*Centaurea maculosa*), and yellow sweet clover (*Melilotus officinalis*). The soils in the uplands are highly variable. Typical soil in the uplands was generally monochromatic yellowish brown (10YR 5/4) loamy sand with varying amounts of gravel and slag. No indicators of wetland hydrology were observed in the upland portions of the Site.

The uplands on the Site are documented on Data Forms 1-4 and 7 in Appendix B and in the color photographs provided in Appendix C.

## 4.0 SUMMARY & RECOMMENDATIONS

The majority of the Site consists of industrial, disturbed uplands. CRA identified and delineated four areas on site that contain wetlands designated as Areas A, B, C, and D. Areas A and C are hydrologically connected to Biles Creek which is a traditionally navigable waterway. Area B is hydrologically isolated from other wetlands on the Site but is adjacent to Area A which flows to Biles Creek. Area D is adjacent to Area C and the downstream segments of the ditch along Steel Road South. It is CRA's opinion that these areas are likely jurisdictional wetlands under Section 404 of the Clean Water Act and under PA Chapter 105. If any activities are proposed which would encroach upon these wetlands, permits from the U.S. Army Corps of Engineers and / or PADEP will likely be required.

CRA recommends that a Jurisdictional Determination be obtained from the U.S. Army Corps of Engineers, Philadelphia District in order to verify CRA's delineation and the jurisdictional status of these wetlands. If you have any questions or require additional information, please call me at (610) 321-1800 ext. 11.

Yours truly,

CONESTOGA ROVERS & ASSOCIATES

Scott E. Bush, P.W.S.
Senior Ecologist

SEB/smk/1
Encl.

FIGURES

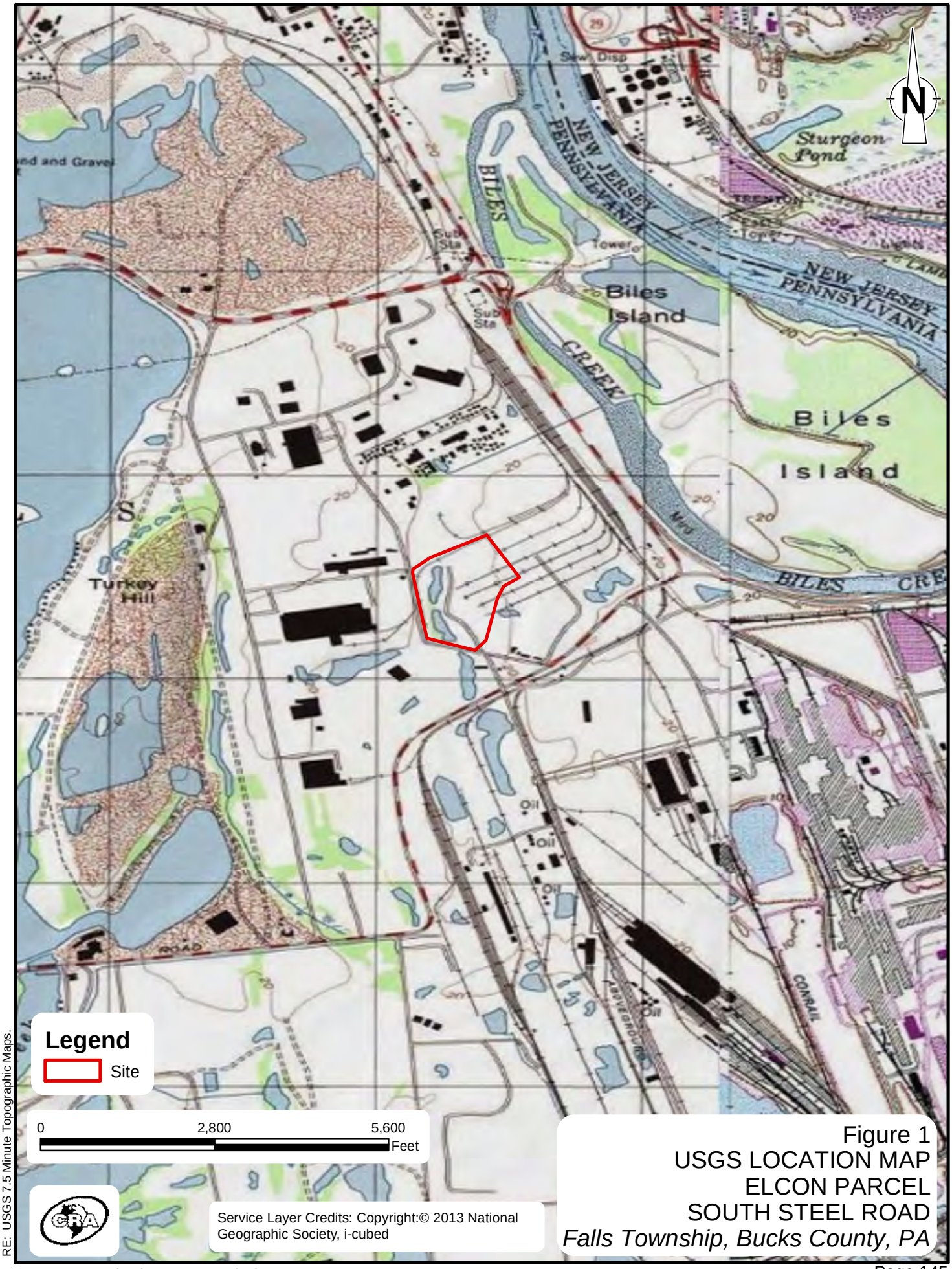



Figure 1
USGS LOCATION MAP
ELCON PARCEL
SOUTH STEEL ROAD
*Falls Township, Bucks County, PA*

RE: USGS 7.5 Minute Topographic Maps.

Figure 2
AERIAL LOCATION MAP
ELCON PARCEL
SOUTH STEEL ROAD
*Falls Township, Bucks County, PA*

RE: Aerial Location Map.

Figure 3
SOILS MAP
ELCON PARCEL
SOUTH STEEL ROAD
*Falls Township, Bucks County, PA*

RE: Soils Map.

Figure 4
NWI MAP
ELCON PARCEL
SOUTH STEEL ROAD
*Falls Township, Bucks County, PA*

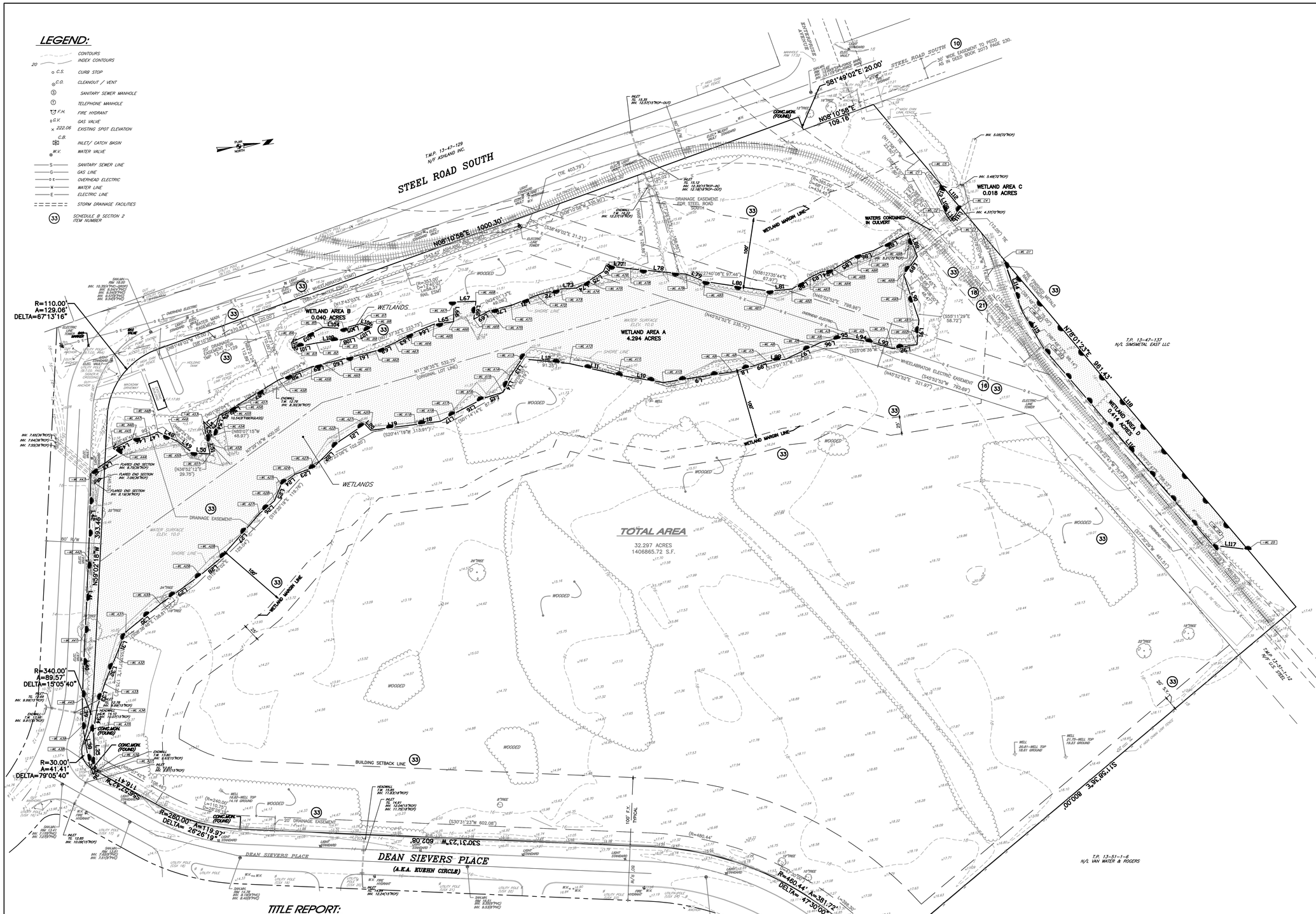
RE: NWI Map.

APPENDIX A

SURVEYED SITE PLAN

## LEGEND:

- CONTOURS
- 20 INDEX CONTOURS
- C.S. CURB STOP
- C.O. CLEANOUT / VENT
- SANITARY SEWER MANHOLE
- TELEPHONE MANHOLE
- F.H. FIRE HYDRANT
- G.V. GAS VALVE
- x 222.06 EXISTING SPOT ELEVATION
- C.B. INLET/ CATCH BASIN
- W.V. WATER VALVE
- S — SANITARY SEWER LINE
- G — GAS LINE
- OHE — OVERHEAD ELECTRIC
- W — WATER LINE
- E — ELECTRIC LINE
- STORM DRAINAGE FACILITIES
- (33) SCHEDULE B SECTION 2 ITEM NUMBER




| WETLAND LINE TABLE | | |
|---|---|---|
| LINE | LENGTH | BEARING |
| WETLAND AREA A | | |
| L8 | 33.01 | S07°31'12"E |
| L9 | 103.06 | S00°21'50"E |
| L10 | 66.58 | S17°57'27"W |
| L11 | 73.43 | S21°38'57"W |
| L12 | 70.19 | S14°01'57"W |
| L13 | 38.80 | S47°13'47"E |
| L14 | 25.82 | S57°31'48"E |
| L15 | 29.26 | S08°44'35"E |
| L16 | 47.56 | S18°59'21"E |
| L17 | 24.20 | S21°09'25"E |
| L18 | 37.53 | S01°43'55"W |
| L19 | 65.65 | S06°41'06"W |
| L20 | 12.59 | S54°21'12"W |
| L21 | 44.25 | S25°32'42"E |
| L22 | 54.81 | S36°52'37"E |
| L23 | 28.76 | S11°43'56"E |
| L24 | 25.22 | S28°09'25"E |
| L25 | 25.71 | S59°08'30"E |
| L26 | 29.09 | S32°01'20"E |
| L27 | 86.37 | S40°37'17"E |
| L28 | 38.73 | S31°43'11"E |
| L29 | 72.02 | S27°23'31"E |
| L30 | 65.34 | S30°31'59"E |
| L31 | 39.20 | S59°03'04"E |
| L32 | 42.90 | S39°36'48"E |
| L33 | 35.99 | S64°15'19"E |
| L34 | 31.78 | S72°01'41"E |
| L35 | 63.32 | S83°22'39"E |
| L36 | 4.22 | S49°16'52"E |
| L37 | 16.37 | S75°59'30"W |
| L38 | 57.29 | S88°38'24"W |
| L39 | 39.64 | N82°11'01"W |
| L40 | 97.28 | N79°04'30"W |
| L41 | 107.71 | N78°59'13"W |
| L42 | 126.04 | N79°59'19"W |
| L43 | 50.97 | N25°44'06"W |
| L44 | 11.62 | S43°46'23"W |
| L45 | 30.97 | N17°42'54"W |
| L46 | 22.61 | N01°40'16"W |
| L47 | 16.75 | N14°33'54"W |
| L48 | 32.61 | N24°13'37"E |
| L49 | 25.62 | N46°18'02"E |
| L50 | 26.81 | N12°58'18"E |
| L51 | 15.63 | S87°20'25"W |
| L52 | 32.80 | S86°48'20"W |
| L53 | 22.03 | N52°08'47"E |
| L54 | 25.11 | N65°36'12"W |
| L55 | 19.67 | N20°00'59"W |
| L56 | 9.08 | N22°16'49"W |
| L57 | 73.33 | N23°03'03"W |
| L58 | 51.57 | N13°07'18"W |
| L59 | 18.45 | N04°57'51"W |
| L60 | 40.22 | N05°48'21"W |
| L61 | 37.62 | N05°29'18"W |
| L62 | 30.42 | N14°18'41"W |
| L63 | 27.59 | N20°19'17"W |
| L64 | 36.26 | N14°32'02"W |
| L65 | 28.88 | N01°06'46"E |
| L66 | 28.98 | N79°35'21"W |
| L67 | 31.65 | N06°53'36"E |
| L68 | 26.28 | S75°06'04"E |
| L69 | 25.87 | N20°13'10"W |
| L70 | 33.11 | N05°14'50"W |
| L71 | 40.66 | N13°14'29"W |
| L72 | 36.17 | N06°10'24"W |
| L73 | 22.60 | N05°16'55"E |
| L74 | 19.15 | N21°52'28"W |
| L75 | 27.40 | N24°12'33"W |
| L76 | 10.61 | N59°37'44"W |
| L77 | 35.84 | N16°07'11"E |
| L78 | 82.11 | N13°55'41"E |
| L79 | 29.31 | N29°54'57"E |
| L80 | 94.10 | N16°53'56"E |
| L81 | 34.81 | N03°42'19"E |
| L82 | 31.89 | N24°13'22"W |
| L83 | 16.91 | N17°50'26"W |
| L84 | 19.10 | N04°55'51"W |
| L85 | 40.16 | N21°51'26"W |
| L86 | 25.36 | N07°58'21"W |
| L87 | 56.56 | N18°37'52"W |
| L88 | 36.95 | N77°56'53"E |
| L89 | 33.84 | S45°43'17"E |
| L90 | 69.33 | N79°41'12"E |
| L91 | 36.18 | S77°12'00"E |
| L92 | 36.48 | S00°49'32"E |
| L93 | 30.90 | S25°05'59"W |
| L94 | 34.24 | S39°02'42"W |
| L95 | 18.83 | S05°19'06"W |
| L96 | 22.11 | S03°19'39"E |
| L97 | 58.55 | S17°05'54"E |
| L98 | 26.89 | S02°05'09"W |
| L99 | 19.92 | S10°24'28"E |
| WETLAND AREA B | | |
| L100 | 37.23 | S00°46'18"W |
| L101 | 35.77 | S03°09'10"E |
| L102 | 8.47 | N88°35'36"W |
| L103 | 51.05 | N16°39'54"W |
| L104 | 29.97 | N11°17'24"E |
| L105 | 24.69 | N07°27'05"W |
| L106 | 18.10 | N25°28'42"E |
| L107 | 27.35 | S18°49'38"E |
| L108 | 20.62 | S06°45'43"E |
| WETLAND AREA C | | |
| L109 | 35.33 | N73°39'14"E |
| L110 | 9.06 | N62°04'10"E |
| L111 | 23.90 | N45°55'09"W |
| L112 | 42.74 | S38°20'22"W |
| L113 | 14.27 | S54°21'15"E |
| WETLAND AREA D | | |
| L114 | 80.99 | N78°44'32"E |
| L115 | 62.62 | N68°25'27"E |
| L116 | 380.68 | N57°46'35"E |
| L117 | 51.83 | N15°10'14"E |
| L118 | 556.03 | S58°20'22"W |

## TITLE REPORT:

FIRST AMERICAN TITLE INSURANCE COMPANY
COMMITMENT NO. PAFA14-0115 MM

EFFECTIVE DATE: 1/10/2014

## SCHEDULE 'B' SECTION 2

| ITEM | DESCRIPTION |
|---|---|
| 8 | RESTRICTIONS AS IN DEED BOOK 435 PAGE 122; *(INSUFFICIENT INFORMATION PROVIDED TO DETERMINE IF THESE RESTRICTIONS AFFECT SURVEYED PROPERTY.)* |
| 9 | RIGHT OF WAY AS IN DEED BOOK 525 PAGE 393 AND ASSIGNMENT THEREOF AS IN DEED BOOK 525 PAGE 556; *(75 FOOT WIDE RIGHT-OF-WAY TO CONSTRUCT, ERECT, OPERATE, MAINTAIN A LINE OR LINES TO TRANSPORT ELECTRICITY, TELEPHONE OR TELEGRAPH LINE. LOCATION CANNOT BE DETERMINED WITH PROVIDED INFORMATION.)* |
| 10 | RIGHTS GRANTED TO PHILADELPHIA ELECTRIC COMPANY AS IN DEED BOOKS 620 PAGE 382, 620 PAGE 445, 620 PAGE 446, 1849 PAGE 46, 2073 PAGE 324, 2073 PAGE 330, 2088 PAGE 304, 2115 PAGE 1120, 2348 PAGE 1032 AND 2590 PAGE 781; *(DEED BOOK 2073 PAGE 324 IS A GAS LINE EASEMENT THROUGH LANDS OF GS STEEL. INSUFFICIENT INFORMATION TO DETERMINE LOCATION. DEED BOOK 2073 PAGE 330 AFFECTS SUBJECT PROPERTY NEAR INTERSECTION OF ENTERPRISE AVENUE AND STEEL DRIVE SOUTH SHOWN ON PLAN. DEED BOOK 2590 PAGE 781 APPEARS TO BE A BLANKET EASEMENT FOR PHILADELPHIA ELECTRIC COMPANY TO CONSTRUCT, OPERATE AND MAINTAIN COMMUNICATIONS, GAS, AND ELECTRIC TRANSMISSION FACILITIES TO FACILITIES OF USS REALTY MAY AFFECT SUBJECT PROPERTY.)* |
| 11 | RIGHTS AS IN DEED BOOK 936 PAGE 45. *(SURVEYED PROPERTY IS SUBJECT TO RIGHTS AS IN DEED BOOK 936 PAGE 45; NOT PLOTTABLE.)* |
| 13 | RIGHTS GRANTED TO THE BELL TELEPHONE COMPANY OF PENNSYLVANIA AS IN DEED BOOK 2593 PAGE 290. *(RIGHTS TO THE TELEPHONE COMPANY OF PENNSYLVANIA AS IN DEED BOOK 2593 PAGE 290 AFFECTS SUBJECT PROPERTY BLANKET IN NATURE.)* |
| 16 | RIGHTS OF WAY AGREEMENT AS IN LAND RECORD BOOK 695 PAGE 1859. *(RIGHT OF WAY AS IN LAND RECORD BOOK 695 PAGE 1859 AFFECTS SURVEYED PROPERTY AND IS SHOWN).* |
| 18 | EASEMENT AGREEMENTS AS IN LAND RECORD BOOKS 1689 PAGE 1548, 1689 PAGE 1561, 1689 PAGE 1574, 1734 PAGE 2021, 1791 PAGE 2110, 2192 PAGE 1111 AND 4508 PAGE 1244. *(LAND RECORD BOOK 1689 PAGE 1548 AFFECTS SURVEYED PROPERTY IN THAT VAN WATERS & ROGERS HAS RIGHTS TO UTILIZE RAIL LINES THROUGH SURVEYED PROPERTY. LAND RECORD BOOK 1689 PAGE 1561 GRANTS RIGHTS TO VAN WATERS & ROGERS TO USE INDUSTRIAL PARK ROADWAYS.)* |
| 21 | RAIL ACCESS EASEMENT AGREEMENT AS IN LAND RECORD BOOK 2657 PAGE 23 AND EXHIBIT IN PLAN BOOK 308 PAGE 81. *(LAND RECORD BOOK 2657 PAGE 23 AND EXHIBIT IN PLAN BOOK 308 PAGE 81 GRANTS RIGHTS TO OWNER OF TAX PARCEL 13-47-129 TO USE RAILROAD AS SHOWN ON PLAN.)* |
| 23 | DEVELOPMENT GRANT AS IN LAND RECORD BOOK 2970 PAGE 1221. *(LAND RECORD BOOK 2970 PAGE 1221 GRANTS RIGHTS TO VERIZON TO CONSTRUCT AND MAINTAIN COMMUNICATION LINES AND STRUCTURES; CANNOT BE PLOTTED, BLANKET IN NATURE.)* |
| 33 | PLAN RECORDED IN PLAN BOOK 340 PAGE 61 SHOWS THE FOLLOWING: (A) BUILDING SET BACK LINES; (B) 20 FEET WIDE DRAINAGE EASEMENT; (C) 20 FEET WIDE DRAINAGE EASEMENT AND VARIABLE WIDTH DRAINAGE EASEMENT; (D) WETLANDS; (E) 15 FEET WIDE WATER MAIN EASEMENT; (F) WHEELABRATOR ELECTRIC EASEMENT; (G) ASHLAND RAIL EASEMENT; (H) PRE-FINISHED METALS RAIL EASEMENT; AND (I) NOTES; *(PLAN BOOK 340 PAGE 61; SURVEYED PROPERTY IS SUBJECT TO LISTED ITEM AS SHOWN ON PLAN. SEE PLAN REFERENCE No. 1)* |

## LEGAL DESCRIPTION:

BEGINNING AT A CORNER, SAID CORNER BEING THE INTERSECTION OF THE REQUIRED RIGHT OF WAY LINE OF DEAN SIEVERS PLACE, TAX PARCEL 13-51-1-5 (LOT 11) AND TAX PARCEL 13-51-1-6, AND RUNNING THENCE, 1) ALONG THE REQUIRED RIGHT OF WAY, ON A CURVE TO THE LEFT HAVING A RADIUS OF 460.44 FEET, A CENTRAL ANGLE OF 47° 30' 00", AND AN ARC LENGTH OF 381.72 FEET TO A POINT; 2) ALONG SAME, S. 30° 31' 23" W., A DISTANCE OF 602.08 FEET TO A POINT; 3) ALONG SAME, ON A CURVE TO THE RIGHT HAVING A RADIUS OF 280.00 FEET, A CENTRAL ANGLE OF 26° 26' 19", AND AN ARC LENGTH OF 119.97 FEET TO A POINT; 4) ALONG SAME, S. 56° 57' 42" W., A DISTANCE OF 116.41 FEET TO A POINT; 5) ALONG SAME, ON A CURVE TO THE RIGHT HAVING A RADIUS OF 30.00 FEET, A CENTRAL ANGLE OF 79° 05' 40", AND AN ARC LENGTH OF 41.41 FEET TO A POINT; 6) ALONG THE REQUIRED RIGHT OF WAY LINE OF STEEL ROAD SOUTH, ON A CURVE TO THE LEFT HAVING A RADIUS OF 340.00 FEET, A CENTRAL ANGLE OF 15° 05' 40", AND AN ARC LENGTH OF 89.57 FEET TO A POINT; 7) ALONG SAME, N. 59° 02' 18" W., A DISTANCE OF 393.46 FEET TO A POINT; 8) ALONG SAME, ON A CURVE TO THE RIGHT HAVING A RADIUS OF 110.00 FEET, A CENTRAL ANGLE OF 67° 13' 16", AND AN ARC LENGTH OF 129.06 FEET TO A POINT; 9) ALONG SAME, N. 08° 10' 58" E., A DISTANCE OF 1000.30 FEET TO A POINT; 10) ALONG SAME, S. 81° 49' 02" E., A DISTANCE OF 20.00 FEET TO A POINT; 11) ALONG SAME, N. 08° 10' 58" E., A DISTANCE OF 109.16 FEET TO A POINT; 12) ALONG TAX PARCEL 13-47-137, N. 78° 01' 23" E., A DISTANCE OF 981.43 FEET TO A POINT; 13) ALONG TAX PARCEL 13-51-1-6, S. 11° 58' 36" E., A DISTANCE OF 800.00 FEET TO A CORNER, SAID CORNER BEING THE TRUE PLACE OF BEGINNING.

CONTAINING 32.297 ACRES, MORE OR LESS.

## GENERAL NOTES:

1. THE BOUNDARY AND TOPOGRAPHY AS SHOWN ARE BASED ON A FIELD SURVEY PERFORMED BY GILMORE & ASSOCIATES INC. IN MARCH OF 2014.
2. DESIGNATIONS OF EXISTING UNDERGROUND UTILITIES/FACILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM RECORDS, FIELD MARKOUTS BY UTILITY OWNERS, AND/OR ABOVE GROUND OBSERVATION OF THE SITE. NO EXCAVATIONS WERE PERFORMED IN PREPARATION OF THESE DRAWINGS; THEREFORE ALL UTILITIES SHOWN SHOULD BE CONSIDERED APPROXIMATE IN LOCATION, DEPTH, AND SIZE. THE POTENTIAL EXISTS FOR OTHER UNDERGROUND UTILITIES/ FACILITIES TO BE PRESENT WHICH ARE NOT SHOWN ON THESE DRAWINGS. ONLY THE VISIBLE LOCATIONS OF UNDERGROUND UTILITIES/FACILITIES AT THE TIME OF FIELD SURVEY SHALL BE CONSIDERED TRUE AND ACCURATE. COMPLETENESS OR ACCURACY OF UNDERGROUND UTILITIES/FACILITIES ARE NOT GUARANTEED BY GILMORE & ASSOCIATES INC.
3. ALL CONTRACTORS WORKING ON THIS PROJECT SHALL VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES/FACILITIES PRIOR TO THE START OF WORK AND SHALL COMPLY WITH THE REQUIREMENTS OF P.L. 652, NO. 287 DECEMBER 10, 1974 AS LAST AMENDED ON OCTOBER 9, 2008, PENNSYLVANIA ACT 121. GILMORE AND ASSOCIATES INC. HAS OBTAINED PA-ONE CALL SERIAL NUMBERS 20140340626 & 20140340618 FOR DESIGN PURPOSES ONLY.
4. VERTICAL DATUM IS NAVD88 AND WAS ESTABLISHED BY GLOBAL POSITIONING SYSTEM (GPS) WITH OBSERVATIONS REFERENCED TO THE TORCON TOPSURV GPS BASE STATION NETWORK.
5. THE WETLANDS WERE FLAGGED BY SCOTT E. BUSH, PWS CONESTOGA-ROVERS & ASSOCIATES, INC. AND LOCATED BY GILMORE & ASSOCIATES, INC. ON JUNE 30, 2014.

## PLAN REFERENCE:

1. LOT 1 COMBINED PLAN AND EASEMENT PLAN PREPARED FOR USS REAL ESTATE ONE NEW FAIRLESS HILLS DRIVE MORRISVILLE, PA, SHEET 2 OF 3 PREPARED BY SHOMALTER AND ASSOCIATES DATED MARCH 29, 2006 AND LAST REVISED 01-26-14.

## SURVEYOR'S CERTIFICATION:

THE UNDERSIGNED, BEING A REGISTERED SURVEYOR OF THE COMMONWEALTH OF PENNSYLVANIA CERTIFIES TO:

FIRST AMERICAN TITLE INSURANCE CO. C/O BROKERS ABSTRACT AND SEARCH CO.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 4, 6, 7(b), 7(c), 8, 9, 11(b), 13, 14, 16, AND 18 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED IN MARCH OF 2014.

DATE

STANLEY J. KLUSKIEWICZ, PLS
PA. LICENSE NO. SU031253E

PENNSYLVANIA ONE CALL SYSTEM, INC.
925 Irwin Run Road
West MIFFIN, Pennsylvania
15122 - 1076

BEFORE YOU DIG ANYWHERE IN PENNSYLVANIA! CALL 1-800-242-1776

NON-MEMBERS MUST BE CONTACTED DIRECTLY

PA LAW REQUIRES THREE WORKING DAYS NOTICE TO UTILITIES BEFORE YOU EXCAVATE. DRILL BLAST OR DEMOLISH

| REV. | DESCRIPTION | DATE | BY |
|---|---|---|---|
| 3 | REVISED PER USACOE SITE VISIT | 11-14-14 | JJH |
| 2 | REVISED PER ADDITIONAL WETLANDS DELINEATION | 8-20-14 | JEG |
| 1 | REVISED PER NEW WETLANDS DELINEATION | 7-02-14 | DL |

APPLICANT:
ELCON RECYCLING SERVICES, LLC
P.O. BOX 1428
HAFA, ISREAL 31013

MUNICIPAL FILE NO.: --

TAX MAP PARCEL NO.: 13-51-1-5

TOTAL AREA: 32.297 AC. | TOTAL LOTS: 1

DATE: 3-28-14 | SCALE: 1"= 50'

# ALTA/ACSM LAND TITLE SURVEY
## *ELCON RECYCLING*
FALLS TOWNSHIP, BUCKS COUNTY, PENNSYLVANIA

**GILMORE & ASSOCIATES, INC.**
ENGINEERING & CONSULTING SERVICES
330 EAST BUTLER AVENUE NEW BRITAIN, PA 18901-0706 • (215) 345-4330 • www.gilmoreassoc.com

SCALE IN FEET: 50 0 50 100

JOB NO.: 1207083
SHEET NO.: 1 OF 1

DESIGNED BY: JEG | DRAWN BY: DL | CHECKED BY: SJK

ONLY THOSE PLANS INCORPORATING THE RAISED PROFESSIONAL SEAL SHOULD BE CONSIDERED OFFICIAL AND RELIED UPON BY USER. THIS PLAN IS PREPARED SPECIFICALLY FOR THE CLIENT AND PROJECT DESIGNATION HEREON. MODIFICATION, REVISION, DUPLICATION OR USE WITHOUT THE CONSENT OF GILMORE & ASSOCIATES, INC. IS PROHIBITED. © COPYRIGHT 2006 GILMORE & ASSOCIATES, INC. ALL RIGHTS RESERVED.

APPENDIX B

COMPLETED DATA FORMS

ELCON PARCEL

Google earth

feet 2000
meters 600

DATA POINT LOCATION MAP

## WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Elcon City/County: Bucks Sampling Date: 6/25/2014

Applicant/Owner: Elcon State: PA Sampling Point: DP 1

Investigator(s): Scott Bush, PWS Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): 149A Lat: 40.168567 Long: 74.759944 Datum: WGS84

Soil Map Unit Name: UfuB - Urban land, 0 - 8% slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✓ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes _____ | No ✓ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

Industrial lands

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes _____ | No _____ | Depth (inches): _____ |
| Water Table Present? | Yes _____ | No _____ | Depth (inches): _____ |
| Saturation Present? (includes capillary fringe) | Yes _____ | No _____ | Depth (inches): _____ |

**Wetland Hydrology Present?** Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION –** Use scientific names of plants.

Sampling Point: DP 1

| Tree Stratum (Plot sizes: _____ ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | = Total Cover | |
| **Sapling Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | = Total Cover | |
| **Shrub Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | = Total Cover | |
| **Herb Stratum** ( _____ ) | | | |
| 1. Poa pratensis | 50 | yes | FACU |
| 2. Centaurea stoebe | 15 | no | UPL |
| 3. Panicum virgatum | 10 | no | FAC |
| 4. Solidago altissima | 10 | no | FACU |
| 5. Trifolium repens | 10 | no | FACU |
| 6. Lolium perenne | 5 | no | FACU |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 100 | = Total Cover | |
| **Woody Vine Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | | = Total Cover | |

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: |
|---|---|---|
| OBL species | | x 1 = |
| FACW species | | x 2 = |
| FAC species | | x 3 = |
| FACU species | | x 4 = |
| UPL species | | x 5 = |
| Column Totals: | (A) | (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks: (If observed, list morphological adaptations below).

## SOIL

Sampling Point: DP 1

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8 | 10YR 5/4 | | | | | | Loam | |
| 8-18 | 10YR 5/4 | | | | | | Loamy | with gravel |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) (LRR T, U)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No ✓

Remarks:

## WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Elcon City/County: Bucks Sampling Date: 6/25/2014

Applicant/Owner: Elcon State: PA Sampling Point: DP 2

Investigator(s): Scott Bush, PWS Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): 149A Lat: 40.169803 Long: 74.760530 Datum: WGS84

Soil Map Unit Name: UfuB - Urban land, 0 - 8% slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✓ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes _____ | No ✓ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes _____ | No _____ | Depth (inches): _____ |
| Water Table Present? | Yes _____ | No _____ | Depth (inches): _____ |
| Saturation Present? (includes capillary fringe) | Yes _____ | No _____ | Depth (inches): _____ |

**Wetland Hydrology Present?** Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** – Use scientific names of plants.

Sampling Point: DP 2

| Tree Stratum (Plot sizes: _____ ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Populus deltoides | 10 | yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 10 | = Total Cover | |
| **Sapling Stratum** ( _____ ) | | | |
| 1. Lonicera tatarica | 5 | yes | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 5 | = Total Cover | |
| **Shrub Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | = Total Cover | |
| **Herb Stratum** ( _____ ) | | | |
| 1. Melilotus officinalis | 15 | yes | FACU |
| 2. Centaurea stoebe | 15 | yes | UPL |
| 3. Setaria pumila | 5 | no | FAC |
| 4. Eupatorium serotinum | 2 | no | FACU |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 37 | = Total Cover | |
| **Woody Vine Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | | = Total Cover | |

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 22 | x 4 = | 88 |
| UPL species | 15 | x 5 = | 75 |
| Column Totals: | 47 (A) | | 193 (B) |

Prevalence Index = B/A = 4.1

**Hydrophytic Vegetation Indicators:**

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks: (If observed, list morphological adaptations below).

## SOIL

Sampling Point: DP 2

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-18 | 10YR 5/2 | | | | | | Sandy | Sandy fill and slag |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) (LRR T, U)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No ✓

Remarks:

## WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Elcon City/County: Bucks Sampling Date: 6/25/2014

Applicant/Owner: Elcon State: PA Sampling Point: DP 3

Investigator(s): Scott Bush, PWS Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): 149A Lat: 40.167322 Long: 74.762298 Datum: WGS84

Soil Map Unit Name: UfuB - Urban land, 0 - 8% slopes NWI classification: -

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No _____ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes _____ | No ✓ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes _____ | No _____ | Depth (inches): _____ |
| Water Table Present? | Yes _____ | No _____ | Depth (inches): _____ |
| Saturation Present? (includes capillary fringe) | Yes _____ | No _____ | Depth (inches): _____ |

**Wetland Hydrology Present?** Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** – Use scientific names of plants.

Sampling Point: DP 3

| Tree Stratum (Plot sizes: _____ ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Populus deltoides | 25 | yes | FAC |
| 2. Platanus occidentalis | 10 | yes | FACW |
| 3. Acer negundo | 10 | yes | FAC |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 45 | = Total Cover | |
| **Sapling Stratum** ( _____ ) | | | |
| 1. Elaeagnus autumnalis | 40 | yes | UPL |
| 2. Lonicera tatarica | 10 | no | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 50 | = Total Cover | |
| **Shrub Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | = Total Cover | |
| **Herb Stratum** ( _____ ) | | | |
| 1. Lonicera japonica | 26 | yes | FACU |
| 2. Toxicodendron radicans | 25 | yes | FAC |
| 3. Solidago canadensis | 20 | no | FACU |
| 4. Apocynum cannabinum | 10 | no | FACU |
| 5. Galium aperine | 10 | no | UPL |
| 6. Parthenocissus quinquefolia | 10 | no | FACU |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 101 | = Total Cover | |
| **Woody Vine Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | | = Total Cover | |

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: |
|---|---|---|
| OBL species | | x 1 = |
| FACW species | | x 2 = |
| FAC species | | x 3 = |
| FACU species | | x 4 = |
| UPL species | | x 5 = |
| Column Totals: | (A) | (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes ✓ No ___

Remarks: (If observed, list morphological adaptations below).

## SOIL

Sampling Point: DP 3

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-18 | | | | | | | Slag | All slag |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) (LRR T, U)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No ✓

Remarks:

No actual soil present in the upper layer of ground at this location

## WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Elcon City/County: Bucks Sampling Date: 6/25/2014

Applicant/Owner: Elcon State: PA Sampling Point: DP 4

Investigator(s): Scott Bush, PWS Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): 149A Lat: 40.165631 Long: 74.762283 Datum: WGS84

Soil Map Unit Name: Na, Nanticoke-Hatboro silt loams NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✓ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes _____ | No ✓ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) (LRR U)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes _____ | No _____ | Depth (inches): _____ |
| Water Table Present? | Yes _____ | No _____ | Depth (inches): _____ |
| Saturation Present? (includes capillary fringe) | Yes _____ | No _____ | Depth (inches): _____ |

**Wetland Hydrology Present?** Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION –** Use scientific names of plants.

Sampling Point: DP 4

| Tree Stratum (Plot sizes: _____ ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Ailanthus altissima | 20 | yes | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 20 | = Total Cover | |
| **Sapling Stratum** ( _____ ) | | | |
| 1. Ailanthus altissima | 30 | yes | FACU |
| 2. Morus rubra | 10 | yes | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 40 | = Total Cover | |
| **Shrub Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | = Total Cover | |
| **Herb Stratum** ( _____ ) | | | |
| 1. Toxicodendron radicans | 40 | yes | FAC |
| 2. Medicago lupulina | 10 | no | UPL |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 50 | = Total Cover | |
| **Woody Vine Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | | = Total Cover | |

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 40 | x 3 = | 120 |
| FACU species | 60 | x 4 = | 240 |
| UPL species | | x 5 = | |
| Column Totals: | 100 (A) | | 360 (B) |

Prevalence Index = B/A = 3.6

**Hydrophytic Vegetation Indicators:**

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks: (If observed, list morphological adaptations below).

## SOIL

Sampling Point: DP 4

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10 | | | | | | | | Rip Rap |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) (LRR T, U)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No ✓

Remarks:

Sample in the shoulder of Steel Road South

## WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Elcon City/County: Bucks Sampling Date: 6/25/2014

Applicant/Owner: Elcon State: PA Sampling Point: DP 5

Investigator(s): Scott Bush, PWS Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): 149A Lat: 40.165429 Long: 74.762283 Datum: WGS84

Soil Map Unit Name: Na, Nanticoke-Hatboro silt loams NWI classification: PUB

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ No _____ | **Is the Sampled Area within a Wetland?** Yes ✓ No _____ |
| Hydric Soil Present? | Yes ✓ No _____ | |
| Wetland Hydrology Present? | Yes ✓ No _____ | |

Remarks:

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ✓ | No _____ | Depth (inches): 6 |
| Water Table Present? | Yes _____ | No _____ | Depth (inches): _____ |
| Saturation Present? (includes capillary fringe) | Yes _____ | No _____ | Depth (inches): _____ |

**Wetland Hydrology Present?** Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** – Use scientific names of plants.

Sampling Point: DP 5

| Tree Stratum (Plot sizes: _____ ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Salix nigra | 20 | yes | OBL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | = Total Cover | |
| **Sapling Stratum** ( _____ ) | | | |
| 1. Hibiscus moscheutos | 30 | yes | OBL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | = Total Cover | |
| **Shrub Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | = Total Cover | |
| **Herb Stratum** ( _____ ) | | | |
| 1. Phragmites australis | 60 | yes | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | | = Total Cover | |
| **Woody Vine Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | | = Total Cover | |

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: |
|---|---|---|
| OBL species | _____ | x 1 = _____ |
| FACW species | _____ | x 2 = _____ |
| FAC species | _____ | x 3 = _____ |
| FACU species | _____ | x 4 = _____ |
| UPL species | _____ | x 5 = _____ |
| Column Totals: | _____ (A) | _____ (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes ✓ No _____

Remarks: (If observed, list morphological adaptations below).

## SOIL

Sampling Point: DP 5

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-18 | 10YR 2/1 | | | | | | Muck | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ✓ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ✓ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Mari (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) (LRR T, U)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✓ No ___

Remarks:

## WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Elcon City/County: Bucks Sampling Date: 6/25/2014

Applicant/Owner: Elcon State: PA Sampling Point: DP 6

Investigator(s): Scott Bush, PWS Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): 149A Lat: 40.166593 Long: 74.762761 Datum: WGS84

Soil Map Unit Name: Na, Nanticoke-Hatboro silt loams NWI classification: -

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No ___ | **Is the Sampled Area within a Wetland?** Yes ✓ No ___ |
| Hydric Soil Present? | Yes ✓ | No ___ | |
| Wetland Hydrology Present? | Yes ✓ | No ___ | |

Remarks:

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) (LRR U)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes ___ | No ✓ | Depth (inches): ___ |
| Water Table Present? | Yes ___ | No ✓ | Depth (inches): ___ |
| Saturation Present? (includes capillary fringe) | Yes ✓ | No ___ | Depth (inches): 12 |

**Wetland Hydrology Present?** Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** – Use scientific names of plants.

Sampling Point: DP 6

| Tree Stratum (Plot sizes: _____ ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | = Total Cover | |
| **Sapling Stratum** ( _____ ) | | | |
| 1. Lindera benzoin | 80 | yes | FACW |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 80 | = Total Cover | |
| **Shrub Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | = Total Cover | |
| **Herb Stratum** ( _____ ) | | | |
| 1. Polygonum cuspidatum | 10 | yes | UPL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 10 | = Total Cover | |
| **Woody Vine Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | | = Total Cover | |

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: |
|---|---|---|
| OBL species | 0 | x 1 = 0 |
| FACW species | 80 | x 2 = 160 |
| FAC species | 0 | x 3 = 0 |
| FACU species | 0 | x 4 = 0 |
| UPL species | 10 | x 5 = 50 |
| Column Totals: | 90 (A) | 210 (B) |

Prevalence Index = B/A = 2.33

**Hydrophytic Vegetation Indicators:**

___ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes ✓ No _____

Remarks: (If observed, list morphological adaptations below).

## SOIL

Sampling Point: DP 6

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-8 | 10YR 4/2 | 98 | 10YR 4/6 | 2 | C | M | Loam | |
| 8-18 | 10YR 4/1 | 98 | 10YR 4/6 | 2 | C | M | Loam w | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) (LRR T, U)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes ✓ No ___

Remarks:

## WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Elcon City/County: Bucks Sampling Date: 6/25/2014

Applicant/Owner: Elcon State: PA Sampling Point: DP 7

Investigator(s): Scott Bush, PWS Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): 149A Lat: 40.166593 Long: 74.762762 Datum: WGS84

Soil Map Unit Name: Na, Nanticoke-Hatboro silt loams NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ | No ✓ | **Is the Sampled Area within a Wetland?** Yes _____ No ✓ |
| Hydric Soil Present? | Yes _____ | No ✓ | |
| Wetland Hydrology Present? | Yes _____ | No ✓ | |

Remarks:

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes _____ | No _____ | Depth (inches): _____ |
| Water Table Present? | Yes _____ | No _____ | Depth (inches): _____ |
| Saturation Present? (includes capillary fringe) | Yes _____ | No _____ | Depth (inches): _____ |

**Wetland Hydrology Present?** Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION** – Use scientific names of plants.

Sampling Point: DP 7

| Tree Stratum (Plot sizes: _____ ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Prunus serotina | 20 | yes | FACU |
| 2. Acer negundo | 20 | yes | FAC |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 40 | = Total Cover | |
| **Sapling Stratum** ( _____ ) | | | |
| 1. Morus rubra | 60 | yes | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 60 | = Total Cover | |
| **Shrub Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | = Total Cover | |
| **Herb Stratum** ( _____ ) | | | |
| 1. Ageratina altissima | 30 | yes | FACU |
| 2. Alliaria petiolata | 30 | yes | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | 60 | = Total Cover | |
| **Woody Vine Stratum** ( _____ ) | | | |
| 1. Vitis aestivalis | 20 | yes | FACU |
| 2. Celastrus orbiculatus | 20 | yes | UPL |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 40 | = Total Cover | |

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 14.3% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | | x 1 = | |
| FACW species | | x 2 = | |
| FAC species | 20 | x 3 = | 60 |
| FACU species | 160 | x 4 = | 640 |
| UPL species | 20 | x 5 = | 100 |
| Column Totals: | 200 (A) | | 800 (B) |

Prevalence Index = B/A = 4

**Hydrophytic Vegetation Indicators:**

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes _____ No ✓

Remarks: (If observed, list morphological adaptations below).

## SOIL

Sampling Point: DP 7

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-4 | 10YR 4/4 | | | | | | Loam | |
| 4-16 | 10YR 5/4 | | | | | | Loam w/ | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) (LRR T, U)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No ✓

Remarks:

## WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Elcon City/County: Bucks Sampling Date: 6/25/2014

Applicant/Owner: Elcon State: PA Sampling Point: DP 8

Investigator(s): Scott Bush, PWS Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): 149A Lat: 40.169745 Long: -74.762271 Datum: WGS84

Soil Map Unit Name: Na, Nanticoke-Hatboro silt loams NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|---|---|
| Hydrophytic Vegetation Present? | Yes ✓ | No _____ | **Is the Sampled Area within a Wetland?** Yes ✓ No _____ |
| Hydric Soil Present? | Yes ✓ | No _____ | |
| Wetland Hydrology Present? | Yes ✓ | No _____ | |

Remarks:

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

**Field Observations:**

| | | | |
|---|---|---|---|
| Surface Water Present? | Yes _____ | No _____ | Depth (inches): _____ |
| Water Table Present? | Yes _____ | No _____ | Depth (inches): _____ |
| Saturation Present? (includes capillary fringe) | Yes ✓ | No _____ | Depth (inches): 2 |

**Wetland Hydrology Present?** Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION –** Use scientific names of plants.

Sampling Point: DP 8

| Tree Stratum (Plot sizes: _____ ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | = Total Cover | |
| **Sapling Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | = Total Cover | |
| **Shrub Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | | = Total Cover | |
| **Herb Stratum** ( _____ ) | | | |
| 1. Phragmites australis | 98 | yes | FACW |
| 2. Lythrum salicaria | 2 | no | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| 11. | | | |
| 12. | | | |
| | | = Total Cover | |
| **Woody Vine Stratum** ( _____ ) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | | = Total Cover | |

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: |
|---|---|---|
| OBL species | | x 1 = |
| FACW species | | x 2 = |
| FAC species | | x 3 = |
| FACU species | | x 4 = |
| UPL species | | x 5 = |
| Column Totals: | (A) | (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes ✓ No _____

Remarks: (If observed, list morphological adaptations below).

## SOIL

Sampling Point: DP 8

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-14 | 10YR 4/2 | 95 | 7.5YR 5/4 | 5 | C | M | Loamy | with slag gravel |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) (LRR T, U)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if observed):**

Type: _____

Depth (inches): _____

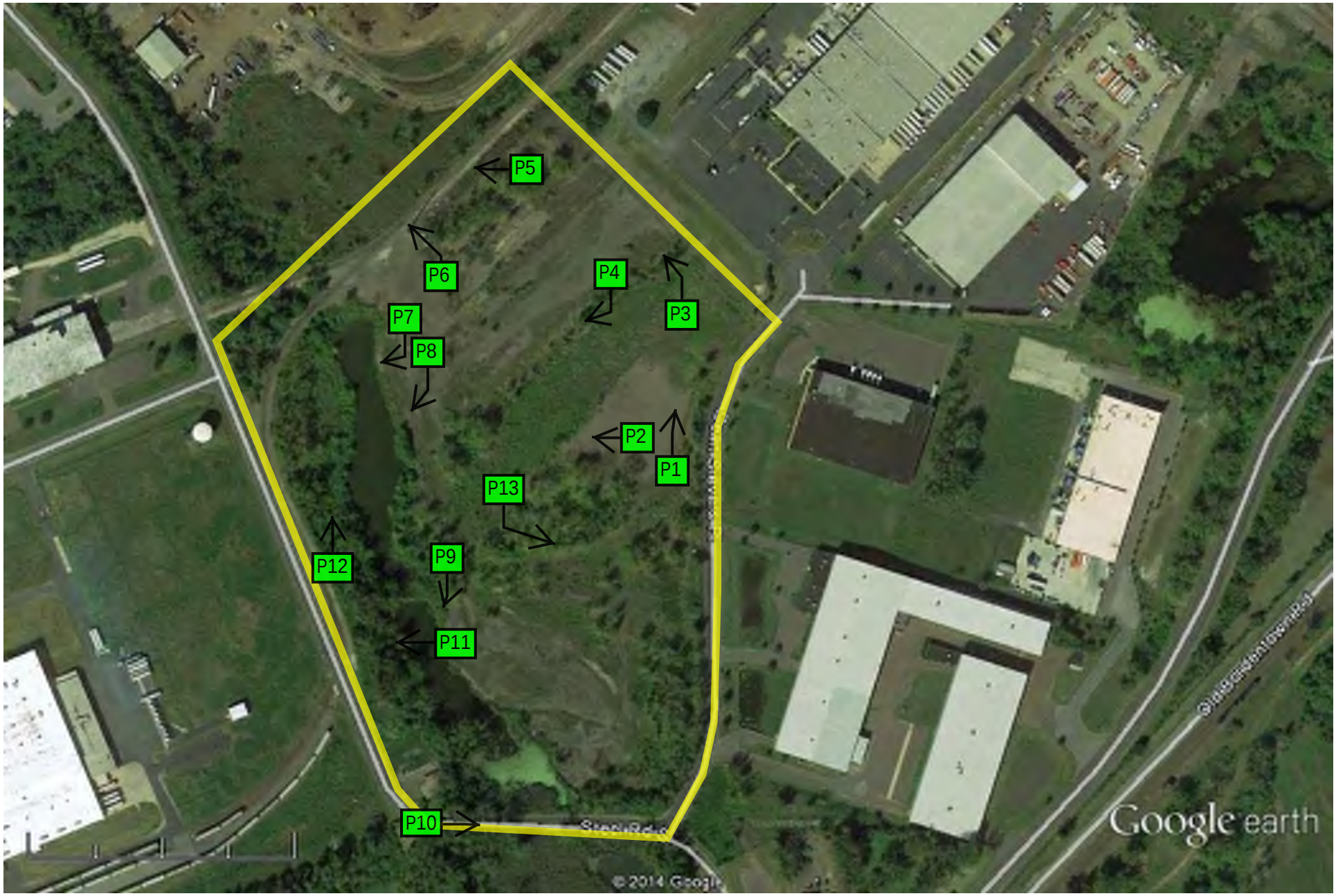
**Hydric Soil Present?** Yes ✓ No ___

Remarks:

APPENDIX C

COLOR PHOTOGRAPHS

ELCON PARCEL




Google earth

feet 2000
meters 600

PHOTO LOCATION MAP

1. Looking northeast at industrial uplands in the eastern part of the Site.

2. Looking west at industrial uplands in the eastern part of the Site.

3. Looking north at industrial uplands in the eastern part of the Site.

4. Looking north at industrial uplands in the northern part of the Site.

5. Looking north at industrial uplands in the northern part of the Site within the Wheelabrator Falls power line right-of-way.

6. Looking north at industrial uplands in the northern part of the Site within the Wheelabrator Falls power line right-of-way. Wetland D, dominated by Phragmites is in the background.

7. Looking east at the northern portion of Area A.

8. Looking southeast at Area A.

9. Looking south at Area A.

10. Looking west at Steel Road South adjacent to the southern Site boundary.

11. Looking at Area B, a sparsely vegetated concave depression that seasonally holds standing water.

12. Looking east at industrial uplands in the southern part of the Site.

13. Looking south east at industrial uplands in the southern part of the Site.

## 9.3 ARMY CORPS OF ENGINEERS JURISDICTIONAL DETERMINATION

**DEPARTMENT OF THE ARMY**

PHILADELPHIA DISTRICT CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO
ATTENTION OF

JAN 05 2015

Regulatory Branch
Application Section I

SUBJECT: CENAP-OP-R 2014-1004-39 (Preliminary JD)
Project Name: Elcon Recycling Services
Latitude and Longitude: 40.168° N/-74.761° W

Zvi Elgat
Elcon Recycling Services
11 LeParc Drive
Princeton, New Jersey 08550

Dear Mr. Elgat:

This letter is written with regard to your request for verification of a preliminary jurisdictional determination. The property associated with your request is located at, Tax Parcel Number 13-51-1-5 adjacent to Dan Sievers Place AKA Kuehn Circle, in Falls Township, Bucks County, Pennsylvania.

Pursuant to Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act, a Department of the Army permit is required for work or structures in navigable waters of the United States and the discharge of dredged and/or fill material into waters of the United States, including adjacent and isolated wetlands. Any proposal to perform the above activities within any waters of the United States, including wetlands, requires the prior approval of this office.

The plans identified on the following page depict all delineated waters and wetlands on the subject site that may be jurisdictional under Section 10 of the Rivers and Harbor Act and/or Section 404 of the Clean Water Act. This preliminary determination has been conducted to identify the location(s) of waters and wetlands that may be waters of the United States for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are U.S. Department of Agriculture (USDA) program participants, or anticipate participating in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

This preliminary jurisdictional determination is non-binding and indicates that there may be waters of the United States, including wetlands, on the parcel. Preliminary JDs are advisory in nature and may not be appealed (See attached Notification of Appeal Form (Enclosure 1)); however, the applicant retains the right to request an approved Jurisdictional Determination, which may be appealed, for the site. Also enclosed (Enclosure 2) is a copy of the Preliminary

Jurisdictional Determination Form signed by the applicant or his agent agreeing to accept a preliminary jurisdictional determination. Please be aware that for purposes of computation of impacts, compensatory mitigation requirements, and other resource protection measures, a permit decision made on the basis of a preliminary JD will treat all waters and wetlands that would be affected in any way by the permitted activity on the site as if they are jurisdictional waters of the U.S.

This letter is valid for a period of five (5) years. This preliminary jurisdictional determination is issued in accordance with current Federal regulations and is based upon the existing site conditions and information provided by you in your application. This office reserves the right to reevaluate and modify the preliminary jurisdictional determination at any time should existing site conditions or Federal regulations change, or should the information provided by you prove to be false, incomplete, or inaccurate.

If you have any questions regarding this matter, please contact Mr. Lawrence Slavitter at (215) 656-6734 or write to the above address.

Sincerely,

Lawrence M. Slavitter
Biologist

**********

SUBJECT PROPERTY: Elcon Recycling Services; 32 acres; Tax Map Parcel Number 13-51-1-5; adjacent to Dan Sievers Place (AKA Kuehn Circle, in Falls Township, Bucks County, Pennsylvania.

**********

SURVEY DESCRIPTION: Plot plan prepared by Gilmore and Associates, Incorporated, entitled "ALTA/ACSM Land Title Survey…"; dated March 28, 2014; last revised November 14, 2014, scale 1" = 50'; sheet 1 of 1.

**********

COMMENTS: Site inspection by representative of this office on November 14, 2014.

**********

Enclosures

Copies Furnished:
PADEP, SE Regional Office (Norristown, PA)
Bucks County Conservation District

Scott Bush
Conestoga-Rovers & Associates, Inc.
410 Eagleview Boulevard Suite 110
Exton, Pennsylvania 19341

## 9.4 ACT 2 FINAL REPORT (WITHOUT APPENDICES)

# Act 2 Final Report for 32-Acre Parcel

Keystone Industrial Port Complex U.S. Steel
Fairless Hills, Bucks County, Pennsylvania

USS Real Estate

410 Eagleview Boulevard, Suite 110 Exton Pennsylvania 19341
083101 | Report No 6 | September 08 2015

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Figure 1.1 Facility Location

Figure 1.2 Site Location – 32-Acre Parcel

Figure 3.1 Investigation Locations – 32 Acre Parcel

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Table 4.2 Screened Analytical Results – Subsurface Soil Samples vs Non-Residential Direct Contact Criteria (2-15)

Table 4.3 Screened Analytical Results – All Soil Samples vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria

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# Appendices


Appendix A Stratigraphic Logs

Appendix B Data Validation Report

Appendix C Wetland Location Plan

Appendix D Pennsylvania Natural Diversity Inventory (PNDI) Records

Appendix E Act 2 Documentation

Appendix F Ecological Health Assessment (EHA)

# 1. Introduction

This Final Report is being submitted to the Pennsylvania Department of Environmental Protection (PADEP) to document the attainment of the Statewide Health Standard (SHS) for the 32-Acre Parcel (Site or Property) at the U.S. Steel (USS) Keystone Industrial Port Complex (KIPC), Fairless Hills, Bucks County, Pennsylvania (Facility). The Site characterized and evaluated in this report is approximately 32 acres of the industrial KIPC. The Site included operations that supported the former industrial operations. This Final Report demonstrating attainment of the SHS for soil was prepared in accordance with Pennsylvania Chapter 250, the Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2), Section 312. The Facility location is presented on Figure 1.1. The Site location is presented on Figure 1.2.

Based on current Site conditions, the results for the Site characterization and previous assessments, evaluation of potential receptors and exposure pathways, and execution of an Environmental Covenant with activity use limitations to ensure future use restrictions, USS has demonstrated attainment with the SHS for Site compounds of concern (COC) for soil in accordance with the requirements in the Pennsylvania Code, Title 25, Chapter 250 (Act 2).

# 2. Site Description

## 2.1 Facility and Site Location

The Facility is located on the west bank of the Delaware River, approximately 1 mile west of Bordentown, New Jersey, 2 miles south of Trenton, New Jersey and 3 miles east of Levittown, Pennsylvania (Figure 1.1). The Facility is approximately 2,800 acres. The Facility is bounded to the east and southeast by low-lying wetlands, tidal marshes, and forested areas that represent former farmed fields. To the southwest of the Facility is the Geological Reclamation Operations and Waste Systems Inc. (G.R.O.W.S) landfill, a subsidiary of Waste Management of Pennsylvania (WMPA). To the northwest of the Facility is the New Ford Mill Industrial Park and property belonging to Wheelabrator Environmental Systems, Inc. To the northeast of the Facility is Biles Island (owned by WMPA).

The Site characterized and evaluated in this Final Report consists of an approximately 32-acre parcel as shown on Figure 1.2. The Site is bounded to the north, south, east, and west by former Facility operational areas.

## 2.2 Facility and Site Background

### *Facility*

Prior to 1952, the Facility was used for agricultural purposes. During construction of the Facility, numerous borrow pits were excavated to provide fill material to raise the Facility above the elevation of the 100-year floodplain. The Facility began operations in 1952. Its primary activities were integrated steel-making and finishing. The majority of the Facility operations were constructed in the early 1950s. Additional development took place in the 1960s and the early 1970s, including the construction of the electric arc furnace, rod mill, and wire mill. In the early 1980s the electric arc furnace and several finishing operations (rod, bar, rolling, and wire mills) were shut down. In 1984, the coke and coal chemical plants were shut down. The sinter plant ceased operations in 1990.

Steel-making operations ceased in 1991 when the last blast furnace, open hearths, and primary mills were shut down. Currently, only the galvanizing facility is still operating.

### *Site*

The Site area includes a small portion of former borrow pit BP-31A. The portion of borrow pit BP-31A (approx. 0.7 acres) that is on the Site is presented on Figure 3.1. Borrow Pit BP-31A was part of a complex of pits that includes BP-21 and BP-31. Borrow Pit BP-31A was located adjacent to Steel Road South by Dean Siever's Place. This pit is irregular in shape and occupies approximately 28.5 acres. Only a small portion of BP-31A (approx. 0.7 acres) extends onto the Site. The pit was filled with blast furnace slag. The central portion of the borrow pit was filled to grade. This pit was active from 1952 to 1980. The Description of Current Conditions (DOCC; BCM, 1994) did not identify any sources or risk of contamination in this area. The Site also includes a storm water ditch of approximately 2.6 acres on the west side of the parcel which was formerly referred to as North Canal system, which drains north and then east to Biles Creek. The Site lays in close proximity to other waterbodies that area currently known to support State-listed species of concern (i.e., rare, threatened, and endangered fish, reptiles, and amphibians).

Fourteen soil samples (four from soil borings and ten from test pits) were collected from the 32-acre area in 1998 and analyzed for select volatile organic compounds (VOCs), select semi-VOCs (SVOCs), Total Petroleum Hydrocarbons (TPH), and priority pollutant (PP) metals. In addition, three sediment samples were also collected from the stormwater ditch on the west side of the parcel in 1998 and analyzed for select VOCs, select SVOCs, TPH, and PP metals.

In addition, 28 soil samples from 14 boreholes (14 surficial [0-2 feet (ft) below ground surface (bgs)] and 14 sub-surface soil samples [greater than 2 ft bgs]) and 3 surface water samples were collected between June 24, 2014 and June 26, 2014 from the 32-acre area and analyzed for Target Compound List (TCL) VOCs, TCL SVOCs, polychlorinated biphenyl (PCBs), and PP metals.

## 2.3 Physiography and Topography

The Facility is located on a broad alluvial plain of the Delaware River (Figure 1.1). The Facility elevation is approximately 10 to 20 ft above mean sea level (AMSL). The alluvial plain lies on the inside bend of a major change in the river channel direction from southeast to southwest. The change in direction corresponds to the emergence of the river from the undulating, rolling low relief hills of the Piedmont Physiographic Province to the relatively flat Atlantic Coastal Plain Province. In the northeastern United States, the boundary between these two provinces is commonly termed the “Fall Line” that trends northeast-southwest (NE-SW) and lies approximately 5 miles northwest of the Facility.

The Piedmont Province consists of a series of NE-SW trending uplands composed of rounded hills and plains cut by relatively narrow valleys. The altitude of the region ranges from 40 to 700 ft AMSL, with local relief not greater than 200 ft. The slope of the whole region is gradually to the southeast. The Piedmont Province is underlain by crystalline rocks of Pre-Cambrian and Cambrian age (Kimball, 1976).

The Atlantic Coastal Plain Province is a low-lying, gently rolling plain. At the Facility, the slope is generally to the southeast toward the Delaware River. The Coastal Plain is composed of unconsolidated or poorly consolidated, flat-lying sediment strata consisting of clay, silt, sandy clay,

sand, and gravel of the Mesozoic and Cenozoic age. The beds thicken to the southeast and overlie some of the consolidated crystalline rocks that are at or near the surface in the Piedmont Province.

A review of the Trenton East and Trenton West, New Jersey USGS 7.5-minute series topographic quadrangle maps and Facility engineering plans, ground surface across the Site ranges from 11.5 to 20 feet AMSL. On the western side of the Site', the existing ground surface slopes gradually downward having elevations of less than 11.5 feet AMSL.

## 2.4 Geologic and Hydrogeologic Setting

According to the Soil Survey of Bucks and Philadelphia Counties, Pennsylvania: U.S. Department of Agriculture, Map 73 (Thompkins, Edward A., July 1975), the Facility is covered by Urban Land, 0 to 8 percent slopes. The Urban Land-Howell Complex is the second most predominant soil type at the Facility. Urban land is soil that has been modified by disturbance of the natural layers with addition of fill material to accommodate large industrial and housing installations. The existing surface of the Site is composed predominantly of fill (slag, brick, ash, silt, and gravel).

Based on data obtained from the Site borings and test pits advanced, the Site overburden is comprised of fill material overlying fine to coarse sand/gravel, silts, and clays. In general, the fill varied in thickness from 4.5 to 15 ft. Fill material generally included fines with some slag. Native soil encountered beneath the fill material appear to be indicative of the Trenton Gravel Series, generally consisting of fine to coarse gravel, sand, with some silt and minor amounts of clay. The upper-most water bearing unit occurs in the unconsolidated native material and is unconfined. The depth to water in the soil borings was encountered at depths ranging from 5 to 13.5 ft bgs.

Bedrock was not encountered in any of the borings during the Site characterization; however, the 1997 RCRA Facility Investigation Report noted that the Site is underlain by the Wissahickon Schist and bedrock generally is located at depths ranging from approximately 80 to 100 ft bgs.

# 3. Site Characterization

The following presents a summary of the methodology and procedures followed during the Site characterization. All investigation activities were performed in accordance with standard industry practice and guidelines described in the Land Recycling Program Technical Guidance manual (June 8, 2002) and following proper health and safety protocols required by Occupational Safety and Health Administration (OSHA) Regulations 1910.120.

Prior to the start of the investigation, utilities were cleared through the Pennsylvania One Call system and USS personnel.

To evaluate historical soil concentrations (September 1998), additional soil and surface water sampling was conducted in June 2014. The soil borings were advanced in the subsurface using direct-push technology (i.e., Geoprobe®). The soil boring locations are presented on Figure 3.1. The soil borings were advanced to a depth equivalent to the top of the upper-most water bearing unit. Soil samples were collected continuously in 4-ft long macrocores for each boring location. Soil was classified in general accordance with the Unified Soil Classification System (USCS). The macrocores were opened and then screened using a RAE Systems MiniRae 2000 Photoionization Detector (PID) for possible presence of VOCs. The PID was calibrated daily prior to use.

Twenty-eight soil samples from 14 boreholes (14 surficial [0-2 ft bgs] and 14 sub-surface soil samples [greater than 2 ft bgs]) and 3 surface water samples were collected between June 24, 2014 and June 26, 2014 from the 32-acre area.

Samples were submitted to TestAmerica for chemical analysis. Quality control samples were collected during sampling (field blank, field duplicate, and trip blank samples). All samples were collected in containers provided by the laboratory and placed in coolers on ice, then transported to the laboratory following standard chain of custody procedures. Soil and surface water samples were analyzed for TAL VOCs, TAL SVOCs, PP metals, and PCBs.

Following sample collection and screening, the soil borings were backfilled. Soil sample locations were surveyed in advance of the sampling events. Appendix A presents the stratigraphic logs for the soil borings along with the results of the PID screening.

All samples were collected and transported following standard chain-of-custody procedures.

# 4. Data Evaluation

## 4.1 Soil Sample Results

All analytical results were below the Medium-Specific Concentrations (MSC) for surficial samples (0 to 2 ft bgs) (Table 4.1) and subsurface samples (2 to 15 ft bgs) for non-residential direct-contact values (Table 4.2). In addition all soil samples were below the MSCs for the soil to groundwater numerical values (Table 4.3) for non-residential, non-use aquifers. Tables 4.1 to 4.4 present the analytical results for soil and sediment samples collected from the historical locations and the recent soil boring.

All soil samples were also below the USEPA-PA Defaults Nonresidential Volatilization to Indoor Air numerical values (Table 4.4).

Appendix B presents the data validation conducted on the June 2014 soil sample's analytical reports.

## 4.2 Surface Water Sample Results

All analytical results were below the Chapter 93.8c, Table 5, Water Quality Criteria for Toxic Substances (Fish and Aquatic Life Criteria and Human Health criteria). Table 4.5 presents the analytical results for surface water samples collected during the June 2014 investigation.

# 5. Site Conceptual Model

The Facility is located on a broad alluvial plain of the Delaware River. The Facility elevation is approximately 10 to 20 ft AMSL. The alluvial plain lies on the inside bend of a major change in the river channel direction from southeast to southwest.

The Site encompasses approximately 32 acres. Based on data obtained from Site borings and test pits advanced, the Facility overburden is comprised of fill material overlying fine to coarse sand/gravel, silts and clays. In general, the fill varied in thickness from 4.5 to 15 ft. Fill material generally included fines and some slag. Native soil encountered beneath the fill material appear to

be indicative of the Trenton Gravel Series, generally consisting of fine to coarse gravel, sand, with some silt and minor amounts of clay. The upper-most water bearing unit occurs in the unconsolidated native material and is unconfined. The depth to water in the soil borings was encountered at depths ranging from 5 to 13.5 ft bgs.

The Site is part of an industrial park and only non-residential uses of the Property are permitted for the future. There are currently no buildings on the Site. A non-use aquifer determination was approved by PADEP in April 1999, and eliminates the groundwater exposure pathway. Also, in an April 11, 2011 letter, PADEP provided a release of environmental liability for COCs in Facility-wide groundwater. Currently, there are no uses of groundwater for potable or non-potable purposes between the up gradient boundary of the Facility and the Delaware River. Furthermore, the use of Facility groundwater is restricted through the implementation of an Environmental Covenant and all present and future use of groundwater from any source on the Property shall be prohibited, except for purposes of monitoring groundwater quality, as necessary. Furthermore, by Environmental Covenant, the uses of the Property will be restricted to non-residential purposes and there is no completed pathway to on-Site groundwater due to existing restrictions.

# 6. Exposure Pathway and Receptor Evaluation

The Site is currently zoned for non-residential use and will be restricted through use of an Environmental Covenant. The immediate and planned future use is industrial (materials processing and manufacturing). The direct-contact MSCs used were the non-residential criteria. The soil to groundwater pathway MSCs used was based on the non-use aquifer criteria, because the Site has obtained a non-use aquifer designation from PADEP.

## 6.1 Soil

The soil concentrations at the Site reported concentrations of COCs below the applicable MSCs for direct-contact in a non-residential use scenario (for both surface and subsurface soil). Therefore, there is no exposure pathway or receptors to COCs in soil.

The soil concentrations at the Site reported concentrations of COCs below the applicable MSCs soil-to-groundwater criteria for non-use aquifers. Therefore, there is no exposure pathway from soil-to-groundwater, and there is a non-use aquifer determination for the Property and Facility.

## 6.2 Ecological Evaluation

The surface soil (top 2 feet) samples at the Site reported concentrations of chemicals that were, with the exception of a one slight exceedance of arsenic, below Act 2 Ecological Evaluation Criteria. At the same time, some VOCs, SVOCs, PCBs, and metals were detected in the surface soil, some of which are potentially due to Site-releases. Following Act 2 guidance, many of the organics, primarily PAHs and PCBs, and several metals (chromium, copper, and nickel) were identified as constituents of potential ecological concern (CPECs) on the Site, even though none was detected above the Act 2 screening levels[1]. Since CPECs are present in surface soils, the Site could not be

[1] According to guidance, CPECs are those chemicals that are both elevated by site releases and also found in Act 2 generic list of potential CPECs. The first criterion was assessed by comparing surface soil concentration to background values. Background values for all organics, including PAHs and PCBs, were assumed to be zero, so these were identified as CPECs. However, only the three metals

eliminated from further ecological evaluations under 250.311 (b). A more detailed evaluation of potential ecological effects was undertaken.

CRA ecologists Daniel W. Smith and Scott E. Bush conducted a site visit on September 25, 2014 to examine and evaluate existing site habitats and existing site conditions. Based on this visit and available sampling data, an Ecological Health Assessment (EHA) was completed following Act 2 guidance. This EHA is described in more detail in Appendix F, but the following describes the on-Site habitat and the conclusions of the EHA.

### *Existing Site Ecological Features*

The Site is approximately 32 acres and is relatively flat. The majority of Site topography ranges in elevation from approximately 15 feet to 20 feet AMSL. Several topographic depressions occur in the western portion of the Site, and these are associated with a small elongated pond and adjacent wetlands. The uplands on the Site (totaling approximately 27.5 acres) are previously disturbed industrial areas of varying levels of plant-community succession on variable fill soil. The majority of the surface material is steel slag of varying texture, with very little to no true soil. These slag covered areas are vegetated with a sparse, depauperate plant community, which is dominated by weedy species that are often typical of disturbed industrial areas and tolerant of these poor growing conditions. These species include eastern cottonwood (*Populus deltoides*), box elder (*Acer negundo*), black locust (*Robinia pseudoacacia*), staghorn sumac (*Rhus typhina*), mugwort (*Artemisia vulgaris*), spotted knapweed (*Centaurea maculosa*), and yellow sweet clover (*Melilotus officinalis*). In turn, the sparse, weedy vegetation is poor habitat for terrestrial animal species.

CRA ecologists observed no evidence that Site-related compounds are causing toxicity to sparse flora or fauna that occur over most of the Site. Therefore, the sparse vegetation and depauperate plant community are due to the poor growing conditions of the surface material, mostly slag with little to no soil, not stresses associated with chemicals related to Site releases.

Four wetland areas occur on the Site and are identified as Areas A, B, C, and D on the Site Plan in Appendix C. Each wetland/open water is discussed below.

Area A is a 4.29 acre palustrine unconsolidated bottom (PUB) openwater with palustrine emergent (PEM1) littoral fringes located along the western Site boundary. The openwater portions of Area A range from approximately one foot deep to a maximum of approximately 4 feet deep. The emergent littoral fringes are dominated by black willow (*Salix nigra*) saplings, poison ivy (*Toxicodendron radicans*), common reed (*Phragmites australis*), and marsh rosemallow (*Hibiscus moscheutos*). The soil/sediment from 0 to 12 inches was observed to be black (10YR 2/1) muck. Area A drains north through a 72-inch diameter reinforced concrete pipe to a ditch that flows north along Steel Road South. Area A provides some habitat for aquatic and semi aquatic species; fish were noted.

Area B is a 0.04 acre palustrine forested (PFO) wetland located in an isolated sparsely vegetated topographic depression west of Area A. Area B is dominated by spice bush (*Lindera benzoin*). The soil was observed to be dark gray (10YR 4/1) with brown (7.5YR 4/6) concentrations. Blackened leaves were present and the soil was saturated at a depth of 12 inches.

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identified above were found to be elevated above background, and identified as CPECs. See Appendix F for more detailed discussion.

Area C is a small area of open water within a drainage ditch along Steel Road South that totals 0.018 acre. The ditch flows through a variety of industrial sites, between two railroad spurs, and ultimately drains to Biles Creek northeast of the Site.

Area D is a 0.41 acre palustrine emergent (PEM) wetland located north of the Ashland Rail easement along the northern property boundary. Area D is has been historically disturbed by industrial activities and is flat and the soils are compacted. Area D is dominated by common reed. The soil from 0 to 14 inches was observed to be dark grayish brown (10YR 4/2) with brown (7.5YR 5/4) concentrations. The soil was saturated at or near the ground surface at the time of the field investigation.

None of the wetlands on the Site exhibited stress related to the presence of toxic compounds at the Site. While invasive species (common reed) are commonly present in the wetlands on the Site, these species are also prevalent in other wetlands, unaffected by toxic chemicals, throughout Falls Township.

As part of the ecological screening process, an assessment of the Site was conducted to determine if any of the sensitive receptors listed at PA Chapter 250.311 (a) were present on the Site. A Pennsylvania Natural Diversity Inventory (PNDI) database search (Appendix D) indicates no potential conflicts with any Federally-listed threatened or endangered species as designated by the United States Fish and Wildlife Service (USFWS) under the Endangered Species Act (16 U.S.C.A. § § 1531-5544).

The PNDI lists five potential conflicts with State-listed reptile and amphibian species under the jurisdiction of the Pennsylvania Fish and Boat Commission (PFBC) including the eastern redbelly turtle (*Pseudemys rubriventris*) and several frog and toad species. All of these species are water/wetland dependent. A herpetological habitat assessment and turtle nesting survey was completed for the species of concern by Aqua-Terra Environmental LTD and the results submitted to PFBC in a report dated October 31, 2013. In a correspondence dated January 7, 2014, PFBC concluded that the core potential habitat will not be disturbed by the proposed project, and as long as the project scope does not change and best management practices are employed, no adverse impacts to the species are anticipated. Correspondence with the PFBC is provided in Appendix D. Please note that the railroad ties in one of the photographs in Appendix D, have since been removed.

Wetlands A and C on the Site could potentially support the eastern redbelly turtle, southern leopard frog, and northern cricket frog, all species of concern in Pennsylvania. However, PFBC has reviewed and approved the re-development of the Site and determined that the proposed buffers will be protective of these species and their habitats. Wetlands B and D do not provide habitats suitable for the species of concern.

The PNDI also lists one plant species of concern, wild ipecac (*Euphorbia ipecacuanhae*), under the jurisdiction of the Pennsylvania Department of Conservation and Natural Resources (PADCNR). This species is primarily associated with sandy or gravelly soil in undisturbed coastal plain habitats which are absent on the Site. PADCNR correspondence indicating no project impact is also provided in Appendix D.

### *Weight of Evidence Analysis of Potential Ecological Effects*

The EHA concluded that exposure pathways between ecological receptors and CPECs in surface material/soil are likely incomplete. Most all of the terrestrial habitat is poorly vegetated and covered in slag with little to no soil. Direct exposure pathways to ecological receptors are precluded because of the mostly impermeable nature of the surface material and the dearth of habitat. Indirect exposure pathways, via migration of soil-associated CPECs, to nearby habitats, are also likely incomplete. Overland flow from the slag area to the wetlands will be minimal given the flat topography and porous nature of the slag. The groundwater underlying the slag fill area flows away from the on-Site wetlands, precluding significant indirect exposure to biota in the wetlands and pond areas. This assessment of functionally incomplete exposure pathways is corroborated by samples of the surface water and sediment in the on-Site wetland/open water, which directly measure potential exposure to ecological receptors. These sample results demonstrate that soil-related CPEC concentrations in these habitats are below levels that would cause ecological effects. See discussion below and in Appendix F.

Exposure pathways between ecological receptors and CPECs in surface water and surface sediments are complete. However, no CPEC or other detected compound in surface water exceeded a water quality criterion or surrogate value. Equally important, detection limits for PCBs and PAHs were sufficiently low to determine that these CPECs were below ESVs. Thus, exposures to surface water receptors are ecologically insignificant. Similarly, no CPEC or other compound detected in sediments of Wetlands A and C significantly exceeded reliable ESVs. In addition, this screening of sediment concentrations did not consider Site-specific factors that would further reduce potential toxicity. Notably, the Site sediments are likely rich in organic carbon and low in dissolved oxygen, conditions which render chemicals less bioavailable and less toxic (USEPA 2003, 2005, 2008). The weight of evidence, therefore, indicates no significant potential for impacts to ecological receptors in Wetlands A and C. Wetlands B and D do not provide habitats suitable for species of concern, are not exceptional value wetlands, and do not support Federally-listed, threatened or endangered species. Consequently, no further assessment of ecological risks is recommended.

## 6.3 Vapor Intrusion Evaluation

The soil concentrations at the Site reported concentrations of COCs below the applicable USEPA-PA Defaults Nonresidential Volatilization to Indoor Air numerical values. Therefore, there is no exposure pathway or receptors to COCs as a result of indoor air.

# 7. Selection of Remediation Standards

The requirement to implement remedial investigation activities is outlined in Chapter 250, and provides specific procedures to demonstrate attainment of a SHS, SSS, or Background Standard. Obtaining an environmental release from liability will require that the Site be remediated to a selected cleanup standard using one, or a combination, of three available standards: SHS, SSS, or Background Standard.

The standards as defined in Chapter 250 of The Land Recycling and Environmental Remediation Standards Act are as follows:

- Statewide Health Standard
- Site-Specific Standard
- Background Standard
- A combination of standards

**Statewide Health Standard (SHS)** - A standard adopted by the Environmental Quality Board which achieves a uniform Statewide health-based level so that any substantial present or probable future risk to human health and the environment is eliminated.

**Site-Specific Standard (SSS)** - A standard developed that meets the human health and environmental protection goals. The development of the SSS shall be based on a property-specific risk assessment (if required), or through pathway elimination.

**Background Standard** - The background standard shall be established using analysis of samples of regulated substances present at the property but not related to any release at the property.

**Combination of Standards** - A person may use a combination of the remediation standards to implement a property remediation plan and may propose to use the SSS standard whether or not efforts have been made to attain the background or SHS.

# 8. Demonstration of Attainment

USS has demonstrated attainment of a SHS for on-Property surficial and subsurface soil. This standard was demonstrated for attainment purposes based upon the following conditions:

- The Site has been utilized for industrial purposes since 1952, and there are no foreseeable changes for the use of the Property
- The random surficial and subsurface soil sampling program has demonstrated attainment of the SHS for soil
- An Environmental Covenant will be executed for the Property restricting residential use
- No current or future pathways to surficial or subsurface soil with unacceptable risk have been identified
- Therefore, USS is requesting a release from environmental liability for COCs in soil

The Site is industrial in nature. Under current and future Site uses, complete exposure pathways between surface material/soils to ecological receptors are functionally incomplete and also ecologically insignificant. Although exposure pathways are complete in surface water, concentrations of Site-related chemicals in surface water are below levels that could cause toxicity. Similarly, exposure pathways between potentially Site-related metals in sediments and ecological receptors are complete. Also as with surface water, concentrations of CPECs and other compounds in sediments were judged to be below levels that pose unacceptable ecological risk, especially when Site-specific constraints on bioavailability are considered. Therefore, additional ecological evaluation of this Site is not warranted.

# 9. Post-Remediation Care Plan

In accordance with the Uniform Environmental Covenants Act (UECA), an Environmental Covenant has been drafted for the Property. Upon approval, the Environmental Covenant will be executed and recorded for the Property.

With execution of the Environmental Covenant, the Property is subject to the activity and use limitations, which the Owner/Holder and each subsequent owner of the Property shall abide by to ensure future use of the Property is limited to Non-residential use.

USS or the owner will be responsible for making any necessary provisions to ensure the safety of worker, and prevent further impacts to the environment.

Upon approval of this Final Report, the Environmental Covenant will be executed and recorded. No further post-remediation care beyond the aforementioned will be implemented.

# 10. Conclusions

The Site evaluated in this report is part of the larger industrial KIPC Facility and the Site included operations that supported the historical industrial facility. An environmental covenant will be executed and recorded for the Property to ensure that the use of the Site remains non-residential. A Non-Use Aquifer determination approved in April 1999 ensures that the soil to groundwater pathway is eliminated, and that groundwater under the Property is not used. Based on current Site conditions, the results for the Site characterization and previous assessments, evaluation of potential receptors and exposure pathways, USS has demonstrated attainment with the SHS for Site COCs for soil in accordance with the requirements in the Pennsylvania Code, Title 25, Chapter 250 (Act 2). Therefore, USS requests a release of environmental liability for the Site soil COCs in attainment with the SHS. No further post-remediation care plan beyond the execution of the Environmental Covenant, and as addressed in Section 9.0, is currently proposed based on the Site conditions and use of the Property.

# 11. References


- BCM, 1994. Description of Current Conditions, U.S. Steel Fairless Works.
- BCM, 1997. Phase I RCRA Facility Investigation Final Report.
- Greenman et al., 1961.
- PADEP, 2002. Final Draft of the Land Recycling Program Technical Guidance Manual.
- Thompkins, 1975. Soil Survey of Bucks and Philadelphia Counties, Pennsylvania: U.S. Department of Agriculture.
- USEPA, 2003. Procedures for the derivation of equilibrium partitioning sediment benchmarks (ESBs) for the protection of benthic organisms: PAH Mixtures. EPA-600-R-02-013.
- USEPA, 2005. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: Metal Mixtures (Cadmium, Copper, Lead, Nickel, Silver and Zinc). EPA/600/R-02/011.

- USEPA, 2008. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: Compendium of Tier 2 Values for Nonionic Organics. EPA 600 R 02 016. Office of Research and Development, Washington, DC 20460.

# 12. Act 2 Administrative Requirements

## 12.1 Notice of Intent to Remediate and Notice of Report

The Notice of Intent to Remediate (NIR) and Notice of Final Report was submitted to the PADEP on August 4, 2015. A copy of the NIR and the Final Report notice for the Site is presented in Appendix E together with a copy of the municipal notification letter to the Falls Township concerning submission of the NIR and this Final Report to PADEP. A notice was published in the Bucks County Courier Times regarding submission of the NIR and the Final Report to PADEP. Proof of publication and receipt of the municipal notification letter by the Falls Township is presented in Appendix E.

## 12.2 Transmittal Sheet for Plan/Report Submission

The Transmittal Sheet for Plan/Report Submission is attached to the front of this report with a check for $250.

## 12.3 Final Report Summary

The Final Report Summary is presented in Appendix E.

# 13. Signatures

GHD has prepared this report on behalf of USS to justify a request for an Act 2 Release of Liability under the SHSs for soils at the 32-Acre Parcel at the KIPC Facility in Fairless Hills, Bucks County, Pennsylvania.

An Environmental Release of Liability in accordance with Chapter 250 is hereby requested on behalf of USS by:

8/31/15
Date

Michael H. Leon
Authorized Representative for Owner

Michael H. Leon

Name (print or type)

Senior Environmental Engineer

Title (print or type)

Sept 8, 2015
Date

Consultant

Ian K. Richardson

Name (print or type)

Project Manager

Title (print or type)

9/8/15
Date

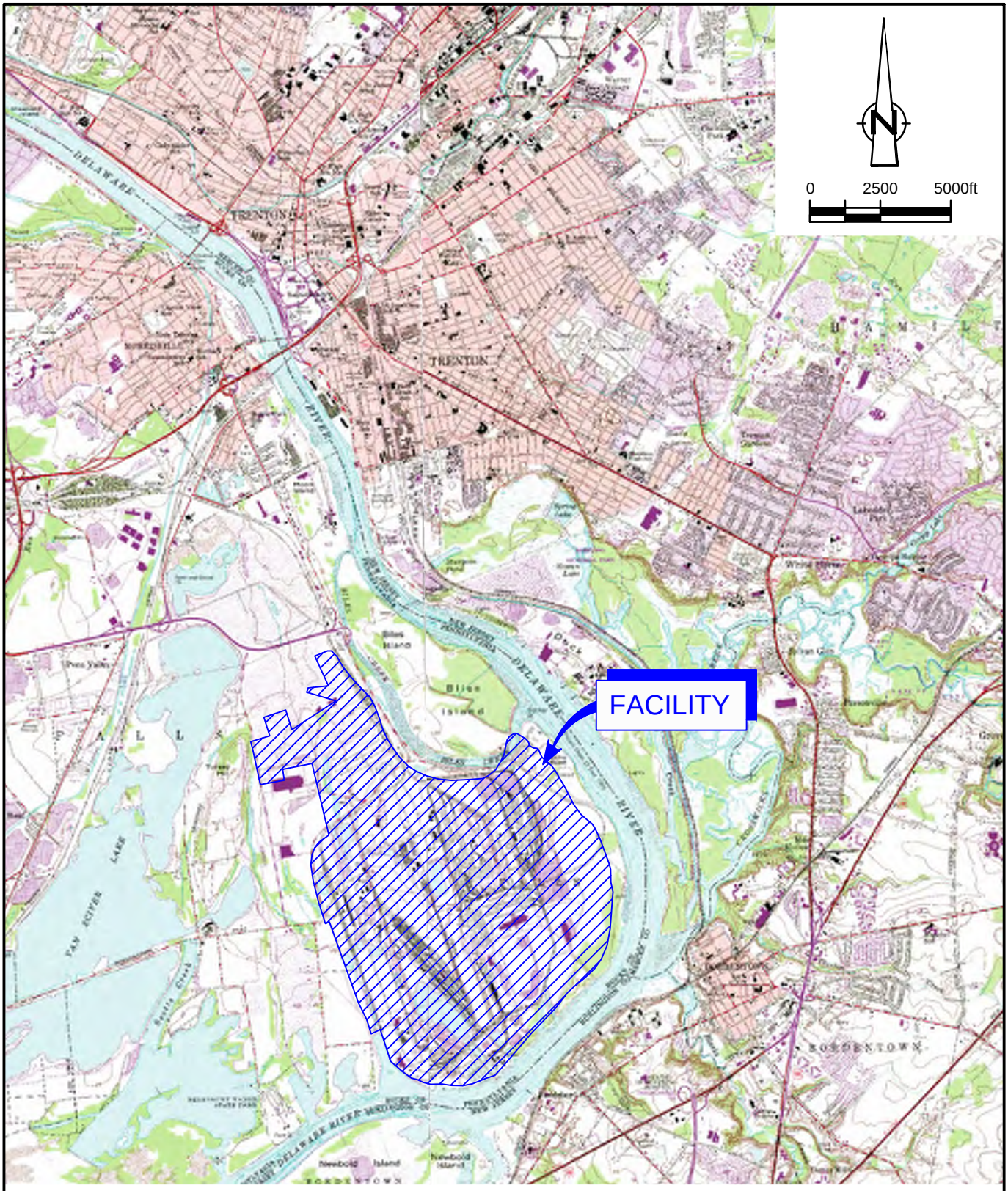
By affixing my seal to this document, I am certifying that the information is true and correct. I further certify that I am licensed to practice in the Commonwealth of Pennsylvania and that it is within my professional expertise to verify the correctness of the information.

John A. Garges

Name (print or type)

Project Geologist

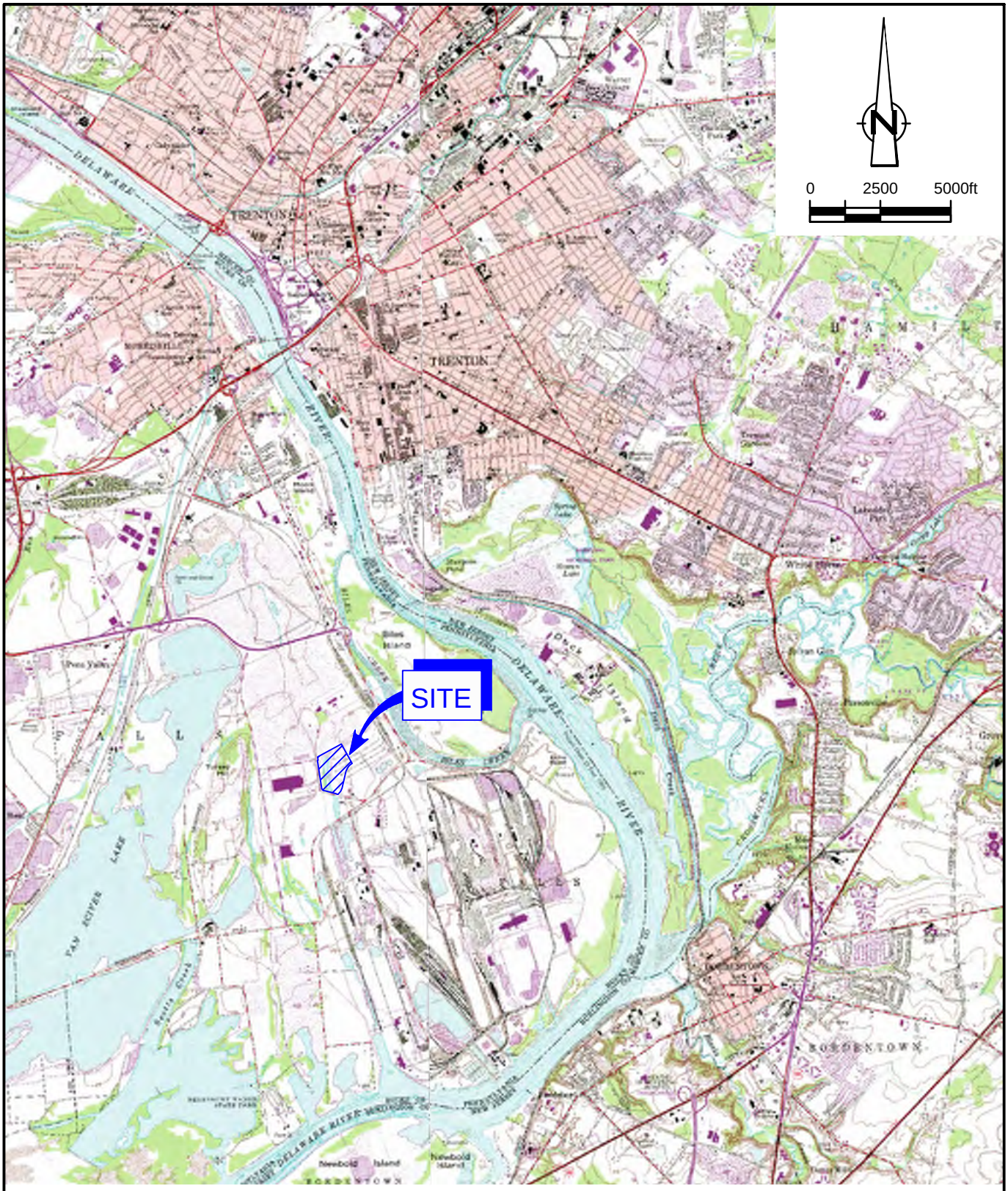
Title (print or type)




SOURCE: USGS QUAD MAP; TRENTON EAST, NJ-PA AND TRENTON WEST, NJ-PA
PHOTOREVISED 1981.

figure 1.1

FACILITY LOCATION
KEYSTONE INDUSTRIAL PORT COMPLEX
US STEEL
*Fairless Hills, PA*




SOURCE: USGS QUAD MAP; TRENTON EAST, NJ-PA AND TRENTON WEST, NJ-PA
PHOTOREVISED 1981.

figure 1.2

SITE LOCATION - 32-ACRE PARCEL
KEYSTONE INDUSTRIAL PORT COMPLEX
US STEEL
*Fairless Hills, PA*

GHD

| Nº | Revision | Date | Initial |
|---|---|---|---|
| | | | |

PROJECT NORTH
TRUE NORTH

0 50 100ft

LEGEND

- 32-ACRE PARCEL
- BORROW PIT AREA
- HISTORIC SOIL SAMPLE LOCATION (1998)
- GROUNDWATER SAMPLE LOCATION
- SOIL BORING LOCATION (2014)
- SURFACE WATER SAMPLE (2014)
- HISTORIC SEDIMENT SAMPLE (1998)

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

| Status | Date | Initial |
|---|---|---|
| | | |

# INVESTIGATION LOCATIONS 32-ACRE PARCEL

KEYSTONE INDUSTRIAL PORT COMPLEX

US STEEL
FAIRLESS HILLS, PA

GHD

Source Reference:
SHOWALTER AND ASSOCIATES, FILE 90413 recd September 4, 2013 AND 7022REIS.PRO (dated March 30, 2012);
USS STEEL DRAWING, CSCTS.DWG; LANGAN, FIGURE 3 COMPLETED SAMPLE LOCATION PLAN, AUGUST 1, 2014.
AERIAL PHOTO DATED 2010 07 03 FROM NAIP.

| Project Manager: | Reviewed By: | Date: | |
|---|---|---|---|
| | | OCTOBER 2014 | |
| Scale: 1:100 | Project Nº: 83101-09 | Report Nº: 006 | Drawing Nº: figure 3.1 |

83101-09(006)GN-WA003 SEP 3, 2015

**Table 4.1**

**Screened Analytical Results**
**Surficial Soil Samples Vs Non-Residential Direct Contact Criteria (0-2)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-5** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_1.5-2-062514** | **ELC-SB-2_1.5-2-062514** | **ELC-SB-3_1.5-2-062514** | **ELC-SB-4_1.5-2_062614** | **DUP-002_062614** | **ELC-SB-5_1.5-2_062414** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** | **6/26/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** |
| | | **MSC Non-Residential Direct-Contact Criteria** | | | | | **(Duplicate)** | |
| **Parameters** | **Units** | **(0-2 feet bgs) (1)** | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 10000 | 0.00040 U | R | 0.00037 U | 0.00042 U | 0.00037 U | R |
| 1,1,2,2-Tetrachloroethane | mg/kg | 38 | 0.00059 U | R | 0.00055 U | 0.00062 U | 0.00054 U | R |
| 1,1,2-Trichloroethane | mg/kg | 140 | 0.00068 U | R | 0.00064 U | 0.00072 U | 0.00063 U | R |
| 1,1-Dichloroethane | mg/kg | 1400 | 0.00047 U | R | 0.00044 U | 0.00050 U | 0.00043 U | R |
| 1,1-Dichloroethene | mg/kg | 10000 | 0.00070 U | R | 0.00065 U | 0.00074 U | 0.00064 U | R |
| 1,2,4-Trichlorobenzene | mg/kg | 10000 | 0.00073 U | R | 0.00068 U | 0.00076 U | 0.00066 U | R |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 0.37 | 0.00062 U | R | 0.00057 U | 0.00065 U | 0.00056 U | R |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 3.7 | 0.00071 U | R | 0.00066 U | 0.00075 U | 0.00065 U | R |
| 1,2-Dichlorobenzene | mg/kg | 10000 | 0.00066 U | R | 0.00061 U | 0.00069 U | 0.00060 U | R |
| 1,2-Dichloroethane | mg/kg | 86 | 0.00050 U | R | 0.00047 U | 0.00053 U | 0.00046 U | R |
| 1,2-Dichloroethene (total) | mg/kg | | 0.0011 U | R | 0.00098 U | 0.0011 U | 0.00096 U | R |
| 1,2-Dichloropropane | mg/kg | 220 | 0.00045 U | R | 0.00042 U | 0.00047 U | 0.00041 U | R |
| 1,3-Dichlorobenzene | mg/kg | 8400 | 0.00054 U | R | 0.00050 U | 0.00057 U | 0.00049 U | R |
| 1,4-Dichlorobenzene | mg/kg | 200 | 0.00052 U | R | 0.00049 U | 0.00055 U | 0.00048 U | R |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 10000 | 0.00073 U | R | 0.00068 U | 0.00076 U | 0.00066 U | R |
| 2-Hexanone | mg/kg | 400 | 0.00057 U | R | 0.00053 U | 0.00060 U | 0.00052 U | R |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 10000 | 0.00054 U | R | 0.00050 U | 0.00057 U | 0.00049 U | R |
| Acetone | mg/kg | 10000 | 0.011 U | R | 0.0038 U | 0.0043 U | 0.0038 U | R |
| Benzene | mg/kg | 290 | 0.00056 U | R | 0.00052 U | 0.00059 U | 0.00051 U | R |
| Bromodichloromethane | mg/kg | 60 | 0.00046 U | R | 0.00043 U | 0.00049 U | 0.00042 U | R |
| Bromoform | mg/kg | 2000 | 0.00036 U | R | 0.00034 U | 0.00038 U | 0.00033 U | R |
| Bromomethane (Methyl bromide) | mg/kg | 400 | 0.00061 U | R | 0.00057 U | 0.00064 U | 0.00056 U | R |
| Carbon disulfide | mg/kg | 10000 | 0.00042 U | R | 0.0011 J | 0.00044 U | 0.00039 U | R |
| Carbon tetrachloride | mg/kg | 150 | 0.00037 U | R | 0.00034 U | 0.00039 U | 0.00034 U | R |
| Chlorobenzene | mg/kg | 4000 | 0.00062 U | R | 0.00058 U | 0.00066 U | 0.00057 U | R |
| Chloroethane | mg/kg | 10000 | 0.0013 U | R | 0.0012 U | 0.0013 U | 0.0012 U | R |
| Chloroform (Trichloromethane) | mg/kg | 97 | 0.00048 U | R | 0.00045 U | 0.00051 U | 0.00044 U | R |
| Chloromethane (Methyl chloride) | mg/kg | 1200 | 0.00070 U | R | 0.00065 U | 0.00074 U | 0.00064 U | R |
| cis-1,2-Dichloroethene | mg/kg | 10000 | 0.00058 U | R | 0.00054 U | 0.00061 U | 0.00053 U | R |
| cis-1,3-Dichloropropene | mg/kg | | 0.00056 U | R | 0.00052 U | 0.00059 U | 0.00051 U | R |
| Cyclohexane | mg/kg | 10000 | 0.00031 U | R | 0.00028 U | 0.00032 U | 0.00028 U | R |
| Dibromochloromethane | mg/kg | 82 | 0.00058 U | R | 0.00054 U | 0.00062 U | 0.00053 U | R |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 10000 | 0.00055 U | R | 0.00051 U | 0.00058 U | 0.00050 U | R |
| Ethylbenzene | mg/kg | 10000 | 0.00053 U | R | 0.00049 U | 0.00056 U | 0.00048 U | R |
| Isopropyl benzene | mg/kg | 10000 | 0.00056 U | R | 0.00052 U | 0.00059 U | 0.00051 U | R |

**Table 4.1**

**Screened Analytical Results**
**Surficial Soil Samples Vs Non-Residential Direct Contact Criteria (0-2)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-5** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_1.5-2-062514** | **ELC-SB-2_1.5-2-062514** | **ELC-SB-3_1.5-2-062514** | **ELC-SB-4_1.5-2_062614** | **DUP-002_062614** | **ELC-SB-5_1.5-2_062414** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** | **6/26/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (0-2 feet bgs) (1)** | | | | | **(Duplicate)** | |
| m&p-Xylenes | mg/kg | | 0.0012 U | R | 0.0011 U | 0.0013 U | 0.0011 U | R |
| Methyl acetate | mg/kg | 10000 | 0.00074 U | R | 0.00069 U | 0.00078 U | 0.00068 U | R |
| Methyl cyclohexane | mg/kg | | 0.00060 U | R | 0.00056 U | 0.00063 U | 0.00055 U | R |
| Methyl tert butyl ether (MTBE) | mg/kg | 3200 | 0.00062 U | R | 0.00057 U | 0.00065 U | 0.00056 U | R |
| Methylene chloride | mg/kg | 4700 | 0.0041 J | 0.0032 J | 0.0037 J | 0.0032 U | 0.0030 U | 0.0020 J |
| o-Xylene | mg/kg | | 0.00064 U | R | 0.00060 U | 0.00068 U | 0.00059 U | R |
| Styrene | mg/kg | 10000 | 0.00058 U | R | 0.00054 U | 0.00061 U | 0.00053 U | R |
| Tetrachloroethene | mg/kg | 1500 | 0.00056 U | R | 0.00052 U | 0.00059 U | 0.00051 U | R |
| Toluene | mg/kg | 10000 | 0.00060 U | R | 0.00056 U | 0.00063 U | 0.00055 U | R |
| trans-1,2-Dichloroethene | mg/kg | 4800 | 0.00049 U | R | 0.00046 U | 0.00052 U | 0.00045 U | R |
| trans-1,3-Dichloropropene | mg/kg | | 0.00049 U | R | 0.00046 U | 0.00052 U | 0.00045 U | R |
| Trichloroethene | mg/kg | 1300 | 0.00054 U | R | 0.00050 U | 0.00057 U | 0.00050 U | R |
| Trichlorofluoromethane (CFC-11) | mg/kg | 10000 | 0.00076 U | R | 0.00070 U | 0.00080 U | 0.00069 U | R |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 10000 | 0.00088 U | R | 0.00082 U | 0.00093 U | 0.00080 U | R |
| Vinyl chloride | mg/kg | 110 | 0.00039 U | R | 0.00036 U | 0.00041 U | 0.00035 U | R |
| Xylenes (total) | mg/kg | 8000 | 0.0018 U | R | 0.0017 U | 0.0019 U | 0.0017 U | R |
| **Semi-volatile Organic Compounds** | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 220 | 0.0038 U | R | 0.0036 U | 0.00081 U | 0.00079 U | R |
| 2,4,5-Trichlorophenol | mg/kg | 190000 | 0.019 U | R | 0.018 U | 0.0040 U | 0.0039 U | R |
| 2,4,6-Trichlorophenol | mg/kg | 2800 | 0.027 U | R | 0.025 U | 0.0056 U | 0.0055 U | R |
| 2,4-Dichlorophenol | mg/kg | 8400 | 0.0036 U | R | 0.0034 U | 0.00076 U | 0.00074 U | R |
| 2,4-Dimethylphenol | mg/kg | 10000 | 0.028 U | R | 0.026 U | 0.0059 U | 0.0057 U | R |
| 2,4-Dinitrophenol | mg/kg | 5600 | R | R | 0.20 U | 0.045 U | 0.044 U | R |
| 2,4-Dinitrotoluene | mg/kg | 260 | 0.014 U | R | 0.014 U | 0.0030 U | 0.0030 U | R |
| 2,6-Dinitrotoluene | mg/kg | 2800 | 0.018 U | R | 0.017 U | 0.0039 U | 0.0038 U | R |
| 2-Chloronaphthalene | mg/kg | 190000 | 0.0037 U | R | 0.0035 U | 0.00079 U | 0.00077 U | R |
| 2-Chlorophenol | mg/kg | 10000 | 0.015 U | R | 0.014 U | 0.0031 U | 0.0030 U | R |
| 2-Methylnaphthalene | mg/kg | 11000 | 0.056 | 0.0014 J | 0.0047 J | 0.0013 J | 0.0017 J | R |
| 2-Methylphenol | mg/kg | 140000 | 0.012 U | R | 0.012 U | 0.0026 U | 0.0026 U | R |
| 2-Nitroaniline | mg/kg | 8400 | 0.079 U | R | 0.075 U | 0.017 U | 0.016 U | R |
| 2-Nitrophenol | mg/kg | 22000 | 0.020 U | R | 0.019 U | 0.0042 U | 0.0041 U | R |
| 3,3'-Dichlorobenzidine | mg/kg | 180 | 0.019 UJ | R | 0.018 U | 0.0040 U | 0.0039 U | R |
| 3-Nitroaniline | mg/kg | 840 | 0.073 U | R | 0.069 U | 0.016 U | 0.015 U | R |
| 4,6-Dinitro-2-methylphenol | mg/kg | 280 | 0.071 UJ | R | 0.068 U | 0.015 U | 0.015 U | R |
| 4-Bromophenyl phenyl ether | mg/kg | | 0.015 U | R | 0.015 U | 0.0033 U | 0.0032 U | R |
| 4-Chloro-3-methylphenol | mg/kg | 14000 | 0.016 U | R | 0.016 U | 0.0035 U | 0.0034 U | R |

**Table 4.1**

**Screened Analytical Results**
**Surficial Soil Samples Vs Non-Residential Direct Contact Criteria (0-2)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-5** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_1.5-2-062514** | **ELC-SB-2_1.5-2-062514** | **ELC-SB-3_1.5-2-062514** | **ELC-SB-4_1.5-2_062614** | **DUP-002_062614** | **ELC-SB-5_1.5-2_062414** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** | **6/26/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** |
| | | **MSC Non-Residential Direct-Contact Criteria** | | | | | **(Duplicate)** | |
| **Parameters** | **Units** | **(0-2 feet bgs) (1)** | | | | | | |
| 4-Chloroaniline | mg/kg | 400 | 0.014 U | R | 0.013 U | 0.0030 U | 0.0029 U | R |
| 4-Chlorophenyl phenyl ether | mg/kg | | 0.020 U | R | 0.019 U | 0.0042 U | 0.0041 U | R |
| 4-Methylphenol | mg/kg | 14000 | 0.017 U | R | 0.016 U | 0.0037 U | 0.0036 U | R |
| 4-Nitroaniline | mg/kg | 4000 | 0.072 U | R | 0.068 U | 0.015 U | 0.015 U | R |
| 4-Nitrophenol | mg/kg | 22000 | 0.065 U | R | 0.061 U | 0.014 U | 0.013 U | R |
| Acenaphthene | mg/kg | 170000 | 0.17 | 0.00076 J | 0.015 J | 0.00072 U | 0.00071 U | R |
| Acenaphthylene | mg/kg | 170000 | 0.026 J | 0.0069 J | 0.12 | 0.0033 J | 0.0024 J | R |
| Acetophenone | mg/kg | 10000 | 0.015 U | R | 0.014 U | 0.012 J | 0.0096 J | R |
| Anthracene | mg/kg | 190000 | 0.10 | 0.0088 J | 0.15 | 0.0024 J | 0.0020 J | R |
| Atrazine | mg/kg | 340 | 0.017 U | R | 0.016 U | 0.0037 U | 0.0036 U | R |
| Benzaldehyde | mg/kg | | R | R | R | R | R | R |
| Benzo(a)anthracene | mg/kg | 110 | 0.49 | 0.028 J | 0.44 | 0.012 | 0.011 | R |
| Benzo(a)pyrene | mg/kg | 11 | 1.0 | 0.037 J | 0.48 | 0.016 | 0.015 | 0.0022 J |
| Benzo(b)fluoranthene | mg/kg | 110 | 1.1 J | 0.070 J | 0.91 | 0.021 | 0.021 | 0.0034 J |
| Benzo(g,h,i)perylene | mg/kg | 170000 | 0.92 | 0.039 J | 0.35 | 0.012 | 0.010 | R |
| Benzo(k)fluoranthene | mg/kg | 1100 | 0.32 | 0.026 J | 0.35 | 0.0081 | 0.0067 J | R |
| Biphenyl (1,1-Biphenyl) | mg/kg | 140000 | 0.018 J | R | 0.015 U | 0.0034 U | 0.0033 U | R |
| bis(2-Chloroethoxy)methane | mg/kg | 8400 | 0.012 U | R | 0.011 U | 0.0025 U | 0.0024 U | R |
| bis(2-Chloroethyl)ether | mg/kg | 6.7 | 0.0048 U | R | 0.0045 U | 0.0010 U | 0.00099 U | R |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | 5700 | 0.029 U | R | 0.027 U | 0.0087 J | 0.0059 U | 0.024 J |
| Butyl benzylphthalate (BBP) | mg/kg | 10000 | 0.031 J | R | 0.023 U | 0.0085 J | 0.0058 J | 0.0088 J |
| Caprolactam | mg/kg | | 0.13 U | R | 0.13 U | 0.028 U | 0.028 U | R |
| Carbazole | mg/kg | 4000 | 0.036 | 0.0016 J | 0.017 J | 0.0011 J | 0.00068 U | R |
| Chrysene | mg/kg | 11000 | 0.52 | 0.045 J | 0.63 | 0.018 | 0.016 | R |
| Dibenz(a,h)anthracene | mg/kg | 11 | 0.20 | 0.0098 J | 0.088 | 0.0027 J | 0.00082 U | R |
| Dibenzofuran | mg/kg | 2800 | 0.055 J | R | 0.017 U | 0.0037 U | 0.0036 U | R |
| Diethyl phthalate | mg/kg | 10000 | 0.019 U | R | 0.018 U | 0.0041 U | 0.0040 U | R |
| Dimethyl phthalate | mg/kg | | 0.019 U | R | 0.018 U | 0.0041 U | 0.0040 U | R |
| Di-n-butylphthalate (DBP) | mg/kg | 10000 | 0.022 U | R | 0.021 U | 0.0047 U | 0.0046 U | 0.0054 J |
| Di-n-octyl phthalate (DnOP) | mg/kg | 10000 | 0.019 U | R | 0.018 U | 0.0040 U | 0.0039 U | R |
| Fluoranthene | mg/kg | 110000 | 0.56 | 0.029 J | 0.54 | 0.023 | 0.021 | 0.0038 J |
| Fluorene | mg/kg | 110000 | 0.040 | R | 0.012 J | 0.00099 U | 0.00097 U | R |
| Hexachlorobenzene | mg/kg | 50 | 0.0038 U | R | 0.0036 U | 0.00080 U | 0.00078 U | 0.095 J |
| Hexachlorobutadiene | mg/kg | 1000 | 0.0040 U | R | 0.0038 U | 0.00084 U | 0.00082 U | R |
| Hexachlorocyclopentadiene | mg/kg | 10000 | 0.019 U | R | 0.018 U | 0.0041 U | 0.0040 U | R |
| Hexachloroethane | mg/kg | 550 | 0.013 U | R | 0.012 U | 0.0027 U | 0.0026 U | R |

**Table 4.1**

**Screened Analytical Results**
**Surficial Soil Samples Vs Non-Residential Direct Contact Criteria (0-2)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-5** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_1.5-2-062514** | **ELC-SB-2_1.5-2-062514** | **ELC-SB-3_1.5-2-062514** | **ELC-SB-4_1.5-2_062614** | **DUP-002_062614** | **ELC-SB-5_1.5-2_062414** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** | **6/26/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (0-2 feet bgs) (1)** | | | | | **(Duplicate)** | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 110 | 0.76 | 0.032 J | 0.33 | 0.0090 | 0.0089 | R |
| Isophorone | mg/kg | 10000 | 0.013 U | R | 0.013 U | 0.0028 U | 0.0028 U | R |
| Naphthalene | mg/kg | 56000 | 0.080 | 0.0028 J | 0.0069 J | 0.00065 U | 0.00063 U | R |
| Nitrobenzene | mg/kg | 5600 | 0.015 U | R | 0.014 U | 0.0031 U | 0.0031 U | R |
| N-Nitrosodi-n-propylamine | mg/kg | 11 | 0.0042 U | R | 0.0040 U | 0.00088 U | 0.00086 U | R |
| N-Nitrosodiphenylamine | mg/kg | 16000 | 0.016 U | R | 0.016 U | 0.0035 U | 0.0034 U | R |
| Pentachlorophenol | mg/kg | 660 | R | R | 0.015 U | 0.0034 U | 0.0033 U | R |
| Phenanthrene | mg/kg | 190000 | 0.28 | 0.011 J | 0.064 | 0.014 | 0.011 | 0.0031 J |
| Phenol | mg/kg | 190000 | 0.0042 U | R | 0.0040 U | 0.00089 U | 0.00087 U | R |
| Pyrene | mg/kg | 84000 | 0.59 | 0.032 J | 0.68 | 0.030 | 0.027 | 0.0024 J |
| **Metals** | | | | | | | | |
| Antimony | mg/kg | 1100 | 0.36 J | 0.023 UJ | 0.025 UJ | 0.20 | 0.17 J | 0.29 J |
| Arsenic | mg/kg | 53 | 4.7 | 2.5 | 3.0 | 11 | 8.3 | 2.5 |
| Beryllium | mg/kg | 5600 | 0.30 J | 0.56 J | 2.2 | 0.54 | 0.54 | 2.5 |
| Cadmium | mg/kg | 1400 | 0.23 J | 0.096 J | 0.11 J | 0.13 | 0.12 | 0.056 J |
| Chromium | mg/kg | | 130 | 1400 | 1200 | 58 J | 14 J | 1400 |
| Copper | mg/kg | 100000 | 78 J | 38 J | 30 J | 29 | 31 | 34 J |
| Lead | mg/kg | 1000 | 40 | 6.6 | 14 | 30 | 22 | 8.0 |
| Mercury | mg/kg | 450 | 0.080 | 0.011 U | 0.011 U | 0.072 | 0.030 J | 0.012 U |
| Nickel | mg/kg | 56000 | 32 J | 97 J | 14 J | 12 | 13 | 13 |
| Selenium | mg/kg | 14000 | 0.51 U | 0.45 U | 1.1 J | 0.43 J | 0.34 J | 1.1 J |
| Silver | mg/kg | 14000 | 0.040 U | 0.035 U | 0.037 U | 0.18 | 0.019 J | 0.021 U |
| Thallium | mg/kg | 200 | 0.075 J | 0.018 U | 0.019 U | 0.094 J | 0.098 J | 0.058 J |
| Zinc | mg/kg | 190000 | 120 | 38 | 64 | 63 | 45 | 56 J |
| **PCBs** | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | 200 | 0.00013 U | 0.00013 U | 0.00013 U | 0.00014 U | 0.00014 U | 0.00013 U |
| Aroclor-1221 (PCB-1221) | mg/kg | 40 | 0.00017 U | 0.00017 U | 0.00016 U | 0.00018 U | 0.00017 U | 0.00017 U |
| Aroclor-1232 (PCB-1232) | mg/kg | 40 | 0.00015 U | 0.00015 U | 0.00015 U | 0.00016 U | 0.00016 U | 0.00015 U |
| Aroclor-1242 (PCB-1242) | mg/kg | 40 | 0.00015 U | 0.00014 U | 0.00014 U | 0.00015 U | 0.00015 U | 0.00015 U |
| Aroclor-1248 (PCB-1248) | mg/kg | 40 | 0.27 | 0.031 | 0.000080 U | 0.000088 U | 0.000086 U | 0.000085 U |
| Aroclor-1254 (PCB-1254) | mg/kg | 40 | 0.24 | 0.025 | 0.011 | 0.00013 U | 0.00013 U | 0.0016 |
| Aroclor-1260 (PCB-1260) | mg/kg | 40 | 0.00013 U | 0.00013 U | 0.00012 U | 0.00013 U | 0.0017 | 0.00013 U |

**Table 4.1**

**Screened Analytical Results**
**Surficial Soil Samples Vs Non-Residential Direct Contact Criteria (0-2)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-5** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_1.5-2-062514** | **ELC-SB-2_1.5-2-062514** | **ELC-SB-3_1.5-2-062514** | **ELC-SB-4_1.5-2_062614** | **DUP-002_062614** | **ELC-SB-5_1.5-2_062414** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** | **6/26/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** |
| | | **MSC Non-Residential Direct-Contact Criteria** | | | | | **(Duplicate)** | |
| **Parameters** | **Units** | **(0-2 feet bgs) (1)** | | | | | | |
| **Petroleum Products** | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | - | - | - |
| **General Chemistry** | | | | | | | | |
| Percent moisture | % | | 6.6 | 5.9 | 1.7 | 11 | 9.9 | 8.2 |
| pH | s.u. | | - | - | - | - | - | - |

Notes:

(1) PA Chapter 250, Appendix A, Tables 3 to 4, Medium Specific Concentrations (MSC) for organic and inorganic regulated substances in soil, Direct-contact Numerical values, Non-Residential, Surficial Soil (0-2 feet).
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
\- Not analyzed

**Table 4.1**

**Screened Analytical Results**
**Surficial Soil Samples Vs Non-Residential Direct Contact Criteria (0-2)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-11** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_1.5-2_062514** | **ELC-SB-7_1.5-2_062414** | **ELC-SB-8_1.5-2-062514** | **ELC-SB-9_0.5-1_062614** | **ELC-SB-10_1.5-2_062414** | **ELC-SB-11_1.5-2-062514** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/25/2014** | **6/26/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(0.5-1) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (0-2 feet bgs) (1)** | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 10000 | R | 0.00040 U | 0.00039 U | 0.00037 U | 0.00039 U | 0.00037 U |
| 1,1,2,2-Tetrachloroethane | mg/kg | 38 | R | 0.00059 U | 0.00058 U | 0.00055 U | 0.00057 U | 0.00055 U |
| 1,1,2-Trichloroethane | mg/kg | 140 | R | 0.00069 U | 0.00067 U | 0.00063 U | 0.00066 U | 0.00064 U |
| 1,1-Dichloroethane | mg/kg | 1400 | R | 0.00048 U | 0.00047 U | 0.00044 U | 0.00046 U | 0.00044 U |
| 1,1-Dichloroethene | mg/kg | 10000 | R | 0.00070 U | 0.00069 U | 0.00065 U | 0.00067 U | 0.00065 U |
| 1,2,4-Trichlorobenzene | mg/kg | 10000 | R | 0.00073 U | 0.00071 U | 0.00067 U | 0.00070 U | 0.00068 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 0.37 | R | 0.00062 U | 0.00061 U | 0.00057 U | 0.00059 U | 0.00057 U |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 3.7 | R | 0.00071 U | 0.00070 U | 0.00066 U | 0.00068 U | 0.00066 U |
| 1,2-Dichlorobenzene | mg/kg | 10000 | R | 0.00066 U | 0.00065 U | 0.00061 U | 0.00063 U | 0.00061 U |
| 1,2-Dichloroethane | mg/kg | 86 | R | 0.00051 U | 0.00050 U | 0.00047 U | 0.00049 U | 0.00047 U |
| 1,2-Dichloroethene (total) | mg/kg | | R | 0.0011 U | 0.0010 U | 0.00098 U | 0.0010 U | 0.00098 U |
| 1,2-Dichloropropane | mg/kg | 220 | R | 0.00045 U | 0.00044 U | 0.00041 U | 0.00043 U | 0.00042 U |
| 1,3-Dichlorobenzene | mg/kg | 8400 | R | 0.00054 U | 0.00053 U | 0.00050 U | 0.00052 U | 0.00050 U |
| 1,4-Dichlorobenzene | mg/kg | 200 | R | 0.00053 U | 0.00052 U | 0.00049 U | 0.00050 U | 0.00049 U |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 10000 | R | 0.00073 U | 0.00071 U | 0.00067 U | 0.00070 U | 0.00068 U |
| 2-Hexanone | mg/kg | 400 | R | 0.00057 U | 0.00056 U | 0.00053 U | 0.00055 U | 0.00053 U |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 10000 | R | 0.00054 U | 0.00053 U | 0.00050 U | 0.00052 U | 0.00050 U |
| Acetone | mg/kg | 10000 | R | 0.0049 J | 0.0040 U | 0.0038 U | 0.0040 U | 0.0038 U |
| Benzene | mg/kg | 290 | R | 0.00056 U | 0.00055 U | 0.00051 U | 0.00054 U | 0.00052 U |
| Bromodichloromethane | mg/kg | 60 | R | 0.00046 U | 0.00045 U | 0.00043 U | 0.00044 U | 0.00043 U |
| Bromoform | mg/kg | 2000 | R | 0.00037 U | 0.00036 U | 0.00034 U | 0.00035 U | 0.00034 U |
| Bromomethane (Methyl bromide) | mg/kg | 400 | R | 0.00061 U | 0.00060 U | 0.00056 U | 0.00059 U | 0.00057 U |
| Carbon disulfide | mg/kg | 10000 | R | 0.00042 U | 0.00041 U | 0.00039 U | 0.00041 U | 0.00039 U |
| Carbon tetrachloride | mg/kg | 150 | R | 0.00037 U | 0.00036 U | 0.00034 U | 0.00035 U | 0.00034 U |
| Chlorobenzene | mg/kg | 4000 | R | 0.00063 U | 0.00061 U | 0.00058 U | 0.00060 U | 0.00058 U |
| Chloroethane | mg/kg | 10000 | R | 0.0013 U | 0.0013 U | 0.0012 U | 0.0012 U | 0.0012 U |
| Chloroform (Trichloromethane) | mg/kg | 97 | R | 0.00048 U | 0.00047 U | 0.00045 U | 0.00046 U | 0.00045 U |
| Chloromethane (Methyl chloride) | mg/kg | 1200 | R | 0.00071 U | 0.00069 U | 0.00065 U | 0.00068 U | 0.00065 U |
| cis-1,2-Dichloroethene | mg/kg | 10000 | R | 0.00058 U | 0.00057 U | 0.00054 U | 0.00056 U | 0.00054 U |
| cis-1,3-Dichloropropene | mg/kg | | R | 0.00056 U | 0.00055 U | 0.00052 U | 0.00054 U | 0.00052 U |
| Cyclohexane | mg/kg | 10000 | R | 0.00031 U | 0.00030 U | 0.00028 U | 0.00029 U | 0.00028 U |
| Dibromochloromethane | mg/kg | 82 | R | 0.00059 U | 0.00057 U | 0.00054 U | 0.00056 U | 0.00054 U |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 10000 | R | 0.00055 U | 0.00054 U | 0.00051 U | 0.00053 U | 0.00051 U |
| Ethylbenzene | mg/kg | 10000 | R | 0.00053 U | 0.00052 U | 0.00049 U | 0.00051 U | 0.00049 U |
| Isopropyl benzene | mg/kg | 10000 | R | 0.00056 U | 0.00055 U | 0.00052 U | 0.00054 U | 0.00052 U |

**Table 4.1**

**Screened Analytical Results**
**Surficial Soil Samples Vs Non-Residential Direct Contact Criteria (0-2)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-11** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_1.5-2_062514** | **ELC-SB-7_1.5-2_062414** | **ELC-SB-8_1.5-2-062514** | **ELC-SB-9_0.5-1_062614** | **ELC-SB-10_1.5-2_062414** | **ELC-SB-11_1.5-2-062514** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/25/2014** | **6/26/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(0.5-1) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (0-2 feet bgs) (1)** | | | | | | |
| m&p-Xylenes | mg/kg | | R | 0.0012 U | 0.0012 U | 0.0011 U | 0.0012 U | 0.0011 U |
| Methyl acetate | mg/kg | 10000 | R | 0.00075 U | 0.00073 U | 0.00069 U | 0.00071 U | 0.00069 U |
| Methyl cyclohexane | mg/kg | | R | 0.00060 U | 0.00059 U | 0.00055 U | 0.00057 U | 0.00056 U |
| Methyl tert butyl ether (MTBE) | mg/kg | 3200 | R | 0.00062 U | 0.00061 U | 0.00057 U | 0.00059 U | 0.00057 U |
| Methylene chloride | mg/kg | 4700 | 0.0032 J | 0.0019 J | 0.0022 U | 0.0039 J | 0.0017 J | 0.0020 U |
| o-Xylene | mg/kg | | R | 0.00065 U | 0.00063 U | 0.00059 U | 0.00062 U | 0.00060 U |
| Styrene | mg/kg | 10000 | R | 0.00058 U | 0.00057 U | 0.00054 U | 0.00056 U | 0.00054 U |
| Tetrachloroethene | mg/kg | 1500 | R | 0.00056 U | 0.00055 U | 0.00052 U | 0.00054 U | 0.00052 U |
| Toluene | mg/kg | 10000 | R | 0.00060 U | 0.00059 U | 0.00056 U | 0.00058 U | 0.00056 U |
| trans-1,2-Dichloroethene | mg/kg | 4800 | R | 0.00049 U | 0.00048 U | 0.00045 U | 0.00047 U | 0.00046 U |
| trans-1,3-Dichloropropene | mg/kg | | R | 0.00049 U | 0.00048 U | 0.00046 U | 0.00047 U | 0.00046 U |
| Trichloroethene | mg/kg | 1300 | R | 0.00054 U | 0.00053 U | 0.00050 U | 0.00052 U | 0.00050 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 10000 | R | 0.00076 U | 0.00074 U | 0.00070 U | 0.00073 U | 0.00070 U |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 10000 | R | 0.00088 U | 0.00086 U | 0.00081 U | 0.00085 U | 0.00082 U |
| Vinyl chloride | mg/kg | 110 | R | 0.00039 U | 0.00038 U | 0.00036 U | 0.00037 U | 0.00036 U |
| Xylenes (total) | mg/kg | 8000 | R | 0.0019 U | 0.0018 U | 0.0017 U | 0.0018 U | 0.0017 U |
| **Semi-volatile Organic Compounds** | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 220 | R | 0.0038 U | 0.0041 U | 0.0038 U | R | 0.00075 UJ |
| 2,4,5-Trichlorophenol | mg/kg | 190000 | R | 0.019 U | 0.020 U | 0.019 U | R | 0.0037 UJ |
| 2,4,6-Trichlorophenol | mg/kg | 2800 | R | 0.026 U | 0.029 U | 0.027 U | R | 0.0052 UJ |
| 2,4-Dichlorophenol | mg/kg | 8400 | R | 0.0035 U | 0.0038 U | 0.0036 U | R | 0.00070 UJ |
| 2,4-Dimethylphenol | mg/kg | 10000 | R | 0.027 U | 0.030 U | 0.028 U | R | 0.0055 UJ |
| 2,4-Dinitrophenol | mg/kg | 5600 | R | 0.21 U | 0.23 U | R | R | 0.042 UJ |
| 2,4-Dinitrotoluene | mg/kg | 260 | R | 0.014 U | 0.015 U | 0.014 U | R | 0.0028 UJ |
| 2,6-Dinitrotoluene | mg/kg | 2800 | R | 0.018 U | 0.020 U | 0.018 U | R | 0.0036 UJ |
| 2-Chloronaphthalene | mg/kg | 190000 | R | 0.0037 U | 0.0040 U | 0.0037 U | R | 0.00073 UJ |
| 2-Chlorophenol | mg/kg | 10000 | R | 0.014 U | 0.016 U | 0.014 U | R | 0.0029 UJ |
| 2-Methylnaphthalene | mg/kg | 11000 | 0.0019 J | 0.014 J | 0.018 J | 0.0032 U | 0.0021 J | 0.0012 J |
| 2-Methylphenol | mg/kg | 140000 | R | 0.012 U | 0.013 U | 0.012 U | R | 0.0024 UJ |
| 2-Nitroaniline | mg/kg | 8400 | R | 0.079 U | 0.086 U | 0.079 U | R | 0.016 UJ |
| 2-Nitrophenol | mg/kg | 22000 | R | 0.019 U | 0.021 U | 0.020 U | R | 0.0038 UJ |
| 3,3'-Dichlorobenzidine | mg/kg | 180 | R | 0.019 U | 0.020 U | 0.019 UJ | R | 0.0037 UJ |
| 3-Nitroaniline | mg/kg | 840 | R | 0.072 U | 0.079 U | 0.073 U | R | 0.014 UJ |
| 4,6-Dinitro-2-methylphenol | mg/kg | 280 | R | 0.070 U | 0.077 U | 0.071 U | R | 0.014 UJ |
| 4-Bromophenyl phenyl ether | mg/kg | | R | 0.015 U | 0.017 U | 0.015 U | R | 0.0030 UJ |
| 4-Chloro-3-methylphenol | mg/kg | 14000 | R | 0.016 U | 0.018 U | 0.016 U | R | 0.0032 UJ |

**Table 4.1**

**Screened Analytical Results**
**Surficial Soil Samples Vs Non-Residential Direct Contact Criteria (0-2)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-11** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_1.5-2_062514** | **ELC-SB-7_1.5-2_062414** | **ELC-SB-8_1.5-2-062514** | **ELC-SB-9_0.5-1_062614** | **ELC-SB-10_1.5-2_062414** | **ELC-SB-11_1.5-2-062514** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/25/2014** | **6/26/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(0.5-1) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (0-2 feet bgs) (1)** | | | | | | |
| 4-Chloroaniline | mg/kg | 400 | R | 0.014 U | 0.015 U | 0.014 U | R | 0.0028 UJ |
| 4-Chlorophenyl phenyl ether | mg/kg | | R | 0.019 U | 0.021 U | 0.020 U | R | 0.0039 UJ |
| 4-Methylphenol | mg/kg | 14000 | R | 0.017 U | 0.019 U | 0.017 U | R | 0.0034 UJ |
| 4-Nitroaniline | mg/kg | 4000 | R | 0.071 U | 0.078 U | 0.072 U | R | 0.014 UJ |
| 4-Nitrophenol | mg/kg | 22000 | R | 0.064 U | 0.070 U | 0.065 U | R | 0.013 UJ |
| Acenaphthene | mg/kg | 170000 | 0.0020 J | 0.0065 J | 0.0057 J | 0.0034 U | R | 0.00067 UJ |
| Acenaphthylene | mg/kg | 170000 | R | 0.095 | 0.011 J | 0.0041 U | R | 0.0021 J |
| Acetophenone | mg/kg | 10000 | R | 0.014 U | 0.016 U | 0.015 U | 0.0029 J | 0.0077 J |
| Anthracene | mg/kg | 190000 | 0.0011 J | 0.054 | 0.022 J | 0.0036 J | 0.00072 J | 0.0024 J |
| Atrazine | mg/kg | 340 | R | 0.017 U | 0.019 U | 0.017 U | R | 0.011 J |
| Benzaldehyde | mg/kg | | R | R | R | R | R | 0.029 J |
| Benzo(a)anthracene | mg/kg | 110 | 0.017 J | 0.23 | 0.069 | 0.014 J | 0.0065 J | 0.011 J |
| Benzo(a)pyrene | mg/kg | 11 | 0.021 J | 0.24 | 0.084 | 0.018 J | 0.0076 J | 0.011 J |
| Benzo(b)fluoranthene | mg/kg | 110 | 0.030 J | 0.28 | 0.13 | 0.031 J | 0.013 J | 0.014 J |
| Benzo(g,h,i)perylene | mg/kg | 170000 | 0.020 J | 0.21 | 0.061 | 0.017 J | 0.012 J | 0.0094 J |
| Benzo(k)fluoranthene | mg/kg | 1100 | 0.015 J | 0.11 | 0.042 | 0.010 J | 0.0051 J | 0.0068 J |
| Biphenyl (1,1-Biphenyl) | mg/kg | 140000 | R | 0.016 U | 0.017 U | 0.016 U | R | 0.0031 UJ |
| bis(2-Chloroethoxy)methane | mg/kg | 8400 | R | 0.012 U | 0.013 U | 0.012 U | R | 0.0023 UJ |
| bis(2-Chloroethyl)ether | mg/kg | 6.7 | R | 0.0047 U | 0.0051 U | 0.0048 U | R | 0.00094 UJ |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | 5700 | R | 0.029 J | 0.031 U | 0.029 U | 0.020 J | 0.016 J |
| Butyl benzylphthalate (BBP) | mg/kg | 10000 | R | 0.024 U | 0.026 U | 0.024 U | 0.012 J | 0.026 J |
| Caprolactam | mg/kg | | R | 0.13 U | 0.14 U | R | R | 0.026 UJ |
| Carbazole | mg/kg | 4000 | R | 0.020 J | 0.0035 U | 0.0033 U | R | 0.00064 UJ |
| Chrysene | mg/kg | 11000 | 0.039 J | 0.24 | 0.097 | 0.016 J | 0.012 J | 0.014 J |
| Dibenz(a,h)anthracene | mg/kg | 11 | 0.0060 J | 0.056 | 0.022 J | 0.0039 U | R | 0.0025 J |
| Dibenzofuran | mg/kg | 2800 | R | 0.024 J | 0.019 U | 0.017 U | R | 0.0034 UJ |
| Diethyl phthalate | mg/kg | 10000 | R | 0.019 U | 0.021 U | 0.019 U | R | 0.0038 UJ |
| Dimethyl phthalate | mg/kg | | R | 0.019 U | 0.021 U | 0.019 U | R | 0.0038 UJ |
| Di-n-butylphthalate (DBP) | mg/kg | 10000 | R | 0.022 U | 0.024 U | 0.022 U | 0.0056 J | 0.0050 J |
| Di-n-octyl phthalate (DnOP) | mg/kg | 10000 | R | 0.018 U | 0.020 U | 0.019 U | R | 0.0037 UJ |
| Fluoranthene | mg/kg | 110000 | 0.012 J | 0.41 | 0.088 | 0.018 J | 0.013 J | 0.019 J |
| Fluorene | mg/kg | 110000 | R | 0.019 J | 0.0050 U | 0.0047 U | R | 0.00092 UJ |
| Hexachlorobenzene | mg/kg | 50 | R | 0.0037 U | 0.0041 U | 0.0038 U | R | 0.00074 UJ |
| Hexachlorobutadiene | mg/kg | 1000 | R | 0.0039 U | 0.0043 U | 0.0040 U | R | 0.00078 UJ |
| Hexachlorocyclopentadiene | mg/kg | 10000 | R | 0.019 U | 0.021 U | 0.019 U | R | 0.0038 UJ |
| Hexachloroethane | mg/kg | 550 | R | 0.013 U | 0.014 U | 0.013 U | R | 0.0025 UJ |

**Table 4.1**

**Screened Analytical Results**
**Surficial Soil Samples Vs Non-Residential Direct Contact Criteria (0-2)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-11** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_1.5-2_062514** | **ELC-SB-7_1.5-2_062414** | **ELC-SB-8_1.5-2-062514** | **ELC-SB-9_0.5-1_062614** | **ELC-SB-10_1.5-2_062414** | **ELC-SB-11_1.5-2-062514** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/25/2014** | **6/26/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(0.5-1) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (0-2 feet bgs) (1)** | | | | | | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 110 | 0.016 J | 0.19 | 0.056 | 0.015 J | 0.0078 J | 0.0081 J |
| Isophorone | mg/kg | 10000 | R | 0.013 U | 0.014 U | 0.013 U | R | 0.0026 UJ |
| Naphthalene | mg/kg | 56000 | R | 0.055 | 0.025 J | 0.0031 U | 0.0020 J | 0.0028 J |
| Nitrobenzene | mg/kg | 5600 | R | 0.015 U | 0.016 U | 0.015 U | R | 0.0029 UJ |
| N-Nitrosodi-n-propylamine | mg/kg | 11 | R | 0.0041 U | 0.0045 U | 0.0042 U | R | 0.00082 UJ |
| N-Nitrosodiphenylamine | mg/kg | 16000 | R | 0.016 U | 0.018 U | 0.016 U | R | 0.0032 UJ |
| Pentachlorophenol | mg/kg | 660 | R | 0.016 U | 0.017 U | 0.016 U | R | 0.0031 UJ |
| Phenanthrene | mg/kg | 190000 | 0.0092 J | 0.19 | 0.061 | 0.0089 J | 0.0074 J | 0.0098 J |
| Phenol | mg/kg | 190000 | R | 0.0041 U | 0.0045 U | 0.0042 U | R | 0.00082 UJ |
| Pyrene | mg/kg | 84000 | 0.016 J | 0.25 | 0.097 | 0.020 J | 0.010 J | 0.00071 UJ |
| **Metals** | | | | | | | | |
| Antimony | mg/kg | 1100 | 0.025 UJ | 0.18 J | 0.30 J | 0.12 J | 0.17 J | 0.28 J |
| Arsenic | mg/kg | 53 | 2.3 | 5.8 | 3.9 | 5.3 | 2.7 | 3.3 |
| Beryllium | mg/kg | 5600 | 0.61 J | 0.62 | 0.54 | 0.39 | 0.71 | 0.49 J |
| Cadmium | mg/kg | 1400 | 0.067 U | 0.17 | 0.30 | 0.10 | 0.11 J | 0.56 J |
| Chromium | mg/kg | | 2400 | 87 | 350 | 42 | 2400 | 1700 |
| Copper | mg/kg | 100000 | 13 J | 14 J | 9.6 J | 13 | 33 J | 69 J |
| Lead | mg/kg | 1000 | 4.5 | 17 | 41 | 14 | 23 | 20 |
| Mercury | mg/kg | 450 | 0.011 U | 0.011 U | 0.029 J | 0.012 J | 0.010 U | 0.011 U |
| Nickel | mg/kg | 56000 | 20 J | 13 | 8.7 J | 13 | 29 | 24 J |
| Selenium | mg/kg | 14000 | 0.48 U | 0.65 J | 0.25 J | 0.21 J | 0.37 J | 0.74 J |
| Silver | mg/kg | 14000 | 0.037 U | 0.018 J | 0.026 J | 0.0037 U | 0.020 U | 0.040 U |
| Thallium | mg/kg | 200 | 0.019 U | 0.055 | 0.085 J | 0.053 J | 0.015 J | 0.020 U |
| Zinc | mg/kg | 190000 | 25 | 54 J | 90 | 39 | 58 J | 190 |
| **PCBs** | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | 200 | 0.00013 U | 0.0026 U | 0.00014 U | 0.00066 U | 0.00013 U | 0.00013 U |
| Aroclor-1221 (PCB-1221) | mg/kg | 40 | 0.00017 U | 0.0033 U | 0.00018 U | 0.00085 U | 0.00017 U | 0.00017 U |
| Aroclor-1232 (PCB-1232) | mg/kg | 40 | 0.00015 U | 0.0030 U | 0.00016 U | 0.00076 U | 0.00015 U | 0.00015 U |
| Aroclor-1242 (PCB-1242) | mg/kg | 40 | 0.00014 U | 0.0029 U | 0.00016 U | 0.00073 U | 0.00014 U | 0.00014 U |
| Aroclor-1248 (PCB-1248) | mg/kg | 40 | 0.0013 | 0.0017 U | 0.016 | 0.00042 U | 0.030 | 0.000082 U |
| Aroclor-1254 (PCB-1254) | mg/kg | 40 | 0.00012 U | 1.2 | 0.0080 | 0.074 | 0.00012 U | 0.012 |
| Aroclor-1260 (PCB-1260) | mg/kg | 40 | 0.0025 | 1.2 | 0.00014 U | 0.00063 U | 0.00012 U | 0.00012 U |

**Table 4.1**

**Screened Analytical Results**
**Surficial Soil Samples Vs Non-Residential Direct Contact Criteria (0-2)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-11** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_1.5-2_062514** | **ELC-SB-7_1.5-2_062414** | **ELC-SB-8_1.5-2-062514** | **ELC-SB-9_0.5-1_062614** | **ELC-SB-10_1.5-2_062414** | **ELC-SB-11_1.5-2-062514** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/25/2014** | **6/26/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(0.5-1) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (0-2 feet bgs) (1)** | | | | | | |
| **Petroleum Products** | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | - | - | - |
| **General Chemistry** | | | | | | | | |
| Percent moisture | % | | 4.4 | 5.5 | 13 | 6.4 | 3.9 | 5.0 |
| pH | s.u. | | - | - | - | - | - | - |

Notes:

(1) PA Chapter 250, Appendix A, Tables 3 to 4, Medium Specific Concentrations (MSC) for organic and inorganic regulated substances in soil, Direct-contact Numerical values, Non-Residential, Surficial Soil (0-2 feet).
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
\- Not analyzed

**Table 4.1**

**Screened Analytical Results**
**Surficial Soil Samples Vs Non-Residential Direct Contact Criteria (0-2)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-14** | **L1P3-SED-1** | **L1P3-SED-2** | **L1P3-SED-3** |
|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-12_1.5-2_062614** | **DUP-001_062614** | **ELC-SB-13-1.5-2_062414** | **ELC-SB-14_1.5-2_062414** | **SED-1** | **SED-2** | **SED-3** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **9/23/1998** | **9/23/1998** | **9/23/1998** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** |
| | | **MSC Non-Residential Direct-Contact Criteria** | | **(Duplicate)** | | | | | |
| **Parameters** | **Units** | **(0-2 feet bgs) (1)** | | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 10000 | 0.00038 U | 0.00038 U | R | 0.00050 UJ | - | - | - |
| 1,1,2,2-Tetrachloroethane | mg/kg | 38 | 0.00056 U | 0.00056 U | R | 0.00073 UJ | - | - | - |
| 1,1,2-Trichloroethane | mg/kg | 140 | 0.00065 U | 0.00065 U | R | 0.00085 UJ | - | - | - |
| 1,1-Dichloroethane | mg/kg | 1400 | 0.00045 U | 0.00045 U | R | 0.00059 UJ | - | - | - |
| 1,1-Dichloroethene | mg/kg | 10000 | 0.00066 U | 0.00066 U | R | 0.00087 UJ | - | - | - |
| 1,2,4-Trichlorobenzene | mg/kg | 10000 | 0.00069 U | 0.00069 U | R | 0.00090 UJ | - | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 0.37 | 0.00058 U | 0.00058 U | R | 0.00076 UJ | - | - | - |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 3.7 | 0.00067 U | 0.00067 U | R | 0.00088 UJ | - | - | - |
| 1,2-Dichlorobenzene | mg/kg | 10000 | 0.00062 U | 0.00062 U | R | 0.00081 UJ | - | - | - |
| 1,2-Dichloroethane | mg/kg | 86 | 0.00048 U | 0.00048 U | R | 0.00063 UJ | - | - | - |
| 1,2-Dichloroethene (total) | mg/kg | | 0.0010 U | 0.0010 U | R | 0.0013 UJ | - | - | - |
| 1,2-Dichloropropane | mg/kg | 220 | 0.00042 U | 0.00042 U | R | 0.00055 UJ | - | - | - |
| 1,3-Dichlorobenzene | mg/kg | 8400 | 0.00051 U | 0.00051 U | R | 0.00067 UJ | - | - | - |
| 1,4-Dichlorobenzene | mg/kg | 200 | 0.00050 U | 0.00050 U | R | 0.00065 UJ | - | - | - |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 10000 | 0.00069 U | 0.00069 U | R | 0.00090 UJ | - | - | - |
| 2-Hexanone | mg/kg | 400 | 0.00054 U | 0.00054 U | R | 0.00071 UJ | - | - | - |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 10000 | 0.00051 U | 0.00051 U | R | 0.00067 UJ | - | - | - |
| Acetone | mg/kg | 10000 | 0.0039 U | 0.0039 U | R | 0.0051 UJ | - | - | - |
| Benzene | mg/kg | 290 | 0.00053 U | 0.00052 U | R | 0.00069 UJ | - | - | - |
| Bromodichloromethane | mg/kg | 60 | 0.00044 U | 0.00044 U | R | 0.00057 UJ | - | - | - |
| Bromoform | mg/kg | 2000 | 0.00035 U | 0.00034 U | R | 0.00045 UJ | - | - | - |
| Bromomethane (Methyl bromide) | mg/kg | 400 | 0.00058 U | 0.00057 U | R | 0.00075 UJ | - | - | - |
| Carbon disulfide | mg/kg | 10000 | 0.00040 U | 0.00040 U | R | 0.00084 J | - | - | - |
| Carbon tetrachloride | mg/kg | 150 | 0.00035 U | 0.00035 U | R | 0.00046 UJ | - | - | - |
| Chlorobenzene | mg/kg | 4000 | 0.00059 U | 0.00059 U | R | 0.00077 UJ | - | - | - |
| Chloroethane | mg/kg | 10000 | 0.0012 U | 0.0012 U | R | 0.0016 UJ | - | - | - |
| Chloroform (Trichloromethane) | mg/kg | 97 | 0.00046 U | 0.00045 U | R | 0.00060 UJ | - | - | - |
| Chloromethane (Methyl chloride) | mg/kg | 1200 | 0.00067 U | 0.00066 U | R | 0.00087 UJ | - | - | - |
| cis-1,2-Dichloroethene | mg/kg | 10000 | 0.00055 U | 0.00055 U | R | 0.00072 UJ | - | - | - |
| cis-1,3-Dichloropropene | mg/kg | | 0.00053 U | 0.00053 U | R | 0.00069 UJ | - | - | - |
| Cyclohexane | mg/kg | 10000 | 0.00029 U | 0.00029 U | R | 0.00038 UJ | - | - | - |
| Dibromochloromethane | mg/kg | 82 | 0.00055 U | 0.00055 U | R | 0.00072 UJ | - | - | - |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 10000 | 0.00052 U | 0.00052 U | R | 0.00068 UJ | - | - | - |
| Ethylbenzene | mg/kg | 10000 | 0.00050 U | 0.00050 U | R | 0.00066 UJ | 0.005 U | 0.005 U | 0.005 U |
| Isopropyl benzene | mg/kg | 10000 | 0.00053 U | 0.00053 U | R | 0.00069 UJ | - | - | - |

**Table 4.1**

**Screened Analytical Results**
**Surficial Soil Samples Vs Non-Residential Direct Contact Criteria (0-2)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-14** | **L1P3-SED-1** | **L1P3-SED-2** | **L1P3-SED-3** |
|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-12_1.5-2_062614** | **DUP-001_062614** | **ELC-SB-13-1.5-2_062414** | **ELC-SB-14_1.5-2_062414** | **SED-1** | **SED-2** | **SED-3** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **9/23/1998** | **9/23/1998** | **9/23/1998** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** |
| | | **MSC Non-Residential** | | **(Duplicate)** | | | | | |
| | | **Direct-Contact Criteria** | | | | | | | |
| **Parameters** | **Units** | **(0-2 feet bgs)** | | | | | | | |
| | | **(1)** | | | | | | | |
| m&p-Xylenes | mg/kg | | 0.0011 U | 0.0011 U | R | 0.0015 UJ | - | - | - |
| Methyl acetate | mg/kg | 10000 | 0.00070 U | 0.00070 U | R | 0.00092 UJ | - | - | - |
| Methyl cyclohexane | mg/kg | | 0.00057 U | 0.00056 U | R | 0.00074 UJ | - | - | - |
| Methyl tert butyl ether (MTBE) | mg/kg | 3200 | 0.00058 U | 0.00058 U | R | 0.00076 UJ | - | - | - |
| Methylene chloride | mg/kg | 4700 | 0.0017 U | 0.0029 U | 0.0015 UJ | 0.0022 UJ | 0.0023 JB | 0.0013 JB | 0.0006 JB |
| o-Xylene | mg/kg | | 0.00061 U | 0.00061 U | R | 0.00080 UJ | - | - | - |
| Styrene | mg/kg | 10000 | 0.00055 U | 0.00055 U | R | 0.00072 UJ | - | - | - |
| Tetrachloroethene | mg/kg | 1500 | 0.00053 U | 0.00053 U | R | 0.00069 UJ | - | - | - |
| Toluene | mg/kg | 10000 | 0.00057 U | 0.00057 U | R | 0.00075 UJ | 0.00056 J | 0.005 U | 0.0006 J |
| trans-1,2-Dichloroethene | mg/kg | 4800 | 0.00047 U | 0.00046 U | R | 0.00061 UJ | - | - | - |
| trans-1,3-Dichloropropene | mg/kg | | 0.00047 U | 0.00046 U | R | 0.00061 UJ | - | - | - |
| Trichloroethene | mg/kg | 1300 | 0.00051 U | 0.00051 U | R | 0.00067 UJ | 0.005 U | 0.005 U | 0.005 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 10000 | 0.00072 U | 0.00071 U | R | 0.00094 UJ | - | - | - |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 10000 | 0.00083 U | 0.00083 U | R | 0.0011 UJ | - | - | - |
| Vinyl chloride | mg/kg | 110 | 0.00037 U | 0.00037 U | R | 0.00048 UJ | - | - | - |
| Xylenes (total) | mg/kg | 8000 | 0.0018 U | 0.0017 U | R | 0.0023 UJ | - | - | - |
| **Semi-volatile Organic Compounds** | | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 220 | 0.0037 U | 0.00074 U | R | 0.00076 U | - | - | - |
| 2,4,5-Trichlorophenol | mg/kg | 190000 | 0.018 U | 0.0036 U | R | 0.0038 U | - | - | - |
| 2,4,6-Trichlorophenol | mg/kg | 2800 | 0.026 U | 0.0051 U | R | 0.0053 U | - | - | - |
| 2,4-Dichlorophenol | mg/kg | 8400 | 0.0034 U | 0.00068 U | R | 0.00071 U | - | - | - |
| 2,4-Dimethylphenol | mg/kg | 10000 | 0.027 U | 0.0053 U | R | 0.0055 U | - | - | - |
| 2,4-Dinitrophenol | mg/kg | 5600 | 0.20 U | 0.041 U | R | 0.042 U | - | - | - |
| 2,4-Dinitrotoluene | mg/kg | 260 | 0.014 U | 0.0028 U | R | 0.0028 U | - | - | - |
| 2,6-Dinitrotoluene | mg/kg | 2800 | 0.018 U | 0.0035 U | R | 0.0036 U | - | - | - |
| 2-Chloronaphthalene | mg/kg | 190000 | 0.0036 U | 0.00071 U | R | 0.00074 U | - | - | - |
| 2-Chlorophenol | mg/kg | 10000 | 0.014 U | 0.0028 U | R | 0.0029 U | - | - | - |
| 2-Methylnaphthalene | mg/kg | 11000 | 0.013 J | 0.016 | 0.00094 J | 0.0013 J | - | - | - |
| 2-Methylphenol | mg/kg | 140000 | 0.012 U | 0.0024 U | R | 0.0025 U | - | - | - |
| 2-Nitroaniline | mg/kg | 8400 | 0.076 U | 0.015 U | R | 0.016 U | - | - | - |
| 2-Nitrophenol | mg/kg | 22000 | 0.019 U | 0.0038 U | R | 0.0039 U | - | - | - |
| 3,3'-Dichlorobenzidine | mg/kg | 180 | 0.018 U | 0.0036 U | R | 0.0037 U | - | - | - |
| 3-Nitroaniline | mg/kg | 840 | 0.070 U | 0.014 U | R | 0.015 U | - | - | - |
| 4,6-Dinitro-2-methylphenol | mg/kg | 280 | 0.068 U | 0.014 U | R | 0.014 U | - | - | - |
| 4-Bromophenyl phenyl ether | mg/kg | | 0.015 U | 0.0030 U | R | 0.0031 U | - | - | - |
| 4-Chloro-3-methylphenol | mg/kg | 14000 | 0.016 U | 0.0031 U | R | 0.0032 U | - | - | - |

**Table 4.1**

**Screened Analytical Results**
**Surficial Soil Samples Vs Non-Residential Direct Contact Criteria (0-2)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-14** | **L1P3-SED-1** | **L1P3-SED-2** | **L1P3-SED-3** |
|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-12_1.5-2_062614** | **DUP-001_062614** | **ELC-SB-13-1.5-2_062414** | **ELC-SB-14_1.5-2_062414** | **SED-1** | **SED-2** | **SED-3** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **9/23/1998** | **9/23/1998** | **9/23/1998** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** |
| | | **MSC Non-Residential Direct-Contact Criteria** | | **(Duplicate)** | | | | | |
| **Parameters** | **Units** | **(0-2 feet bgs) (1)** | | | | | | | |
| 4-Chloroaniline | mg/kg | 400 | 0.014 U | 0.0027 U | R | 0.0028 U | - | - | - |
| 4-Chlorophenyl phenyl ether | mg/kg | | 0.019 U | 0.0038 U | R | 0.0039 U | - | - | - |
| 4-Methylphenol | mg/kg | 14000 | 0.017 U | 0.0033 U | R | 0.0035 U | - | - | - |
| 4-Nitroaniline | mg/kg | 4000 | 0.069 U | 0.014 U | R | 0.014 U | - | - | - |
| 4-Nitrophenol | mg/kg | 22000 | 0.062 U | 0.012 U | R | 0.013 U | - | - | - |
| Acenaphthene | mg/kg | 170000 | 0.0033 U | 0.00066 U | R | 0.00068 J | 0.33 U | 0.33 U | 0.33 U |
| Acenaphthylene | mg/kg | 170000 | 0.012 J | 0.0058 J | R | 0.00081 U | 0.33 U | 0.33 U | 0.33 U |
| Acetophenone | mg/kg | 10000 | 0.023 J | 0.023 J | R | 0.0029 U | - | - | - |
| Anthracene | mg/kg | 190000 | 0.013 J | 0.0062 J | 0.00088 J | 0.0010 J | 0.33 U | 0.33 U | 0.33 U |
| Atrazine | mg/kg | 340 | 0.017 U | 0.0033 U | R | 0.0034 U | - | - | - |
| Benzaldehyde | mg/kg | | R | 0.0085 J | R | R | - | - | - |
| Benzo(a)anthracene | mg/kg | 110 | 0.081 | 0.036 | 0.0049 J | 0.0053 J | 0.33 U | 0.33 U | 0.33 U |
| Benzo(a)pyrene | mg/kg | 11 | 0.085 | 0.041 | 0.0043 J | 0.0056 J | 0.33 U | 0.33 U | 0.33 U |
| Benzo(b)fluoranthene | mg/kg | 110 | 0.11 | 0.052 | 0.0083 J | 0.0075 | 0.33 U | 0.33 U | 0.33 U |
| Benzo(g,h,i)perylene | mg/kg | 170000 | 0.060 | 0.030 | 0.0065 J | 0.0083 | 0.33 U | 0.33 U | 0.33 U |
| Benzo(k)fluoranthene | mg/kg | 1100 | 0.048 | 0.023 | 0.0030 J | 0.0056 J | 0.33 U | 0.33 U | 0.33 U |
| Biphenyl (1,1-Biphenyl) | mg/kg | 140000 | 0.015 U | 0.0030 U | R | 0.0031 U | - | - | - |
| bis(2-Chloroethoxy)methane | mg/kg | 8400 | 0.011 U | 0.0022 U | R | 0.0023 U | - | - | - |
| bis(2-Chloroethyl)ether | mg/kg | 6.7 | 0.0046 U | 0.00092 U | R | 0.00095 U | - | - | - |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | 5700 | 0.028 U | 0.0055 U | 0.017 J | 0.011 J | 0.33 U | 0.33 U | 0.33 U |
| Butyl benzylphthalate (BBP) | mg/kg | 10000 | 0.023 U | 0.0059 J | 0.012 J | 0.0090 J | - | - | - |
| Caprolactam | mg/kg | | 0.13 U | 0.026 U | R | 0.027 U | - | - | - |
| Carbazole | mg/kg | 4000 | 0.0031 U | 0.0015 J | R | 0.0012 J | - | - | - |
| Chrysene | mg/kg | 11000 | 0.077 | 0.039 | 0.0079 J | 0.0065 J | 0.33 U | 0.33 U | 0.33 U |
| Dibenz(a,h)anthracene | mg/kg | 11 | 0.0038 U | 0.011 | R | 0.00079 U | 0.33 U | 0.33 U | 0.33 U |
| Dibenzofuran | mg/kg | 2800 | 0.017 U | 0.0057 J | R | 0.0035 U | - | - | - |
| Diethyl phthalate | mg/kg | 10000 | 0.019 U | 0.0037 U | R | 0.0039 U | - | - | - |
| Dimethyl phthalate | mg/kg | | 0.019 U | 0.0037 U | R | 0.0038 U | - | - | - |
| Di-n-butylphthalate (DBP) | mg/kg | 10000 | 0.021 U | 0.0043 U | 0.0049 J | 0.0053 J | - | - | - |
| Di-n-octyl phthalate (DnOP) | mg/kg | 10000 | 0.018 U | 0.0036 U | R | 0.0037 U | - | - | - |
| Fluoranthene | mg/kg | 110000 | 0.080 | 0.038 | 0.0097 J | 0.0069 J | 0.33 U | 0.33 U | 0.33 U |
| Fluorene | mg/kg | 110000 | 0.0045 U | 0.0022 J | R | 0.00093 U | 0.33 U | 0.33 U | 0.33 U |
| Hexachlorobenzene | mg/kg | 50 | 0.0036 U | 0.00073 U | R | 0.00075 U | - | - | - |
| Hexachlorobutadiene | mg/kg | 1000 | 0.0038 U | 0.00076 U | R | 0.00079 U | - | - | - |
| Hexachlorocyclopentadiene | mg/kg | 10000 | 0.018 U | 0.0037 U | R | 0.0038 U | - | - | - |
| Hexachloroethane | mg/kg | 550 | 0.012 U | 0.0025 U | R | 0.0025 U | - | - | - |

**Table 4.1**

**Screened Analytical Results**
**Surficial Soil Samples Vs Non-Residential Direct Contact Criteria (0-2)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-14** | **L1P3-SED-1** | **L1P3-SED-2** | **L1P3-SED-3** |
|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-12_1.5-2_062614** | **DUP-001_062614** | **ELC-SB-13-1.5-2_062414** | **ELC-SB-14_1.5-2_062414** | **SED-1** | **SED-2** | **SED-3** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **9/23/1998** | **9/23/1998** | **9/23/1998** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** |
| | | **MSC Non-Residential Direct-Contact Criteria** | | **(Duplicate)** | | | | | |
| **Parameters** | **Units** | **(0-2 feet bgs) (1)** | | | | | | | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 110 | 0.045 | 0.027 | 0.0051 J | 0.0062 J | 0.33 U | 0.33 U | 0.33 U |
| Isophorone | mg/kg | 10000 | 0.013 U | 0.0026 U | R | 0.0027 U | - | - | - |
| Naphthalene | mg/kg | 56000 | 0.0067 J | 0.0092 | R | 0.0016 J | 0.33 U | 0.33 U | 0.33 U |
| Nitrobenzene | mg/kg | 5600 | 0.014 U | 0.0028 U | R | 0.0029 U | - | - | - |
| N-Nitrosodi-n-propylamine | mg/kg | 11 | 0.0040 U | 0.00080 U | R | 0.00083 U | - | - | - |
| N-Nitrosodiphenylamine | mg/kg | 16000 | 0.016 U | 0.0032 U | R | 0.0033 U | - | - | - |
| Pentachlorophenol | mg/kg | 660 | 0.015 U | 0.0031 U | R | 0.0032 U | - | - | - |
| Phenanthrene | mg/kg | 190000 | 0.018 J | 0.020 | 0.0073 J | 0.014 | 0.33 U | 0.33 U | 0.33 U |
| Phenol | mg/kg | 190000 | 0.0040 U | 0.00081 U | R | 0.00083 U | - | - | - |
| Pyrene | mg/kg | 84000 | 0.084 | 0.040 | 0.0087 J | 0.0075 | 0.33 U | 0.33 U | 0.33 U |
| **Metals** | | | | | | | | | |
| Antimony | mg/kg | 1100 | 0.027 J | 0.014 J | 0.17 J | 0.21 J | 0.5 U | 0.78 | 0.76 |
| Arsenic | mg/kg | 53 | 5.0 | 5.5 | 2.2 | 2.8 | 0.91 | 1.6 | 2.3 |
| Beryllium | mg/kg | 5600 | 0.18 | 0.13 | 3.5 | 3.8 | 0.2 U | 0.2 U | 0.35 |
| Cadmium | mg/kg | 1400 | 0.038 J | 0.078 J | 0.092 J | 0.16 J | 0.2 U | 0.45 | 0.99 |
| Chromium | mg/kg | | 7.7 | 9.8 | 1200 | 1900 | 44 | 20 | 49 |
| Copper | mg/kg | 100000 | 2.1 | 1.9 | 17 J | 84 J | 19 | 64 | 93 |
| Lead | mg/kg | 1000 | 2.9 | 3.5 | 9.8 | 43 | 43 | 61 | 110 |
| Mercury | mg/kg | 450 | 0.011 U | 0.011 U | 0.011 U | 0.011 U | 0.1 U | 0.20 | 0.1 U |
| Nickel | mg/kg | 56000 | 1.6 | 1.7 | 7.1 | 41 | 5.6 | 4.9 | 11 |
| Selenium | mg/kg | 14000 | 0.13 J | 0.083 J | 3.2 J | 1.3 J | 0.2 U | 0.9 | 2.2 |
| Silver | mg/kg | 14000 | 0.0038 U | 0.0037 U | 0.018 U | 0.020 U | 0.2 U | 3.6 | 4.8 |
| Thallium | mg/kg | 200 | 0.017 J | 0.019 J | 0.035 J | 0.012 J | - | - | - |
| Zinc | mg/kg | 190000 | 7.1 | 9.1 | 57 J | 580 J | 120 | 170 | 330 |
| **PCBs** | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | 200 | 0.00063 U | 0.00013 U | 0.00013 U | 0.00013 U | - | - | - |
| Aroclor-1221 (PCB-1221) | mg/kg | 40 | 0.00081 U | 0.00016 U | 0.00017 U | 0.00017 U | - | - | - |
| Aroclor-1232 (PCB-1232) | mg/kg | 40 | 0.00072 U | 0.00015 U | 0.00015 U | 0.00015 U | - | - | - |
| Aroclor-1242 (PCB-1242) | mg/kg | 40 | 0.00069 U | 0.00014 U | 0.00014 U | 0.00014 U | - | - | - |
| Aroclor-1248 (PCB-1248) | mg/kg | 40 | 0.00040 U | 0.000081 U | 0.000082 U | 0.000083 U | - | - | - |
| Aroclor-1254 (PCB-1254) | mg/kg | 40 | 0.00060 U | 0.0029 | 0.00084 J | 0.00013 U | - | - | - |
| Aroclor-1260 (PCB-1260) | mg/kg | 40 | 0.00060 U | 0.00012 U | 0.00012 U | 0.0012 | - | - | - |

**Table 4.1**

**Screened Analytical Results**
**Surficial Soil Samples Vs Non-Residential Direct Contact Criteria (0-2)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-14** | **L1P3-SED-1** | **L1P3-SED-2** | **L1P3-SED-3** |
|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-12_1.5-2_062614** | **DUP-001_062614** | **ELC-SB-13-1.5-2_062414** | **ELC-SB-14_1.5-2_062414** | **SED-1** | **SED-2** | **SED-3** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **9/23/1998** | **9/23/1998** | **9/23/1998** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** |
| | | **MSC Non-Residential Direct-Contact Criteria** | | **(Duplicate)** | | | | | |
| **Parameters** | **Units** | **(0-2 feet bgs) (1)** | | | | | | | |
| **Petroleum Products** | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | - | 280 | 110 | 310 |
| **General Chemistry** | | | | | | | | | |
| Percent moisture | % | | 2.1 | 2.2 | 5.0 | 6.1 | - | - | - |
| pH | s.u. | | - | - | - | - | 7.19 | 7.06 | 6.88 |

Notes:

(1) PA Chapter 250, Appendix A, Tables 3 to 4, Medium Specific Concentrations (MSC) for organic and inorganic regulated substances in soil, Direct-contact Numerical values, Non-Residential, Surficial Soil (0-2 feet).
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
\- Not analyzed

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-4** | **ELC-SB-5** |
|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_4.5-5-062514** | **ELC-SB-2_5-5.5-062514** | **ELC-SB-3_10-10.5_062514** | **ELC-SB-4_7-7.5_062614** | **ELC-SB-5_10-10.5_062414** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(4.5-5) ft BGS** | **(5-5.5) ft BGS** | **(10-10.5) ft BGS** | **(7-7.5) ft BGS** | **(10-10.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | |
| **Volatile Organic Compounds** | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 10000 | 0.00038 U | 0.00033 UJ | 0.00039 U | 0.00038 U | 0.00071 UJ |
| 1,1,2,2-Tetrachloroethane | mg/kg | 44 | 0.00056 U | 0.00049 UJ | 0.00057 U | 0.00057 U | 0.0010 UJ |
| 1,1,2-Trichloroethane | mg/kg | 160 | 0.00065 U | 0.00057 UJ | 0.00066 U | 0.00066 U | 0.0012 UJ |
| 1,1-Dichloroethane | mg/kg | 1600 | 0.00045 U | 0.00039 UJ | 0.00046 U | 0.00045 U | 0.00084 UJ |
| 1,1-Dichloroethene | mg/kg | 10000 | 0.00067 U | 0.00058 UJ | 0.00067 U | 0.00067 U | 0.0012 UJ |
| 1,2,4-Trichlorobenzene | mg/kg | 10000 | 0.00069 U | 0.00060 UJ | 0.00070 U | 0.00070 U | 0.0013 UJ |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 0.43 | 0.00059 U | 0.00051 UJ | 0.00060 U | 0.00059 U | 0.0011 UJ |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 4.3 | 0.00068 U | 0.00059 UJ | 0.00069 U | 0.00068 U | 0.0013 UJ |
| 1,2-Dichlorobenzene | mg/kg | 10000 | 0.00063 U | 0.00055 UJ | 0.00063 U | 0.00063 U | 0.0012 UJ |
| 1,2-Dichloroethane | mg/kg | 98 | 0.00048 U | 0.00042 UJ | 0.00049 U | 0.00048 U | 0.00089 UJ |
| 1,2-Dichloroethene (total) | mg/kg | | 0.0010 U | 0.00088 UJ | 0.0010 U | 0.0010 U | 0.0019 UJ |
| 1,2-Dichloropropane | mg/kg | 260 | 0.00043 U | 0.00037 UJ | 0.00043 U | 0.00043 U | 0.00079 UJ |
| 1,3-Dichlorobenzene | mg/kg | 10000 | 0.00052 U | 0.00045 UJ | 0.00052 U | 0.00052 U | 0.00096 UJ |
| 1,4-Dichlorobenzene | mg/kg | 230 | 0.00050 U | 0.00044 UJ | 0.00051 U | 0.00050 U | 0.00093 UJ |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 10000 | 0.00069 U | 0.00060 UJ | 0.00070 U | 0.00070 U | 0.0013 UJ |
| 2-Hexanone | mg/kg | 460 | 0.00054 U | 0.00047 UJ | 0.00055 U | 0.00055 U | 0.0010 UJ |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 10000 | 0.00051 U | 0.00045 UJ | 0.00052 U | 0.00052 U | 0.00095 UJ |
| Acetone | mg/kg | 10000 | 0.0078 U | 0.0034 UJ | 0.0040 U | 0.0062 U | 0.0073 UJ |
| Benzene | mg/kg | 330 | 0.00053 U | 0.00046 UJ | 0.00054 U | 0.00053 U | 0.00098 UJ |
| Bromodichloromethane | mg/kg | 69 | 0.00044 U | 0.00038 UJ | 0.00045 U | 0.00044 U | 0.00082 UJ |
| Bromoform | mg/kg | 2300 | 0.00035 U | 0.00030 UJ | 0.00035 U | 0.00035 U | 0.00064 UJ |
| Bromomethane (Methyl bromide) | mg/kg | 460 | 0.00058 U | 0.00051 UJ | 0.00059 U | 0.00058 U | 0.0011 UJ |
| Carbon disulfide | mg/kg | 10000 | 0.00040 U | 0.00054 J | 0.00041 U | 0.00040 U | 0.0012 J |
| Carbon tetrachloride | mg/kg | 170 | 0.00035 U | 0.00031 UJ | 0.00036 U | 0.00035 U | 0.00065 UJ |
| Chlorobenzene | mg/kg | 4600 | 0.00059 U | 0.00052 UJ | 0.00060 U | 0.00060 U | 0.0011 UJ |
| Chloroethane | mg/kg | 10000 | 0.0012 U | 0.0011 UJ | 0.0012 U | 0.0012 U | 0.0023 UJ |
| Chloroform (Trichloromethane) | mg/kg | 110 | 0.00046 U | 0.00040 UJ | 0.00047 U | 0.00046 U | 0.00085 UJ |
| Chloromethane (Methyl chloride) | mg/kg | 1400 | 0.00067 U | 0.00058 UJ | 0.00068 U | 0.00067 U | 0.0012 UJ |
| cis-1,2-Dichloroethene | mg/kg | 10000 | 0.00055 U | 0.00048 UJ | 0.00056 U | 0.00056 U | 0.0010 UJ |
| cis-1,3-Dichloropropene | mg/kg | | 0.00053 U | 0.00046 UJ | 0.00054 U | 0.00054 U | 0.00099 UJ |
| Cyclohexane | mg/kg | 10000 | 0.00029 U | 0.00025 UJ | 0.00030 U | 0.00029 U | 0.00054 UJ |
| Dibromochloromethane | mg/kg | 95 | 0.00056 U | 0.00049 UJ | 0.00056 U | 0.00056 U | 0.0010 UJ |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 10000 | 0.00052 U | 0.00046 UJ | 0.00053 U | 0.00053 U | 0.00097 UJ |
| Ethylbenzene | mg/kg | 10000 | 0.00050 U | 0.00044 UJ | 0.00051 U | 0.00051 U | 0.00094 UJ |
| Isopropyl benzene | mg/kg | 10000 | 0.00053 U | 0.00047 UJ | 0.00054 U | 0.00054 U | 0.00099 UJ |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-4** | **ELC-SB-5** |
|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_4.5-5-062514** | **ELC-SB-2_5-5.5-062514** | **ELC-SB-3_10-10.5_062514** | **ELC-SB-4_7-7.5_062614** | **ELC-SB-5_10-10.5_062414** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(4.5-5) ft BGS** | **(5-5.5) ft BGS** | **(10-10.5) ft BGS** | **(7-7.5) ft BGS** | **(10-10.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | |
| m&p-Xylenes | mg/kg | | 0.0012 U | 0.0010 UJ | 0.0012 U | 0.0012 U | 0.0021 UJ |
| Methyl acetate | mg/kg | 10000 | 0.00071 U | 0.00062 UJ | 0.00072 U | 0.00071 U | 0.0013 UJ |
| Methyl cyclohexane | mg/kg | | 0.00057 U | 0.00050 UJ | 0.00058 U | 0.00057 U | 0.0011 UJ |
| Methyl tert butyl ether (MTBE) | mg/kg | 3700 | 0.00059 U | 0.00051 UJ | 0.00059 U | 0.00059 U | 0.0011 UJ |
| Methylene chloride | mg/kg | 5400 | 0.0034 J | 0.0028 J | 0.0038 J | 0.0030 U | 0.0040 J |
| o-Xylene | mg/kg | | 0.00061 U | 0.00053 UJ | 0.00062 U | 0.00062 U | 0.0011 UJ |
| Styrene | mg/kg | 10000 | 0.00055 U | 0.00048 UJ | 0.00056 U | 0.00056 U | 0.0010 UJ |
| Tetrachloroethene | mg/kg | 4400 | 0.00053 U | 0.00047 UJ | 0.00054 U | 0.00054 U | 0.00099 UJ |
| Toluene | mg/kg | 10000 | 0.00057 U | 0.00050 UJ | 0.00058 U | 0.00058 U | 0.0011 UJ |
| trans-1,2-Dichloroethene | mg/kg | 5500 | 0.00047 U | 0.00041 UJ | 0.00047 U | 0.00047 U | 0.00087 UJ |
| trans-1,3-Dichloropropene | mg/kg | | 0.00047 U | 0.00041 UJ | 0.00048 U | 0.00047 U | 0.00087 UJ |
| Trichloroethene | mg/kg | 1500 | 0.00052 U | 0.00045 UJ | 0.00052 U | 0.00052 U | 0.00096 UJ |
| Trichlorofluoromethane (CFC-11) | mg/kg | 10000 | 0.00072 U | 0.00063 UJ | 0.00073 U | 0.00073 U | 0.0013 UJ |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 10000 | 0.00084 U | 0.00073 UJ | 0.00085 U | 0.00084 U | 0.0016 UJ |
| Vinyl chloride | mg/kg | 580 | 0.00037 U | 0.00032 UJ | 0.00037 U | 0.00037 U | 0.00068 UJ |
| Xylenes (total) | mg/kg | 9100 | 0.0018 U | 0.0015 UJ | 0.0018 U | 0.0018 U | 0.0033 UJ |
| **Semi-volatile Organic Compounds** | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 250 | 0.00082 U | 0.0038 U | 0.00082 U | 0.00083 U | 0.0061 U |
| 2,4,5-Trichlorophenol | mg/kg | 190000 | 0.0041 U | 0.019 U | 0.0040 U | 0.0041 U | 0.030 U |
| 2,4,6-Trichlorophenol | mg/kg | 190000 | 0.0057 U | 0.026 U | 0.0057 U | 0.0058 U | 0.043 U |
| 2,4-Dichlorophenol | mg/kg | 190000 | 0.00077 U | 0.0035 U | 0.00076 U | 0.00077 U | 0.0057 U |
| 2,4-Dimethylphenol | mg/kg | 10000 | 0.0060 U | 0.028 U | 0.0059 U | 0.0060 U | 0.044 U |
| 2,4-Dinitrophenol | mg/kg | 190000 | 0.045 U | 0.21 U | 0.045 U | 0.046 U | 0.34 U |
| 2,4-Dinitrotoluene | mg/kg | 190000 | 0.0031 U | 0.014 U | 0.0030 U | 0.0031 U | 0.023 U |
| 2,6-Dinitrotoluene | mg/kg | 190000 | 0.0039 U | 0.018 U | 0.0039 U | 0.0040 U | 0.029 U |
| 2-Chloronaphthalene | mg/kg | 190000 | 0.00080 U | 0.0037 U | 0.00079 U | 0.00080 U | 0.0059 U |
| 2-Chlorophenol | mg/kg | 10000 | 0.0031 U | 0.014 U | 0.0031 U | 0.0032 U | 0.023 U |
| 2-Methylnaphthalene | mg/kg | 190000 | 0.00069 U | 0.0032 U | 0.00068 U | 0.00090 J | 0.033 J |
| 2-Methylphenol | mg/kg | 190000 | 0.0027 U | 0.012 U | 0.0026 U | 0.0027 U | 0.020 U |
| 2-Nitroaniline | mg/kg | 190000 | 0.017 U | 0.079 U | 0.017 U | 0.017 U | 0.13 U |
| 2-Nitrophenol | mg/kg | 190000 | 0.0042 U | 0.020 U | 0.0042 U | 0.0042 U | 0.031 U |
| 3,3'-Dichlorobenzidine | mg/kg | 190000 | 0.0040 U | 0.019 U | 0.0040 U | 0.0041 U | 0.030 U |
| 3-Nitroaniline | mg/kg | 190000 | 0.016 U | 0.073 U | 0.016 U | 0.016 U | 0.12 U |
| 4,6-Dinitro-2-methylphenol | mg/kg | 190000 | 0.015 U | 0.071 U | 0.015 U | 0.015 U | 0.11 U |
| 4-Bromophenyl phenyl ether | mg/kg | | 0.0033 U | 0.015 U | 0.0033 U | 0.0034 U | 0.025 U |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-4** | **ELC-SB-5** |
|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_4.5-5-062514** | **ELC-SB-2_5-5.5-062514** | **ELC-SB-3_10-10.5_062514** | **ELC-SB-4_7-7.5_062614** | **ELC-SB-5_10-10.5_062414** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(4.5-5) ft BGS** | **(5-5.5) ft BGS** | **(10-10.5) ft BGS** | **(7-7.5) ft BGS** | **(10-10.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | |
| 4-Chloro-3-methylphenol | mg/kg | 190000 | 0.0035 U | 0.016 U | 0.0035 U | 0.0035 U | 0.026 U |
| 4-Chloroaniline | mg/kg | 190000 | 0.0031 U | 0.014 U | 0.0030 U | 0.0031 U | 0.023 U |
| 4-Chlorophenyl phenyl ether | mg/kg | | 0.0042 U | 0.020 U | 0.0042 U | 0.0043 U | 0.032 U |
| 4-Methylphenol | mg/kg | 190000 | 0.0037 U | 0.017 U | 0.0037 U | 0.0038 U | 0.033 J |
| 4-Nitroaniline | mg/kg | 190000 | 0.015 U | 0.072 U | 0.015 U | 0.016 U | 0.12 U |
| 4-Nitrophenol | mg/kg | 190000 | 0.014 U | 0.065 U | 0.014 U | 0.014 U | 0.10 U |
| Acenaphthene | mg/kg | 190000 | 0.00073 U | 0.0046 J | 0.00073 U | 0.0012 J | 0.0088 J |
| Acenaphthylene | mg/kg | 190000 | 0.00087 U | 0.0041 U | 0.00086 U | 0.0039 J | 0.038 J |
| Acetophenone | mg/kg | 10000 | 0.0031 U | 0.015 U | 0.0031 U | 0.013 J | 0.023 U |
| Anthracene | mg/kg | 190000 | 0.00075 U | 0.015 J | 0.00074 U | 0.0026 J | 0.050 J |
| Atrazine | mg/kg | 190000 | 0.0037 U | 0.017 U | 0.0037 U | 0.0038 U | 0.028 U |
| Benzaldehyde | mg/kg | | R | R | R | R | 0.21 J |
| Benzo(a)anthracene | mg/kg | 190000 | 0.00096 U | 0.067 | 0.00095 U | 0.012 | 0.10 |
| Benzo(a)pyrene | mg/kg | 190000 | 0.00076 U | 0.096 | 0.00076 U | 0.015 | 0.11 |
| Benzo(b)fluoranthene | mg/kg | 190000 | 0.0012 U | 0.13 | 0.0012 U | 0.016 | 0.14 |
| Benzo(g,h,i)perylene | mg/kg | 190000 | 0.00076 U | 0.091 | 0.00075 U | 0.011 | 0.098 |
| Benzo(k)fluoranthene | mg/kg | 190000 | 0.0015 U | 0.043 | 0.0015 U | 0.012 | 0.054 J |
| Biphenyl (1,1-Biphenyl) | mg/kg | 190000 | 0.0034 U | 0.016 U | 0.0034 U | 0.0034 U | 0.025 U |
| bis(2-Chloroethoxy)methane | mg/kg | 10000 | 0.0025 U | 0.012 U | 0.0025 U | 0.0025 U | 0.019 U |
| bis(2-Chloroethyl)ether | mg/kg | 7.7 | 0.0010 U | 0.0047 U | 0.0010 U | 0.0010 U | 0.0076 U |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | 10000 | 0.0078 J | 0.029 U | 0.0061 U | 0.0062 U | 0.058 J |
| Butyl benzylphthalate (BBP) | mg/kg | 10000 | 0.0077 J | 0.024 U | 0.0052 U | 0.0053 U | 0.039 U |
| Caprolactam | mg/kg | | 0.029 U | 0.13 U | 0.029 U | 0.029 U | 0.21 U |
| Carbazole | mg/kg | 190000 | 0.00070 U | 0.0033 U | 0.00070 U | 0.00071 U | 0.011 J |
| Chrysene | mg/kg | 190000 | 0.00091 U | 0.075 | 0.00090 U | 0.019 | 0.16 |
| Dibenz(a,h)anthracene | mg/kg | 190000 | 0.00085 U | 0.025 J | 0.00084 U | 0.00086 U | 0.025 J |
| Dibenzofuran | mg/kg | 190000 | 0.0038 U | 0.017 U | 0.0037 U | 0.0038 U | 0.028 U |
| Diethyl phthalate | mg/kg | 10000 | 0.0042 U | 0.019 U | 0.0041 U | 0.0042 U | 0.031 U |
| Dimethyl phthalate | mg/kg | | 0.0042 U | 0.019 U | 0.0041 U | 0.0042 U | 0.031 U |
| Di-n-butylphthalate (DBP) | mg/kg | 10000 | 0.0048 U | 0.022 U | 0.0047 U | 0.0048 U | 0.036 U |
| Di-n-octyl phthalate (DnOP) | mg/kg | 10000 | 0.0040 U | 0.019 U | 0.0040 U | 0.0041 U | 0.030 U |
| Fluoranthene | mg/kg | 190000 | 0.00082 U | 0.066 | 0.00081 U | 0.025 | 0.22 |
| Fluorene | mg/kg | 190000 | 0.0010 U | 0.0047 U | 0.0010 U | 0.0015 J | 0.025 J |
| Hexachlorobenzene | mg/kg | 190000 | 0.00081 U | 0.0038 U | 0.00080 U | 0.00082 U | 0.091 |
| Hexachlorobutadiene | mg/kg | 10000 | 0.00085 U | 0.0040 U | 0.00084 U | 0.00086 U | 0.0064 U |
| Hexachlorocyclopentadiene | mg/kg | 10000 | 0.0041 U | 0.019 U | 0.0041 U | 0.0042 U | 0.031 U |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-4** | **ELC-SB-5** |
|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_4.5-5-062514** | **ELC-SB-2_5-5.5-062514** | **ELC-SB-3_10-10.5_062514** | **ELC-SB-4_7-7.5_062614** | **ELC-SB-5_10-10.5_062414** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(4.5-5) ft BGS** | **(5-5.5) ft BGS** | **(10-10.5) ft BGS** | **(7-7.5) ft BGS** | **(10-10.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | |
| Hexachloroethane | mg/kg | 640 | 0.0027 U | 0.013 U | 0.0027 U | 0.0028 U | 0.020 U |
| Indeno(1,2,3-cd)pyrene | mg/kg | 190000 | 0.00079 U | 0.079 | 0.00078 U | 0.0091 | 0.087 |
| Isophorone | mg/kg | 10000 | 0.0029 U | 0.013 U | 0.0028 U | 0.0029 U | 0.021 U |
| Naphthalene | mg/kg | 190000 | 0.00066 U | 0.0030 U | 0.00065 U | 0.00066 U | 0.065 |
| Nitrobenzene | mg/kg | 10000 | 0.0032 U | 0.015 U | 0.0031 U | 0.0032 U | 0.024 U |
| N-Nitrosodi-n-propylamine | mg/kg | 10000 | 0.00089 U | 0.0041 U | 0.00089 U | 0.00090 U | 0.0067 U |
| N-Nitrosodiphenylamine | mg/kg | 190000 | 0.0035 U | 0.016 U | 0.0035 U | 0.0036 U | 0.026 U |
| Pentachlorophenol | mg/kg | 190000 | 0.0034 U | 0.016 U | 0.0034 U | 0.0034 U | 0.025 U |
| Phenanthrene | mg/kg | 190000 | 0.0012 U | 0.031 J | 0.0012 U | 0.017 | 0.14 |
| Phenol | mg/kg | 190000 | 0.00090 U | 0.0042 U | 0.00089 U | 0.00091 U | 0.0067 U |
| Pyrene | mg/kg | 190000 | 0.00077 U | 0.074 | 0.00076 U | 0.030 | 0.18 |
| **Metals** | | | | | | | |
| Antimony | mg/kg | 190000 | 0.14 J | 0.024 UJ | 0.10 J | 0.23 | 1.2 J |
| Arsenic | mg/kg | 190000 | 6.6 | 2.4 | 4.4 | 13 | 6.5 |
| Beryllium | mg/kg | 190000 | 0.42 | 0.40 J | 0.32 | 0.52 | 1.9 |
| Cadmium | mg/kg | 190000 | 0.022 J | 0.11 J | 0.069 J | 0.14 | 8.1 |
| Chromium | mg/kg | | 12 | 2200 | 8.0 | 12 | 120 |
| Copper | mg/kg | 190000 | 9.1 J | 28 J | 9.2 J | 46 | 180 J |
| Lead | mg/kg | 190000 | 9.6 | 10 | 6.8 | 24 | 240 |
| Mercury | mg/kg | 190000 | 0.012 U | 0.012 U | 0.012 U | 0.077 | 0.77 |
| Nickel | mg/kg | 190000 | 15 J | 36 J | 13 J | 12 | 56 |
| Selenium | mg/kg | 190000 | 0.30 J | 0.46 U | 0.14 J | 0.38 J | 2.2 J |
| Silver | mg/kg | 190000 | 0.0041 U | 0.036 U | 0.0039 U | 0.011 J | 1.5 |
| Thallium | mg/kg | 190000 | 0.075 J | 0.018 U | 0.039 J | 0.092 J | 0.29 J |
| Zinc | mg/kg | 190000 | 35 | 54 | 32 | 49 | 1900 J |
| **PCBs** | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | 10000 | 0.00014 U | 0.00013 U | 0.00014 U | 0.00014 U | 0.00021 U |
| Aroclor-1221 (PCB-1221) | mg/kg | 10000 | 0.00018 U | 0.00017 U | 0.00018 U | 0.00018 U | 0.00027 U |
| Aroclor-1232 (PCB-1232) | mg/kg | 10000 | 0.00016 U | 0.00015 U | 0.00016 U | 0.00017 U | 0.00024 U |
| Aroclor-1242 (PCB-1242) | mg/kg | 10000 | 0.00015 U | 0.00014 U | 0.00015 U | 0.00016 U | 0.00023 U |
| Aroclor-1248 (PCB-1248) | mg/kg | 10000 | 0.000089 U | 0.026 | 0.000089 U | 0.000092 U | 0.00014 U |
| Aroclor-1254 (PCB-1254) | mg/kg | 10000 | 0.00013 U | 0.00013 U | 0.00013 U | 0.00014 U | 0.11 |
| Aroclor-1260 (PCB-1260) | mg/kg | 190000 | 0.00013 U | 0.012 | 0.00013 U | 0.0018 | 0.00020 U |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-4** | **ELC-SB-5** |
|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_4.5-5-062514** | **ELC-SB-2_5-5.5-062514** | **ELC-SB-3_10-10.5_062514** | **ELC-SB-4_7-7.5_062614** | **ELC-SB-5_10-10.5_062414** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(4.5-5) ft BGS** | **(5-5.5) ft BGS** | **(10-10.5) ft BGS** | **(7-7.5) ft BGS** | **(10-10.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | |
| **Petroleum Products** | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | - | - |
| **General Chemistry** | | | | | | | |
| Percent moisture | % | | 13 | 6.3 | 12 | 14 | 42 |
| pH | s.u. | | - | - | - | - | - |

Notes:

(1) PA Chapter 250, Appendix A, Tables 3 to 4, Medium Specific Concentrations (MSC) for organic and inorganic regulated substances in soil, Direct-contact Numerical values, Non-Residential, Subsurface Soil (2-15 feet).
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
- Not analyzed

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-11** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_10-10.5_062514** | **ELC-SB-7_6.5-7_062414** | **ELC-SB-8_3-3.5-062514** | **ELC-SB-9_5-5.5_062614** | **ELC-SB-10_6-6.5_062414** | **ELC-SB-11_5-5.5-062514** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/25/2014** | **6/26/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(10-10.5) ft BGS** | **(6.5-7) ft BGS** | **(3-3.5) ft BGS** | **(5-5.5) ft BGS** | **(6-6.5) ft BGS** | **(5-5.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 10000 | 0.00046 U | 0.00037 U | 0.00035 U | 0.00035 U | 0.00036 UJ | 0.00040 U |
| 1,1,2,2-Tetrachloroethane | mg/kg | 44 | 0.00068 U | 0.00055 U | 0.00052 U | 0.00052 U | 0.00054 UJ | 0.00059 U |
| 1,1,2-Trichloroethane | mg/kg | 160 | 0.00079 U | 0.00064 U | 0.00061 U | 0.00060 U | 0.00062 UJ | 0.00069 U |
| 1,1-Dichloroethane | mg/kg | 1600 | 0.00054 U | 0.00044 U | 0.00042 U | 0.00042 U | 0.00043 UJ | 0.00048 U |
| 1,1-Dichloroethene | mg/kg | 10000 | 0.00080 U | 0.00065 U | 0.00062 U | 0.00062 U | 0.00063 UJ | 0.00070 U |
| 1,2,4-Trichlorobenzene | mg/kg | 10000 | 0.00083 U | 0.00068 U | 0.00064 U | 0.00064 U | 0.00066 UJ | 0.00073 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 0.43 | 0.00071 U | 0.00057 U | 0.00055 U | 0.00054 U | 0.00056 UJ | 0.00062 U |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 4.3 | 0.00082 U | 0.00066 U | 0.00063 U | 0.00063 U | 0.00064 UJ | 0.00071 U |
| 1,2-Dichlorobenzene | mg/kg | 10000 | 0.00075 U | 0.00061 U | 0.00058 U | 0.00058 U | 0.00060 UJ | 0.00066 U |
| 1,2-Dichloroethane | mg/kg | 98 | 0.00058 U | 0.00047 U | 0.00045 U | 0.00045 U | 0.00046 UJ | 0.00051 U |
| 1,2-Dichloroethene (total) | mg/kg | | 0.0012 U | 0.00098 U | 0.013 | 0.00093 U | 0.00096 UJ | 0.0011 U |
| 1,2-Dichloropropane | mg/kg | 260 | 0.00051 U | 0.00042 U | 0.00040 U | 0.00040 U | 0.00041 UJ | 0.00045 U |
| 1,3-Dichlorobenzene | mg/kg | 10000 | 0.00062 U | 0.00050 U | 0.00048 U | 0.00048 U | 0.00049 UJ | 0.00054 U |
| 1,4-Dichlorobenzene | mg/kg | 230 | 0.00060 U | 0.00049 U | 0.00046 U | 0.00046 U | 0.00048 UJ | 0.00053 U |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 10000 | 0.00083 U | 0.00067 U | 0.00064 U | 0.00064 U | 0.00066 UJ | 0.00073 U |
| 2-Hexanone | mg/kg | 460 | 0.00065 U | 0.00053 U | 0.00050 U | 0.00050 U | 0.00052 UJ | 0.00057 U |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 10000 | 0.00062 U | 0.00050 U | 0.00048 U | 0.00047 U | 0.00049 UJ | 0.00054 U |
| Acetone | mg/kg | 10000 | 0.0047 U | 0.0038 U | 0.0036 U | 0.0036 U | 0.0037 UJ | 0.0047 U |
| Benzene | mg/kg | 330 | 0.00064 U | 0.00052 U | 0.00049 U | 0.00049 U | 0.00050 UJ | 0.00056 U |
| Bromodichloromethane | mg/kg | 69 | 0.00053 U | 0.00043 U | 0.00041 U | 0.00041 U | 0.00042 UJ | 0.00046 U |
| Bromoform | mg/kg | 2300 | 0.00042 U | 0.00034 U | 0.00032 U | 0.00032 U | 0.00033 UJ | 0.00037 U |
| Bromomethane (Methyl bromide) | mg/kg | 460 | 0.00070 U | 0.00057 U | 0.00054 U | 0.00054 U | 0.00055 UJ | 0.00061 U |
| Carbon disulfide | mg/kg | 10000 | 0.00048 U | 0.00039 U | 0.00065 J | 0.00070 J | 0.00038 J | 0.00042 U |
| Carbon tetrachloride | mg/kg | 170 | 0.00042 U | 0.00034 U | 0.00033 U | 0.00032 U | 0.00033 UJ | 0.00037 U |
| Chlorobenzene | mg/kg | 4600 | 0.00072 U | 0.00058 U | 0.00055 U | 0.00055 U | 0.00057 UJ | 0.00063 U |
| Chloroethane | mg/kg | 10000 | 0.0015 U | 0.0012 U | 0.0011 U | 0.0011 U | 0.0012 UJ | 0.0013 U |
| Chloroform (Trichloromethane) | mg/kg | 110 | 0.00055 U | 0.00045 U | 0.00043 U | 0.00043 U | 0.00044 UJ | 0.00048 U |
| Chloromethane (Methyl chloride) | mg/kg | 1400 | 0.00081 U | 0.00065 U | 0.00062 U | 0.00062 U | 0.00064 UJ | 0.00070 U |
| cis-1,2-Dichloroethene | mg/kg | 10000 | 0.00067 U | 0.00054 U | 0.013 | 0.00051 U | 0.00052 UJ | 0.00058 U |
| cis-1,3-Dichloropropene | mg/kg | | 0.00064 U | 0.00052 U | 0.00049 U | 0.00049 U | 0.00051 UJ | 0.00056 U |
| Cyclohexane | mg/kg | 10000 | 0.00035 U | 0.00028 U | 0.00027 U | 0.00093 J | 0.00028 UJ | 0.00031 U |
| Dibromochloromethane | mg/kg | 95 | 0.00067 U | 0.00054 U | 0.00052 U | 0.00052 U | 0.00053 UJ | 0.00059 U |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 10000 | 0.00063 U | 0.00051 U | 0.00049 U | 0.00048 U | 0.00050 UJ | 0.00055 U |
| Ethylbenzene | mg/kg | 10000 | 0.00061 U | 0.00049 U | 0.00047 U | 0.0026 J | 0.00048 UJ | 0.00053 U |
| Isopropyl benzene | mg/kg | 10000 | 0.00064 U | 0.00052 U | 0.00050 U | 0.0029 J | 0.00051 UJ | 0.00056 U |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-11** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_10-10.5_062514** | **ELC-SB-7_6.5-7_062414** | **ELC-SB-8_3-3.5-062514** | **ELC-SB-9_5-5.5_062614** | **ELC-SB-10_6-6.5_062414** | **ELC-SB-11_5-5.5-062514** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/25/2014** | **6/26/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(10-10.5) ft BGS** | **(6.5-7) ft BGS** | **(3-3.5) ft BGS** | **(5-5.5) ft BGS** | **(6-6.5) ft BGS** | **(5-5.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | | |
| m&p-Xylenes | mg/kg | | 0.0014 U | 0.0011 U | 0.0011 U | 0.0059 J | 0.0011 UJ | 0.0012 U |
| Methyl acetate | mg/kg | 10000 | 0.00085 U | 0.00069 U | 0.00066 U | 0.00066 U | 0.00067 UJ | 0.00075 U |
| Methyl cyclohexane | mg/kg | | 0.00069 U | 0.00056 U | 0.00053 U | 0.0080 | 0.00054 UJ | 0.00060 U |
| Methyl tert butyl ether (MTBE) | mg/kg | 3700 | 0.00071 U | 0.00057 U | 0.00055 U | 0.00054 U | 0.00056 UJ | 0.00062 U |
| Methylene chloride | mg/kg | 5400 | 0.0017 U | 0.0016 J | 0.0029 U | 0.0035 J | 0.0018 UJ | 0.0020 U |
| o-Xylene | mg/kg | | 0.00074 U | 0.00060 U | 0.00057 U | 0.0082 | 0.00058 UJ | 0.00064 U |
| Styrene | mg/kg | 10000 | 0.00067 U | 0.00054 U | 0.00051 U | 0.00051 U | 0.00053 UJ | 0.00058 U |
| Tetrachloroethene | mg/kg | 4400 | 0.00064 U | 0.00052 U | 0.018 | 0.00050 U | 0.00051 UJ | 0.00056 U |
| Toluene | mg/kg | 10000 | 0.00069 U | 0.00056 U | 0.00053 U | 0.00053 U | 0.00054 UJ | 0.00060 U |
| trans-1,2-Dichloroethene | mg/kg | 5500 | 0.00056 U | 0.00046 U | 0.00043 U | 0.00043 U | 0.00044 UJ | 0.00049 U |
| trans-1,3-Dichloropropene | mg/kg | | 0.00057 U | 0.00046 U | 0.00044 U | 0.00043 U | 0.00045 UJ | 0.00049 U |
| Trichloroethene | mg/kg | 1500 | 0.00062 U | 0.00050 U | 0.0019 J | 0.00048 U | 0.00049 UJ | 0.00054 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 10000 | 0.00087 U | 0.00070 U | 0.00067 U | 0.00067 U | 0.00069 UJ | 0.00076 U |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 10000 | 0.0010 U | 0.00082 U | 0.00078 U | 0.00078 U | 0.00080 UJ | 0.00088 U |
| Vinyl chloride | mg/kg | 580 | 0.00044 U | 0.00036 U | 0.00034 U | 0.00034 U | 0.00035 UJ | 0.00039 U |
| Xylenes (total) | mg/kg | 9100 | 0.0021 U | 0.0017 U | 0.0016 U | 0.014 | 0.0017 UJ | 0.0019 U |
| **Semi-volatile Organic Compounds** | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 250 | 0.00083 U | 0.00081 U | 0.0079 U | 0.0040 U | 0.00078 UJ | 0.00086 U |
| 2,4,5-Trichlorophenol | mg/kg | 190000 | 0.0041 U | 0.0040 U | 0.039 U | 0.020 U | 0.0039 UJ | 0.0042 U |
| 2,4,6-Trichlorophenol | mg/kg | 190000 | 0.0057 U | 0.0056 U | 0.055 U | 0.028 U | 0.0054 UJ | 0.0060 U |
| 2,4-Dichlorophenol | mg/kg | 190000 | 0.00077 U | 0.00075 U | 0.0074 U | 0.0037 U | 0.00073 UJ | 0.00080 U |
| 2,4-Dimethylphenol | mg/kg | 10000 | 0.0060 U | 0.0059 U | 0.057 U | 0.029 U | 0.0057 UJ | 0.0062 U |
| 2,4-Dinitrophenol | mg/kg | 190000 | 0.046 U | 0.045 U | 0.44 U | 0.22 U | 0.043 UJ | 0.047 U |
| 2,4-Dinitrotoluene | mg/kg | 190000 | 0.0031 U | 0.0030 U | 0.030 U | 0.015 U | 0.0029 UJ | 0.0032 U |
| 2,6-Dinitrotoluene | mg/kg | 190000 | 0.0040 U | 0.0039 U | 0.038 U | 0.019 U | 0.0037 UJ | 0.0041 U |
| 2-Chloronaphthalene | mg/kg | 190000 | 0.00080 U | 0.00078 U | 0.0077 U | 0.0039 U | 0.00075 UJ | 0.00083 U |
| 2-Chlorophenol | mg/kg | 10000 | 0.0031 U | 0.0031 U | 0.030 U | 0.015 U | 0.0030 UJ | 0.0032 U |
| 2-Methylnaphthalene | mg/kg | 190000 | 0.00069 U | 0.00068 U | 0.027 J | 5.4 | 0.0025 J | 0.00071 U |
| 2-Methylphenol | mg/kg | 190000 | 0.0027 U | 0.0026 U | 0.026 U | 0.013 U | 0.0025 UJ | 0.0028 U |
| 2-Nitroaniline | mg/kg | 190000 | 0.017 U | 0.017 U | 0.16 U | 0.083 U | 0.016 UJ | 0.018 U |
| 2-Nitrophenol | mg/kg | 190000 | 0.0042 U | 0.0041 U | 0.040 U | 0.021 U | 0.0040 UJ | 0.0044 U |
| 3,3'-Dichlorobenzidine | mg/kg | 190000 | 0.0040 U | 0.0040 U | 0.039 U | 0.020 U | 0.0038 UJ | 0.0042 U |
| 3-Nitroaniline | mg/kg | 190000 | 0.016 U | 0.015 U | 0.15 U | 0.077 U | 0.015 UJ | 0.016 U |
| 4,6-Dinitro-2-methylphenol | mg/kg | 190000 | 0.015 U | 0.015 U | 0.15 U | 0.075 U | 0.015 UJ | 0.016 U |
| 4-Bromophenyl phenyl ether | mg/kg | | 0.0033 U | 0.0033 U | 0.032 U | 0.016 U | 0.0031 UJ | 0.0035 U |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-11** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_10-10.5_062514** | **ELC-SB-7_6.5-7_062414** | **ELC-SB-8_3-3.5-062514** | **ELC-SB-9_5-5.5_062614** | **ELC-SB-10_6-6.5_062414** | **ELC-SB-11_5-5.5-062514** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/25/2014** | **6/26/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(10-10.5) ft BGS** | **(6.5-7) ft BGS** | **(3-3.5) ft BGS** | **(5-5.5) ft BGS** | **(6-6.5) ft BGS** | **(5-5.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | | |
| 4-Chloro-3-methylphenol | mg/kg | 190000 | 0.0035 U | 0.0035 U | 0.034 U | 0.017 U | 0.0033 UJ | 0.0037 U |
| 4-Chloroaniline | mg/kg | 190000 | 0.0031 U | 0.0030 U | 0.029 U | 0.015 U | 0.0029 UJ | 0.0032 U |
| 4-Chlorophenyl phenyl ether | mg/kg | | 0.0043 U | 0.0042 U | 0.041 U | 0.021 U | 0.0040 UJ | 0.0044 U |
| 4-Methylphenol | mg/kg | 190000 | 0.0037 U | 0.0037 U | 0.036 U | 0.018 U | 0.0035 UJ | 0.0039 U |
| 4-Nitroaniline | mg/kg | 190000 | 0.016 U | 0.015 U | 0.15 U | 0.075 U | 0.015 UJ | 0.016 U |
| 4-Nitrophenol | mg/kg | 190000 | 0.014 U | 0.014 U | 0.13 U | 0.068 U | 0.013 UJ | 0.014 U |
| Acenaphthene | mg/kg | 190000 | 0.00074 U | 0.00072 U | 0.055 J | 0.75 | 0.0073 J | 0.00076 U |
| Acenaphthylene | mg/kg | 190000 | 0.00088 U | 0.00086 U | 0.050 J | 0.0043 U | 0.0011 J | 0.00091 U |
| Acetophenone | mg/kg | 10000 | 0.0035 J | 0.0031 U | 0.030 U | 1.0 | 0.0079 J | 0.0033 U |
| Anthracene | mg/kg | 190000 | 0.00075 U | 0.00074 U | 0.078 | 0.46 | 0.012 J | 0.00078 U |
| Atrazine | mg/kg | 190000 | 0.0037 U | 0.0037 U | 0.036 U | 0.018 U | 0.0035 UJ | 0.0039 U |
| Benzaldehyde | mg/kg | | R | 0.028 J | R | R | 0.0054 UJ | R |
| Benzo(a)anthracene | mg/kg | 190000 | 0.00096 U | 0.00094 U | 0.34 | 0.058 | 0.055 J | 0.0028 J |
| Benzo(a)pyrene | mg/kg | 190000 | 0.00077 U | 0.00075 U | 0.39 | 0.056 | 0.095 J | 0.00080 U |
| Benzo(b)fluoranthene | mg/kg | 190000 | 0.0012 U | 0.0012 U | 0.49 | 0.081 | 0.097 J | 0.0030 J |
| Benzo(g,h,i)perylene | mg/kg | 190000 | 0.00076 U | 0.00075 U | 0.39 | 0.068 | 0.10 J | 0.00079 U |
| Benzo(k)fluoranthene | mg/kg | 190000 | 0.0015 U | 0.0015 U | 0.15 | 0.042 | 0.039 J | 0.0016 U |
| Biphenyl (1,1-Biphenyl) | mg/kg | 190000 | 0.0034 U | 0.0034 U | 0.033 U | 0.59 | 0.0032 UJ | 0.0035 U |
| bis(2-Chloroethoxy)methane | mg/kg | 10000 | 0.0025 U | 0.0025 U | 0.024 U | 0.012 U | 0.0024 UJ | 0.0026 U |
| bis(2-Chloroethyl)ether | mg/kg | 7.7 | 0.0010 U | 0.0010 U | 0.0098 U | 0.0050 U | 0.00097 UJ | 0.0011 U |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | 10000 | 0.0062 U | 0.018 J | 0.059 U | 0.10 J | 0.0058 UJ | 0.0066 J |
| Butyl benzylphthalate (BBP) | mg/kg | 10000 | 0.0052 U | 0.0081 J | 0.050 U | 0.025 U | 0.0049 UJ | 0.0065 J |
| Caprolactam | mg/kg | | 0.029 U | 0.028 U | 0.28 U | 0.14 U | 0.027 UJ | 0.030 U |
| Carbazole | mg/kg | 190000 | 0.00071 U | 0.00069 U | 0.027 J | 0.0034 U | 0.0059 J | 0.00073 U |
| Chrysene | mg/kg | 190000 | 0.00091 U | 0.00090 U | 0.45 | 0.074 | 0.060 J | 0.0025 J |
| Dibenz(a,h)anthracene | mg/kg | 190000 | 0.00085 U | 0.00084 U | 0.070 J | 0.0041 U | 0.021 J | 0.00088 U |
| Dibenzofuran | mg/kg | 190000 | 0.0038 U | 0.0037 U | 0.036 U | 0.018 U | 0.0036 UJ | 0.0039 U |
| Diethyl phthalate | mg/kg | 10000 | 0.0042 U | 0.0041 U | 0.040 U | 0.020 U | 0.0039 UJ | 0.0043 U |
| Dimethyl phthalate | mg/kg | | 0.0042 U | 0.0041 U | 0.040 U | 0.020 U | 0.0039 UJ | 0.0043 U |
| Di-n-butylphthalate (DBP) | mg/kg | 10000 | 0.0048 U | 0.0067 J | 0.046 U | 0.023 U | 0.0045 UJ | 0.0050 U |
| Di-n-octyl phthalate (DnOP) | mg/kg | 10000 | 0.0040 U | 0.0040 U | 0.039 U | 0.020 U | 0.0038 UJ | 0.0042 U |
| Fluoranthene | mg/kg | 190000 | 0.00082 U | 0.0017 J | 0.55 | 0.16 | 0.091 J | 0.0032 J |
| Fluorene | mg/kg | 190000 | 0.0010 U | 0.00099 U | 0.045 J | 0.95 | 0.0039 J | 0.0010 U |
| Hexachlorobenzene | mg/kg | 190000 | 0.00082 U | 0.046 | 0.0078 U | 0.0040 U | 0.00077 UJ | 0.00085 U |
| Hexachlorobutadiene | mg/kg | 10000 | 0.00086 U | 0.00084 U | 0.0082 U | 0.0042 U | 0.00081 UJ | 0.00089 U |
| Hexachlorocyclopentadiene | mg/kg | 10000 | 0.0041 U | 0.0041 U | 0.040 U | 0.020 U | 0.0039 UJ | 0.0043 U |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-11** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_10-10.5_062514** | **ELC-SB-7_6.5-7_062414** | **ELC-SB-8_3-3.5-062514** | **ELC-SB-9_5-5.5_062614** | **ELC-SB-10_6-6.5_062414** | **ELC-SB-11_5-5.5-062514** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/25/2014** | **6/26/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(10-10.5) ft BGS** | **(6.5-7) ft BGS** | **(3-3.5) ft BGS** | **(5-5.5) ft BGS** | **(6-6.5) ft BGS** | **(5-5.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | | |
| Hexachloroethane | mg/kg | 640 | 0.0028 U | 0.0027 U | 0.026 U | 0.013 U | 0.0026 UJ | 0.0029 U |
| Indeno(1,2,3-cd)pyrene | mg/kg | 190000 | 0.00079 U | 0.00077 U | 0.26 | 0.040 | 0.083 J | 0.00082 U |
| Isophorone | mg/kg | 10000 | 0.0029 U | 0.0028 U | 0.028 U | 0.014 U | 0.0027 UJ | 0.0030 U |
| Naphthalene | mg/kg | 190000 | 0.00066 U | 0.00065 U | 0.054 J | 0.42 | 0.0033 J | 0.00069 U |
| Nitrobenzene | mg/kg | 10000 | 0.0032 U | 0.0031 U | 0.031 U | 0.015 U | 0.0030 UJ | 0.0033 U |
| N-Nitrosodi-n-propylamine | mg/kg | 10000 | 0.00090 U | 0.00088 U | 0.0086 U | 0.0044 U | 0.00085 UJ | 0.00093 U |
| N-Nitrosodiphenylamine | mg/kg | 190000 | 0.0035 U | 0.0035 U | 0.034 U | 0.017 U | 0.0033 UJ | 0.0037 U |
| Pentachlorophenol | mg/kg | 190000 | 0.0034 U | 0.0034 U | 0.033 U | 0.017 U | 0.0032 UJ | 0.0036 U |
| Phenanthrene | mg/kg | 190000 | 0.0012 U | 0.0012 U | 0.30 | 1.7 | 0.042 J | 0.0019 J |
| Phenol | mg/kg | 190000 | 0.00090 U | 0.0063 J | 0.0087 U | 0.0044 U | 0.00085 UJ | 0.00094 U |
| Pyrene | mg/kg | 190000 | 0.00077 U | 0.0011 J | 0.56 | 0.22 | 0.064 J | 0.0031 J |
| **Metals** | | | | | | | | |
| Antimony | mg/kg | 190000 | 0.13 J | 0.12 J | 20 J | 8.3 | 0.15 J | 0.25 J |
| Arsenic | mg/kg | 190000 | 4.7 | 5.6 | 6.3 | 11 | 2.1 | 5.0 |
| Beryllium | mg/kg | 190000 | 0.31 | 0.33 | 2.2 | 0.39 | 0.82 | 0.43 |
| Cadmium | mg/kg | 190000 | 0.095 J | 0.040 J | 0.55 J | 3.4 | 0.12 J | 0.040 J |
| Chromium | mg/kg | | 8.6 | 8.6 | 580 | 34 | 1600 | 22 |
| Copper | mg/kg | 190000 | 10 J | 9.3 J | 3200 J | 110 | 26 J | 9.4 J |
| Lead | mg/kg | 190000 | 7.3 | 7.8 | 500 | 170 | 23 | 9.3 |
| Mercury | mg/kg | 190000 | 0.012 U | 0.012 U | 0.014 J | 0.16 | 0.011 U | 0.012 U |
| Nickel | mg/kg | 190000 | 14 J | 14 | 36 J | 34 | 24 | 15 J |
| Selenium | mg/kg | 190000 | 0.15 J | 0.18 J | 1.9 J | 0.45 J | 0.48 J | 0.32 J |
| Silver | mg/kg | 190000 | 0.0041 U | 0.0065 J | 0.98 | 0.30 | 0.021 U | 0.0042 U |
| Thallium | mg/kg | 190000 | 0.046 J | 0.041 J | 0.052 J | 0.076 J | 0.012 J | 0.081 J |
| Zinc | mg/kg | 190000 | 31 | 33 J | 160 | 310 | 64 J | 43 |
| **PCBs** | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | 10000 | 0.00014 U | 0.00014 U | 0.0014 U | 0.00069 U | 0.00013 U | 0.00015 U |
| Aroclor-1221 (PCB-1221) | mg/kg | 10000 | 0.00018 U | 0.00018 U | 0.0017 U | 0.00089 U | 0.00017 U | 0.00019 U |
| Aroclor-1232 (PCB-1232) | mg/kg | 10000 | 0.00016 U | 0.00016 U | 0.0016 U | 0.00080 U | 0.00015 U | 0.00017 U |
| Aroclor-1242 (PCB-1242) | mg/kg | 10000 | 0.00015 U | 0.00015 U | 0.0015 U | 0.00076 U | 0.00015 U | 0.00016 U |
| Aroclor-1248 (PCB-1248) | mg/kg | 10000 | 0.00039 J | 0.000088 U | 0.00086 U | 0.00044 U | 0.0061 | 0.000095 U |
| Aroclor-1254 (PCB-1254) | mg/kg | 10000 | 0.00014 U | 0.0019 | 0.34 | 0.10 J | 0.00013 U | 0.0021 |
| Aroclor-1260 (PCB-1260) | mg/kg | 190000 | 0.00027 J | 0.00013 U | 0.0013 U | 0.071 J | 0.00013 U | 0.00014 U |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-11** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_10-10.5_062514** | **ELC-SB-7_6.5-7_062414** | **ELC-SB-8_3-3.5-062514** | **ELC-SB-9_5-5.5_062614** | **ELC-SB-10_6-6.5_062414** | **ELC-SB-11_5-5.5-062514** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/25/2014** | **6/26/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(10-10.5) ft BGS** | **(6.5-7) ft BGS** | **(3-3.5) ft BGS** | **(5-5.5) ft BGS** | **(6-6.5) ft BGS** | **(5-5.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | | |
| **Petroleum Products** | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | - | - | - |
| **General Chemistry** | | | | | | | | |
| Percent moisture | % | | 13 | 12 | 9.1 | 10 | 8.3 | 17 |
| pH | s.u. | | - | - | - | - | - | - |

Notes:

(1) PA Chapter 250, Appendix A, Tables 3 to 4, Medium Specific Concentrations (MSC) for organic and inorganic regulated substances in soil, Direct-contact Numerical values, Non-Residential, Subsurface Soil (2-15 feet).
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
\- Not analyzed

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-14** | **L1P3-MW-4** | **L1P3-MW-5** | **L1P3-MW-5** | **L1P3-MW-6** | **L1P3-TP-1** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-12_5-5.5_062614** | **ELC-SB-13-4.5-5_062414** | **ELC-SB-14_4.5-5_062414** | **MW-4 10-11'** | **MW-5 7.5-12'** | **MW-5 12-14'** | **MW-6 15-17'** | **TP-1 7'-7-6"** |
| **Sample Date:** | | | **6/26/2014** | **6/24/2014** | **6/24/2014** | **9/15/1998** | **9/15/1998** | **9/15/1998** | **9/16/1998** | **9/22/1998** |
| **Sample Depth:** | | | **(5-5.5) ft BGS** | **(4.5-5) ft BGS** | **(4.5-5) ft BGS** | **(10-11) ft BGS** | **(7.5-12) ft BGS** | **(12-14) ft BGS** | **(15-17) ft BGS** | **(7-7.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 10000 | 0.00040 U | 0.00046 UJ | 0.00048 U | - | - | - | - | - |
| 1,1,2,2-Tetrachloroethane | mg/kg | 44 | 0.00059 U | 0.00068 UJ | 0.00071 U | - | - | - | - | - |
| 1,1,2-Trichloroethane | mg/kg | 160 | 0.00069 U | 0.00078 UJ | 0.00082 U | - | - | - | - | - |
| 1,1-Dichloroethane | mg/kg | 1600 | 0.00048 U | 0.00054 UJ | 0.00057 U | - | - | - | - | - |
| 1,1-Dichloroethene | mg/kg | 10000 | 0.00070 U | 0.00080 UJ | 0.00084 U | - | - | - | - | - |
| 1,2,4-Trichlorobenzene | mg/kg | 10000 | 0.00073 U | 0.00083 UJ | 0.00087 U | - | - | - | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 0.43 | 0.00062 U | 0.00071 UJ | 0.00074 U | - | - | - | - | - |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 4.3 | 0.00071 U | 0.00081 UJ | 0.00085 U | - | - | - | - | - |
| 1,2-Dichlorobenzene | mg/kg | 10000 | 0.00066 U | 0.00075 UJ | 0.00079 U | - | - | - | - | - |
| 1,2-Dichloroethane | mg/kg | 98 | 0.00051 U | 0.00058 UJ | 0.00061 U | - | - | - | - | - |
| 1,2-Dichloroethene (total) | mg/kg | | 0.0011 U | 0.0012 UJ | 0.0013 U | - | - | - | - | - |
| 1,2-Dichloropropane | mg/kg | 260 | 0.00045 U | 0.00051 UJ | 0.00054 U | - | - | - | - | - |
| 1,3-Dichlorobenzene | mg/kg | 10000 | 0.00054 U | 0.00062 UJ | 0.00065 U | - | - | - | - | - |
| 1,4-Dichlorobenzene | mg/kg | 230 | 0.00053 U | 0.00060 UJ | 0.00063 U | - | - | - | - | - |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 10000 | 0.00073 U | 0.00083 UJ | 0.00087 U | - | - | - | - | - |
| 2-Hexanone | mg/kg | 460 | 0.00057 U | 0.00065 UJ | 0.00068 U | - | - | - | - | - |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 10000 | 0.00054 U | 0.00061 UJ | 0.00064 U | - | - | - | - | - |
| Acetone | mg/kg | 10000 | 0.0041 U | 0.0047 UJ | 0.0049 U | - | - | - | - | - |
| Benzene | mg/kg | 330 | 0.00056 U | 0.00064 UJ | 0.00067 U | - | - | - | - | - |
| Bromodichloromethane | mg/kg | 69 | 0.00046 U | 0.00053 UJ | 0.00055 U | - | - | - | - | - |
| Bromoform | mg/kg | 2300 | 0.00037 U | 0.00042 UJ | 0.00044 U | - | - | - | - | - |
| Bromomethane (Methyl bromide) | mg/kg | 460 | 0.00061 U | 0.00070 UJ | 0.00073 U | - | - | - | - | - |
| Carbon disulfide | mg/kg | 10000 | 0.00042 U | 0.00060 J | 0.00051 U | - | - | - | - | - |
| Carbon tetrachloride | mg/kg | 170 | 0.00037 U | 0.00042 UJ | 0.00044 U | - | - | - | - | - |
| Chlorobenzene | mg/kg | 4600 | 0.00063 U | 0.00071 UJ | 0.00075 U | - | - | - | - | - |
| Chloroethane | mg/kg | 10000 | 0.0013 U | 0.0015 UJ | 0.0015 U | - | - | - | - | - |
| Chloroform (Trichloromethane) | mg/kg | 110 | 0.00048 U | 0.00055 UJ | 0.00058 U | - | - | - | - | - |
| Chloromethane (Methyl chloride) | mg/kg | 1400 | 0.00070 U | 0.00080 UJ | 0.00084 U | - | - | - | - | - |
| cis-1,2-Dichloroethene | mg/kg | 10000 | 0.00058 U | 0.00066 UJ | 0.00069 U | - | - | - | - | - |
| cis-1,3-Dichloropropene | mg/kg | | 0.00056 U | 0.00064 UJ | 0.00067 U | - | - | - | - | - |
| Cyclohexane | mg/kg | 10000 | 0.00031 U | 0.00035 UJ | 0.00037 U | - | - | - | - | - |
| Dibromochloromethane | mg/kg | 95 | 0.00059 U | 0.00067 UJ | 0.00070 U | - | - | - | - | - |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 10000 | 0.00055 U | 0.00063 UJ | 0.00066 U | - | - | - | - | - |
| Ethylbenzene | mg/kg | 10000 | 0.00053 U | 0.00061 UJ | 0.00063 U | 0.005 U | 0.23 J | 0.0031 J | 0.005 U | 0.005 U |
| Isopropyl benzene | mg/kg | 10000 | 0.00056 U | 0.00064 UJ | 0.00067 U | - | - | - | - | - |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-14** | **L1P3-MW-4** | **L1P3-MW-5** | **L1P3-MW-5** | **L1P3-MW-6** | **L1P3-TP-1** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-12_5-5.5_062614** | **ELC-SB-13-4.5-5_062414** | **ELC-SB-14_4.5-5_062414** | **MW-4 10-11'** | **MW-5 7.5-12'** | **MW-5 12-14'** | **MW-6 15-17'** | **TP-1 7'-7-6"** |
| **Sample Date:** | | | **6/26/2014** | **6/24/2014** | **6/24/2014** | **9/15/1998** | **9/15/1998** | **9/15/1998** | **9/16/1998** | **9/22/1998** |
| **Sample Depth:** | | | **(5-5.5) ft BGS** | **(4.5-5) ft BGS** | **(4.5-5) ft BGS** | **(10-11) ft BGS** | **(7.5-12) ft BGS** | **(12-14) ft BGS** | **(15-17) ft BGS** | **(7-7.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | | | | |
| m&p-Xylenes | mg/kg | | 0.0012 U | 0.0014 UJ | 0.0015 U | - | - | - | - | - |
| Methyl acetate | mg/kg | 10000 | 0.00074 U | 0.00085 UJ | 0.00089 U | - | - | - | - | - |
| Methyl cyclohexane | mg/kg | | 0.00060 U | 0.00068 UJ | 0.00072 U | - | - | - | - | - |
| Methyl tert butyl ether (MTBE) | mg/kg | 3700 | 0.00062 U | 0.00070 UJ | 0.00074 U | - | - | - | - | - |
| Methylene chloride | mg/kg | 5400 | 0.0028 U | 0.0020 UJ | 0.0023 UJ | 0.0035 JB | 0.92 | 0.0031 JB | 0.0036 JB | 0.0013 JB |
| o-Xylene | mg/kg | | 0.00064 U | 0.00073 UJ | 0.00077 U | - | - | - | - | - |
| Styrene | mg/kg | 10000 | 0.00058 U | 0.00066 UJ | 0.00070 U | - | - | - | - | - |
| Tetrachloroethene | mg/kg | 4400 | 0.00056 U | 0.00064 UJ | 0.00067 U | - | - | - | - | - |
| Toluene | mg/kg | 10000 | 0.00060 U | 0.00069 UJ | 0.00072 U | 0.0013 JB | 0.13 J | 0.0027 J | 0.005 U | 0.00091 J |
| trans-1,2-Dichloroethene | mg/kg | 5500 | 0.00049 U | 0.00056 UJ | 0.00059 U | - | - | - | - | - |
| trans-1,3-Dichloropropene | mg/kg | | 0.00049 U | 0.00056 UJ | 0.00059 U | - | - | - | - | - |
| Trichloroethene | mg/kg | 1500 | 0.00054 U | 0.00062 UJ | 0.00065 U | 0.00079 JB | 0.00079 J | 0.005 U | 0.005 U | 0.005 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 10000 | 0.00076 U | 0.00087 UJ | 0.00091 U | - | - | - | - | - |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 10000 | 0.00088 U | 0.0010 UJ | 0.0011 U | - | - | - | - | - |
| Vinyl chloride | mg/kg | 580 | 0.00039 U | 0.00044 UJ | 0.00046 U | - | - | - | - | - |
| Xylenes (total) | mg/kg | 9100 | 0.0019 U | 0.0021 UJ | 0.0022 U | - | - | - | - | - |
| **Semi-volatile Organic Compounds** | | | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 250 | 0.00085 U | 0.00083 U | 0.00080 U | - | - | - | - | - |
| 2,4,5-Trichlorophenol | mg/kg | 190000 | 0.0042 U | 0.0041 U | 0.0040 U | - | - | - | - | - |
| 2,4,6-Trichlorophenol | mg/kg | 190000 | 0.0059 U | 0.0058 U | 0.0056 U | - | - | - | - | - |
| 2,4-Dichlorophenol | mg/kg | 190000 | 0.00079 U | 0.00077 U | 0.00075 U | - | - | - | - | - |
| 2,4-Dimethylphenol | mg/kg | 10000 | 0.0062 U | 0.0060 U | 0.0058 U | - | - | - | - | - |
| 2,4-Dinitrophenol | mg/kg | 190000 | 0.047 U | 0.046 U | 0.044 U | - | - | - | - | - |
| 2,4-Dinitrotoluene | mg/kg | 190000 | 0.0032 U | 0.0031 U | 0.0030 U | - | - | - | - | - |
| 2,6-Dinitrotoluene | mg/kg | 190000 | 0.0041 U | 0.0040 U | 0.0038 U | - | - | - | - | - |
| 2-Chloronaphthalene | mg/kg | 190000 | 0.00082 U | 0.00080 U | 0.00078 U | - | - | - | - | - |
| 2-Chlorophenol | mg/kg | 10000 | 0.0032 U | 0.0031 U | 0.0030 U | - | - | - | - | - |
| 2-Methylnaphthalene | mg/kg | 190000 | 0.00071 U | 0.0027 J | 0.00067 U | - | - | - | - | - |
| 2-Methylphenol | mg/kg | 190000 | 0.0028 U | 0.0027 U | 0.0026 U | - | - | - | - | - |
| 2-Nitroaniline | mg/kg | 190000 | 0.018 U | 0.017 U | 0.017 U | - | - | - | - | - |
| 2-Nitrophenol | mg/kg | 190000 | 0.0043 U | 0.0042 U | 0.0041 U | - | - | - | - | - |
| 3,3'-Dichlorobenzidine | mg/kg | 190000 | 0.0042 U | 0.0041 U | 0.0039 U | - | - | - | - | - |
| 3-Nitroaniline | mg/kg | 190000 | 0.016 U | 0.016 U | 0.015 U | - | - | - | - | - |
| 4,6-Dinitro-2-methylphenol | mg/kg | 190000 | 0.016 U | 0.015 U | 0.015 U | - | - | - | - | - |
| 4-Bromophenyl phenyl ether | mg/kg | | 0.0034 U | 0.0033 U | 0.0032 U | - | - | - | - | - |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-14** | **L1P3-MW-4** | **L1P3-MW-5** | **L1P3-MW-5** | **L1P3-MW-6** | **L1P3-TP-1** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-12_5-5.5_062614** | **ELC-SB-13-4.5-5_062414** | **ELC-SB-14_4.5-5_062414** | **MW-4 10-11'** | **MW-5 7.5-12'** | **MW-5 12-14'** | **MW-6 15-17'** | **TP-1 7'-7-6"** |
| **Sample Date:** | | | **6/26/2014** | **6/24/2014** | **6/24/2014** | **9/15/1998** | **9/15/1998** | **9/15/1998** | **9/16/1998** | **9/22/1998** |
| **Sample Depth:** | | | **(5-5.5) ft BGS** | **(4.5-5) ft BGS** | **(4.5-5) ft BGS** | **(10-11) ft BGS** | **(7.5-12) ft BGS** | **(12-14) ft BGS** | **(15-17) ft BGS** | **(7-7.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | | | | |
| 4-Chloro-3-methylphenol | mg/kg | 190000 | 0.0036 U | 0.0035 U | 0.0034 U | - | - | - | - | - |
| 4-Chloroaniline | mg/kg | 190000 | 0.0032 U | 0.0031 U | 0.0030 U | - | - | - | - | - |
| 4-Chlorophenyl phenyl ether | mg/kg | | 0.0044 U | 0.0043 U | 0.0041 U | - | - | - | - | - |
| 4-Methylphenol | mg/kg | 190000 | 0.0039 U | 0.0038 U | 0.0036 U | - | - | - | - | - |
| 4-Nitroaniline | mg/kg | 190000 | 0.016 U | 0.016 U | 0.015 U | - | - | - | - | - |
| 4-Nitrophenol | mg/kg | 190000 | 0.014 U | 0.014 U | 0.014 U | - | - | - | - | - |
| Acenaphthene | mg/kg | 190000 | 0.00076 U | 0.00074 U | 0.0015 J | 0.33 U | 200 | 2.9 | 0.33 U | 0.33 U |
| Acenaphthylene | mg/kg | 190000 | 0.00090 U | 0.00088 U | 0.00085 U | 0.33 U | 29 | 0.71 | 0.33 U | 0.33 U |
| Acetophenone | mg/kg | 10000 | 0.017 J | 0.0032 U | 0.0031 U | - | - | - | - | - |
| Anthracene | mg/kg | 190000 | 0.00077 U | 0.0017 J | 0.0013 J | 0.33 U | 200 | 3.4 | 0.33 U | 0.33 U |
| Atrazine | mg/kg | 190000 | 0.0038 U | 0.0037 U | 0.0036 U | - | - | - | - | - |
| Benzaldehyde | mg/kg | | R | 0.029 J | R | - | - | - | - | - |
| Benzo(a)anthracene | mg/kg | 190000 | 0.00099 U | 0.0042 J | 0.0071 J | 0.33 U | 89 | 1.7 | 0.33 U | 0.33 U |
| Benzo(a)pyrene | mg/kg | 190000 | 0.00079 U | 0.0043 J | 0.012 | 0.33 U | 37 | 1.1 | 0.33 U | 0.33 U |
| Benzo(b)fluoranthene | mg/kg | 190000 | 0.0012 U | 0.0054 J | 0.014 | 0.33 U | 32 | 1.2 | 0.33 U | 0.33 U |
| Benzo(g,h,i)perylene | mg/kg | 190000 | 0.00078 U | 0.0043 J | 0.017 | 0.33 U | 15 | 0.54 | 0.33 U | 0.33 U |
| Benzo(k)fluoranthene | mg/kg | 190000 | 0.0016 U | 0.0035 J | 0.0068 J | 0.33 U | 38 | 1.2 | 0.33 U | 0.33 U |
| Biphenyl (1,1-Biphenyl) | mg/kg | 190000 | 0.0035 U | 0.0034 U | 0.0033 U | - | - | - | - | - |
| bis(2-Chloroethoxy)methane | mg/kg | 10000 | 0.0026 U | 0.0025 U | 0.0024 U | - | - | - | - | - |
| bis(2-Chloroethyl)ether | mg/kg | 7.7 | 0.0011 U | 0.0010 U | 0.0010 U | - | - | - | - | - |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | 10000 | 0.0069 J | 0.017 J | 2.3 | 0.42 | 3.2 J | 0.48 | 0.35 | 0.33 U |
| Butyl benzylphthalate (BBP) | mg/kg | 10000 | 0.0076 J | 0.010 J | 0.0070 J | - | - | - | - | - |
| Caprolactam | mg/kg | | 0.030 U | 0.029 U | 0.028 U | - | - | - | - | - |
| Carbazole | mg/kg | 190000 | 0.00073 U | 0.00071 U | 0.00069 U | - | - | - | - | - |
| Chrysene | mg/kg | 190000 | 0.00094 U | 0.0068 J | 0.0098 | 0.33 U | 81 | 1.9 | 0.33 U | 0.33 U |
| Dibenz(a,h)anthracene | mg/kg | 190000 | 0.00088 U | 0.00086 U | 0.0050 J | 0.33 U | 8.2 | 0.24 J | 0.33 U | 0.33 U |
| Dibenzofuran | mg/kg | 190000 | 0.0039 U | 0.0038 U | 0.0037 U | - | - | - | - | - |
| Diethyl phthalate | mg/kg | 10000 | 0.0043 U | 0.0042 U | 0.0041 U | - | - | - | - | - |
| Dimethyl phthalate | mg/kg | | 0.0043 U | 0.0042 U | 0.0041 U | - | - | - | - | - |
| Di-n-butylphthalate (DBP) | mg/kg | 10000 | 0.0049 U | 0.0063 J | 0.0055 J | - | - | - | - | - |
| Di-n-octyl phthalate (DnOP) | mg/kg | 10000 | 0.0042 U | 0.0041 U | 0.0039 U | - | - | - | - | - |
| Fluoranthene | mg/kg | 190000 | 0.00084 U | 0.0099 | 0.0090 | 0.33 U | 440 | 7.9 | 0.33 U | 0.33 U |
| Fluorene | mg/kg | 190000 | 0.0010 U | 0.0010 U | 0.00098 U | 0.33 U | 280 | 4.5 | 0.33 U | 0.33 U |
| Hexachlorobenzene | mg/kg | 190000 | 0.00084 U | 0.00082 U | 0.00079 U | - | - | - | - | - |
| Hexachlorobutadiene | mg/kg | 10000 | 0.00088 U | 0.00086 U | 0.00083 U | - | - | - | - | - |
| Hexachlorocyclopentadiene | mg/kg | 10000 | 0.0043 U | 0.0041 U | 0.0040 U | - | - | - | - | - |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-14** | **L1P3-MW-4** | **L1P3-MW-5** | **L1P3-MW-5** | **L1P3-MW-6** | **L1P3-TP-1** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-12_5-5.5_062614** | **ELC-SB-13-4.5-5_062414** | **ELC-SB-14_4.5-5_062414** | **MW-4 10-11'** | **MW-5 7.5-12'** | **MW-5 12-14'** | **MW-6 15-17'** | **TP-1 7'-7-6"** |
| **Sample Date:** | | | **6/26/2014** | **6/24/2014** | **6/24/2014** | **9/15/1998** | **9/15/1998** | **9/15/1998** | **9/16/1998** | **9/22/1998** |
| **Sample Depth:** | | | **(5-5.5) ft BGS** | **(4.5-5) ft BGS** | **(4.5-5) ft BGS** | **(10-11) ft BGS** | **(7.5-12) ft BGS** | **(12-14) ft BGS** | **(15-17) ft BGS** | **(7-7.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | | | | |
| Hexachloroethane | mg/kg | 640 | 0.0028 U | 0.0028 U | 0.0027 U | - | - | - | - | - |
| Indeno(1,2,3-cd)pyrene | mg/kg | 190000 | 0.00081 U | 0.0038 J | 0.014 | 0.33 U | 16 | 0.56 | 0.33 U | 0.33 U |
| Isophorone | mg/kg | 10000 | 0.0030 U | 0.0029 U | 0.0028 U | - | - | - | - | - |
| Naphthalene | mg/kg | 190000 | 0.00068 U | 0.0029 J | 0.00064 U | 0.33 U | 280 | 4 | 0.33 U | 0.33 U |
| Nitrobenzene | mg/kg | 10000 | 0.0033 U | 0.0032 U | 0.0031 U | - | - | - | - | - |
| N-Nitrosodi-n-propylamine | mg/kg | 10000 | 0.00093 U | 0.00090 U | 0.00087 U | - | - | - | - | - |
| N-Nitrosodiphenylamine | mg/kg | 190000 | 0.0037 U | 0.0036 U | 0.0034 U | - | - | - | - | - |
| Pentachlorophenol | mg/kg | 190000 | 0.0035 U | 0.0034 U | 0.0033 U | - | - | - | - | - |
| Phenanthrene | mg/kg | 190000 | 0.0013 U | 0.0072 J | 0.0035 J | 0.33 U | 830 | 13 | 0.33 U | 0.33 U |
| Phenol | mg/kg | 190000 | 0.00093 U | 0.00091 U | 0.00088 U | - | - | - | - | - |
| Pyrene | mg/kg | 190000 | 0.00080 U | 0.0059 J | 0.0078 | 0.33 U | 270 | 5.4 | 0.33 U | 0.33 U |
| **Metals** | | | | | | | | | | |
| Antimony | mg/kg | 190000 | 0.12 J | 0.21 J | 0.23 J | 0.64 | 0.64 | 0.54 | 0.89 | 2.5 |
| Arsenic | mg/kg | 190000 | 5.9 | 3.8 | 2.9 | 3.5 | 0.2 U | 1.1 | 2.3 | 0.2 U |
| Beryllium | mg/kg | 190000 | 0.49 | 0.61 | 0.43 | 0.25 | 0.2 U | 0.26 | 0.26 | 0.2 U |
| Cadmium | mg/kg | 190000 | 0.045 J | 1.1 | 0.093 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Chromium | mg/kg | | 12 | 1000 | 170 | 7.6 | 560 | 160 | 16 | 860 |
| Copper | mg/kg | 190000 | 9.3 | 31 J | 17 J | 9.2 | 7.2 | 24 | 8.2 | 18 |
| Lead | mg/kg | 190000 | 9.9 | 29 | 17 | 10 | 73 | 45 | 8 | 59 |
| Mercury | mg/kg | 190000 | 0.015 J | 0.021 J | 0.014 J | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Nickel | mg/kg | 190000 | 14 | 11 | 12 | 10 | 110 | 31 | 8.6 | 8.4 |
| Selenium | mg/kg | 190000 | 0.34 J | 0.76 J | 0.32 J | 0.2 U | 0.2 U | 0.39 | 0.2 U | 0.2 U |
| Silver | mg/kg | 190000 | 0.0045 U | 0.11 J | 0.020 J | 0.2 U | 0.3 | 0.2 U | 0.2 U | 0.88 |
| Thallium | mg/kg | 190000 | 0.093 J | 0.060 J | 0.035 J | - | - | - | - | - |
| Zinc | mg/kg | 190000 | 39 | 240 J | 50 J | 32 | 19 | 270 | 34 | 54 |
| **PCBs** | | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | 10000 | 0.00015 U | 0.00014 U | 0.00069 U | - | - | - | - | - |
| Aroclor-1221 (PCB-1221) | mg/kg | 10000 | 0.00019 U | 0.00018 U | 0.00089 U | - | - | - | - | - |
| Aroclor-1232 (PCB-1232) | mg/kg | 10000 | 0.00017 U | 0.00017 U | 0.00079 U | - | - | - | - | - |
| Aroclor-1242 (PCB-1242) | mg/kg | 10000 | 0.00016 U | 0.00016 U | 0.00076 U | - | - | - | - | - |
| Aroclor-1248 (PCB-1248) | mg/kg | 10000 | 0.000093 U | 0.000091 U | 0.00044 U | - | - | - | - | - |
| Aroclor-1254 (PCB-1254) | mg/kg | 10000 | 0.00014 U | 0.0091 | 0.25 | - | - | - | - | - |
| Aroclor-1260 (PCB-1260) | mg/kg | 190000 | 0.00014 U | 0.00014 U | 0.16 | - | - | - | - | - |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-14** | **L1P3-MW-4** | **L1P3-MW-5** | **L1P3-MW-5** | **L1P3-MW-6** | **L1P3-TP-1** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-12_5-5.5_062614** | **ELC-SB-13-4.5-5_062414** | **ELC-SB-14_4.5-5_062414** | **MW-4 10-11'** | **MW-5 7.5-12'** | **MW-5 12-14'** | **MW-6 15-17'** | **TP-1 7'-7-6"** |
| **Sample Date:** | | | **6/26/2014** | **6/24/2014** | **6/24/2014** | **9/15/1998** | **9/15/1998** | **9/15/1998** | **9/16/1998** | **9/22/1998** |
| **Sample Depth:** | | | **(5-5.5) ft BGS** | **(4.5-5) ft BGS** | **(4.5-5) ft BGS** | **(10-11) ft BGS** | **(7.5-12) ft BGS** | **(12-14) ft BGS** | **(15-17) ft BGS** | **(7-7.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | | | | |
| **Petroleum Products** | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | 49 | - | 61 | 38 J | 590 |
| **General Chemistry** | | | | | | | | | | |
| Percent moisture | % | | 16 | 14 | 10 | - | - | - | - | - |
| pH | s.u. | | - | - | - | 8.48 | 9.98 | 9.36 | 8.44 | 11.24 |

Notes:

(1) PA Chapter 250, Appendix A, Tables 3 to 4, Medium Specific Concentrations (MSC) for organic and inorganic regulated substances in soil, Direct-contact Numerical values, Non-Residential, Subsurface Soil (2-15 feet).
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
\- Not analyzed

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **L1P3-TP-10** | **L1P3-TP-2** | **L1P3-TP-3** | **L1P3-TP-4** | **L1P3-TP-5** | **L1P3-TP-6** | **L1P3-TP-7** | **L1P3-TP-8** | **L1P3-TP-9** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **TP-10 3-3'9"** | **TP-2 6-9'** | **TP-3 5-6'** | **TP-4 5-6'6"** | **TP-5 5-6'** | **TP-6 3-4'** | **TP-7 9-10'** | **TP-8 9-10'** | **TP-9 5-6'** |
| **Sample Date:** | | | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(3-3.75) ft BGS** | **(6-9) ft BGS** | **(5-6) ft BGS** | **(5-6.5) ft BGS** | **(5-6) ft BGS** | **(3-4) ft BGS** | **(9-10) ft BGS** | **(9-10) ft BGS** | **(5-6) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| 1,1,2,2-Tetrachloroethane | mg/kg | 44 | - | - | - | - | - | - | - | - | - |
| 1,1,2-Trichloroethane | mg/kg | 160 | - | - | - | - | - | - | - | - | - |
| 1,1-Dichloroethane | mg/kg | 1600 | - | - | - | - | - | - | - | - | - |
| 1,1-Dichloroethene | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| 1,2,4-Trichlorobenzene | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 0.43 | - | - | - | - | - | - | - | - | - |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 4.3 | - | - | - | - | - | - | - | - | - |
| 1,2-Dichlorobenzene | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| 1,2-Dichloroethane | mg/kg | 98 | - | - | - | - | - | - | - | - | - |
| 1,2-Dichloroethene (total) | mg/kg | | - | - | - | - | - | - | - | - | - |
| 1,2-Dichloropropane | mg/kg | 260 | - | - | - | - | - | - | - | - | - |
| 1,3-Dichlorobenzene | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| 1,4-Dichlorobenzene | mg/kg | 230 | - | - | - | - | - | - | - | - | - |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| 2-Hexanone | mg/kg | 460 | - | - | - | - | - | - | - | - | - |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Acetone | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Benzene | mg/kg | 330 | - | - | - | - | - | - | - | - | - |
| Bromodichloromethane | mg/kg | 69 | - | - | - | - | - | - | - | - | - |
| Bromoform | mg/kg | 2300 | - | - | - | - | - | - | - | - | - |
| Bromomethane (Methyl bromide) | mg/kg | 460 | - | - | - | - | - | - | - | - | - |
| Carbon disulfide | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Carbon tetrachloride | mg/kg | 170 | - | - | - | - | - | - | - | - | - |
| Chlorobenzene | mg/kg | 4600 | - | - | - | - | - | - | - | - | - |
| Chloroethane | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Chloroform (Trichloromethane) | mg/kg | 110 | - | - | - | - | - | - | - | - | - |
| Chloromethane (Methyl chloride) | mg/kg | 1400 | - | - | - | - | - | - | - | - | - |
| cis-1,2-Dichloroethene | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| cis-1,3-Dichloropropene | mg/kg | | - | - | - | - | - | - | - | - | - |
| Cyclohexane | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Dibromochloromethane | mg/kg | 95 | - | - | - | - | - | - | - | - | - |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | mg/kg | 10000 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Isopropyl benzene | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **L1P3-TP-10** | **L1P3-TP-2** | **L1P3-TP-3** | **L1P3-TP-4** | **L1P3-TP-5** | **L1P3-TP-6** | **L1P3-TP-7** | **L1P3-TP-8** | **L1P3-TP-9** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **TP-10 3-3'9"** | **TP-2 6-9'** | **TP-3 5-6'** | **TP-4 5-6'6"** | **TP-5 5-6'** | **TP-6 3-4'** | **TP-7 9-10'** | **TP-8 9-10'** | **TP-9 5-6'** |
| **Sample Date:** | | | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(3-3.75) ft BGS** | **(6-9) ft BGS** | **(5-6) ft BGS** | **(5-6.5) ft BGS** | **(5-6) ft BGS** | **(3-4) ft BGS** | **(9-10) ft BGS** | **(9-10) ft BGS** | **(5-6) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | | | | | |
| m&p-Xylenes | mg/kg | | - | - | - | - | - | - | - | - | - |
| Methyl acetate | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Methyl cyclohexane | mg/kg | | - | - | - | - | - | - | - | - | - |
| Methyl tert butyl ether (MTBE) | mg/kg | 3700 | - | - | - | - | - | - | - | - | - |
| Methylene chloride | mg/kg | 5400 | 0.0018 JB | 0.0019 JB | 0.0012 JB | 0.0014 JB | 0.0015 JB | 0.0011 JB | 0.0017 JB | 0.0011 JB | 0.0013 JB |
| o-Xylene | mg/kg | | - | - | - | - | - | - | - | - | - |
| Styrene | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Tetrachloroethene | mg/kg | 4400 | - | - | - | - | - | - | - | - | - |
| Toluene | mg/kg | 10000 | 0.00056 JB | 0.00075 JB | 0.00055 JB | 0.00062 JB | 0.0006 JB | 0.00059 JB | 0.00051 JB | 0.00051 JB | 0.00052 JB |
| trans-1,2-Dichloroethene | mg/kg | 5500 | - | - | - | - | - | - | - | - | - |
| trans-1,3-Dichloropropene | mg/kg | | - | - | - | - | - | - | - | - | - |
| Trichloroethene | mg/kg | 1500 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Vinyl chloride | mg/kg | 580 | - | - | - | - | - | - | - | - | - |
| Xylenes (total) | mg/kg | 9100 | - | - | - | - | - | - | - | - | - |
| **Semi-volatile Organic Compounds** | | | | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 250 | - | - | - | - | - | - | - | - | - |
| 2,4,5-Trichlorophenol | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 2,4,6-Trichlorophenol | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 2,4-Dichlorophenol | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 2,4-Dimethylphenol | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| 2,4-Dinitrophenol | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 2,4-Dinitrotoluene | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 2,6-Dinitrotoluene | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 2-Chloronaphthalene | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 2-Chlorophenol | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| 2-Methylnaphthalene | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 2-Methylphenol | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 2-Nitroaniline | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 2-Nitrophenol | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 3,3'-Dichlorobenzidine | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 3-Nitroaniline | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 4,6-Dinitro-2-methylphenol | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 4-Bromophenyl phenyl ether | mg/kg | | - | - | - | - | - | - | - | - | - |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **L1P3-TP-10** | **L1P3-TP-2** | **L1P3-TP-3** | **L1P3-TP-4** | **L1P3-TP-5** | **L1P3-TP-6** | **L1P3-TP-7** | **L1P3-TP-8** | **L1P3-TP-9** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **TP-10 3-3'9"** | **TP-2 6-9'** | **TP-3 5-6'** | **TP-4 5-6'6"** | **TP-5 5-6'** | **TP-6 3-4'** | **TP-7 9-10'** | **TP-8 9-10'** | **TP-9 5-6'** |
| **Sample Date:** | | | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(3-3.75) ft BGS** | **(6-9) ft BGS** | **(5-6) ft BGS** | **(5-6.5) ft BGS** | **(5-6) ft BGS** | **(3-4) ft BGS** | **(9-10) ft BGS** | **(9-10) ft BGS** | **(5-6) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | | | | | |
| 4-Chloro-3-methylphenol | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 4-Chloroaniline | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 4-Chlorophenyl phenyl ether | mg/kg | | - | - | - | - | - | - | - | - | - |
| 4-Methylphenol | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 4-Nitroaniline | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 4-Nitrophenol | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| Acenaphthene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Acenaphthylene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Acetophenone | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Anthracene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Atrazine | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| Benzaldehyde | mg/kg | | - | - | - | - | - | - | - | - | - |
| Benzo(a)anthracene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(a)pyrene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(b)fluoranthene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(g,h,i)perylene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(k)fluoranthene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Biphenyl (1,1-Biphenyl) | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| bis(2-Chloroethoxy)methane | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| bis(2-Chloroethyl)ether | mg/kg | 7.7 | - | - | - | - | - | - | - | - | - |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | 10000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Butyl benzylphthalate (BBP) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Caprolactam | mg/kg | | - | - | - | - | - | - | - | - | - |
| Carbazole | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| Chrysene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Dibenz(a,h)anthracene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Dibenzofuran | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| Diethyl phthalate | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Dimethyl phthalate | mg/kg | | - | - | - | - | - | - | - | - | - |
| Di-n-butylphthalate (DBP) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Di-n-octyl phthalate (DnOP) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Fluoranthene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Fluorene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Hexachlorobenzene | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| Hexachlorobutadiene | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Hexachlorocyclopentadiene | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **L1P3-TP-10** | **L1P3-TP-2** | **L1P3-TP-3** | **L1P3-TP-4** | **L1P3-TP-5** | **L1P3-TP-6** | **L1P3-TP-7** | **L1P3-TP-8** | **L1P3-TP-9** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **TP-10 3-3'9"** | **TP-2 6-9'** | **TP-3 5-6'** | **TP-4 5-6'6"** | **TP-5 5-6'** | **TP-6 3-4'** | **TP-7 9-10'** | **TP-8 9-10'** | **TP-9 5-6'** |
| **Sample Date:** | | | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(3-3.75) ft BGS** | **(6-9) ft BGS** | **(5-6) ft BGS** | **(5-6.5) ft BGS** | **(5-6) ft BGS** | **(3-4) ft BGS** | **(9-10) ft BGS** | **(9-10) ft BGS** | **(5-6) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | | | | | |
| Hexachloroethane | mg/kg | 640 | - | - | - | - | - | - | - | - | - |
| Indeno(1,2,3-cd)pyrene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Isophorone | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Naphthalene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Nitrobenzene | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| N-Nitrosodi-n-propylamine | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| N-Nitrosodiphenylamine | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| Pentachlorophenol | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| Phenanthrene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Phenol | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| Pyrene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| **Metals** | | | | | | | | | | | |
| Antimony | mg/kg | 190000 | 0.5 U | 0.5 U | 0.88 | 0.96 | 0.5 U | 1.2 | 0.75 | 0.52 | 1.2 |
| Arsenic | mg/kg | 190000 | 11 | 1.1 | 3.5 | 6.7 | 7.2 | 4.8 | 4.2 | 3.6 | 0.5 |
| Beryllium | mg/kg | 190000 | 0.44 | 0.2 U | 0.29 | 0.46 | 0.48 | 0.29 | 0.25 | 0.26 | 0.46 |
| Cadmium | mg/kg | 190000 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Chromium | mg/kg | | 9.7 | 550 | 7.6 | 22 | 6.1 | 20 | 8.1 | 6.8 | 51 |
| Copper | mg/kg | 190000 | 25 | 15 | 9.6 | 9.2 | 8 | 11 | 8.8 | 7.8 | 12 |
| Lead | mg/kg | 190000 | 20 | 15 | 8.8 | 15 | 15 | 20 | 8.3 | 8.1 | 17 |
| Mercury | mg/kg | 190000 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.11 | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Nickel | mg/kg | 190000 | 11 | 6.8 | 12 | 11 | 11 | 14 | 11 | 12 | 11 |
| Selenium | mg/kg | 190000 | 0.2 U | 0.2 U | 0.98 | 0.2 U | 0.67 | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Silver | mg/kg | 190000 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Thallium | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| Zinc | mg/kg | 190000 | 50 | 55 | 52 | 50 | 41 | 63 | 47 | 45 | 51 |
| **PCBs** | | | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Aroclor-1221 (PCB-1221) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Aroclor-1232 (PCB-1232) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Aroclor-1242 (PCB-1242) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Aroclor-1248 (PCB-1248) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Aroclor-1254 (PCB-1254) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Aroclor-1260 (PCB-1260) | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |

**Table 4.2**

**Screened Analytical Results**
**Subsurface Soil Samples Vs Non-Residential Direct Contact Criteria (2-15)**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **L1P3-TP-10** | **L1P3-TP-2** | **L1P3-TP-3** | **L1P3-TP-4** | **L1P3-TP-5** | **L1P3-TP-6** | **L1P3-TP-7** | **L1P3-TP-8** | **L1P3-TP-9** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **TP-10 3-3'9"** | **TP-2 6-9'** | **TP-3 5-6'** | **TP-4 5-6'6"** | **TP-5 5-6'** | **TP-6 3-4'** | **TP-7 9-10'** | **TP-8 9-10'** | **TP-9 5-6'** |
| **Sample Date:** | | | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(3-3.75) ft BGS** | **(6-9) ft BGS** | **(5-6) ft BGS** | **(5-6.5) ft BGS** | **(5-6) ft BGS** | **(3-4) ft BGS** | **(9-10) ft BGS** | **(9-10) ft BGS** | **(5-6) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Direct-Contact Criteria (2-15 feet bgs) (1)** | | | | | | | | | |
| **Petroleum Products** | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | 55 | 32 J | 32 J | 49 | 32 JB | 49 | 49 | 44 | 32 J |
| **General Chemistry** | | | | | | | | | | | |
| Percent moisture | % | | - | - | - | - | - | - | - | - | - |
| pH | s.u. | | 8.39 | 9.06 | 6.11 | 7.2 | 7.13 | 7.73 | 8.43 | 7.57 | 7.66 |

Notes:

(1) PA Chapter 250, Appendix A, Tables 3 to 4, Medium Specific Concentrations (MSC) for organic and inorganic regulated substances in soil, Direct-contact Numerical values, Non-Residential, Subsurface Soil (2-15 feet).
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
\- Not analyzed

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-3** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_1.5-2-062514** | **ELC-SB-1_4.5-5-062514** | **ELC-SB-2_1.5-2-062514** | **ELC-SB-2_5-5.5-062514** | **ELC-SB-3_1.5-2-062514** | **ELC-SB-3_10-10.5_062514** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 72 | 0.00040 U | 0.00038 U | R | 0.00033 UJ | 0.00037 U | 0.00039 U |
| 1,1,2,2-Tetrachloroethane | mg/kg | 13 | 0.00059 U | 0.00056 U | R | 0.00049 UJ | 0.00055 U | 0.00057 U |
| 1,1,2-Trichloroethane | mg/kg | 1.5 | 0.00068 U | 0.00065 U | R | 0.00057 UJ | 0.00064 U | 0.00066 U |
| 1,1-Dichloroethane | mg/kg | 39 | 0.00047 U | 0.00045 U | R | 0.00039 UJ | 0.00044 U | 0.00046 U |
| 1,1-Dichloroethene | mg/kg | 1.9 | 0.00070 U | 0.00067 U | R | 0.00058 UJ | 0.00065 U | 0.00067 U |
| 1,2,4-Trichlorobenzene | mg/kg | 10000 | 0.00073 U | 0.00069 U | R | 0.00060 UJ | 0.00068 U | 0.00070 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 0.92 | 0.00062 U | 0.00059 U | R | 0.00051 UJ | 0.00057 U | 0.00060 U |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 0.12 | 0.00071 U | 0.00068 U | R | 0.00059 UJ | 0.00066 U | 0.00069 U |
| 1,2-Dichlorobenzene | mg/kg | 5900 | 0.00066 U | 0.00063 U | R | 0.00055 UJ | 0.00061 U | 0.00063 U |
| 1,2-Dichloroethane | mg/kg | 1 | 0.00050 U | 0.00048 U | R | 0.00042 UJ | 0.00047 U | 0.00049 U |
| 1,2-Dichloroethene (total) | mg/kg | | 0.0011 U | 0.0010 U | R | 0.00088 UJ | 0.00098 U | 0.0010 U |
| 1,2-Dichloropropane | mg/kg | 1.1 | 0.00045 U | 0.00043 U | R | 0.00037 UJ | 0.00042 U | 0.00043 U |
| 1,3-Dichlorobenzene | mg/kg | 6100 | 0.00054 U | 0.00052 U | R | 0.00045 UJ | 0.00050 U | 0.00052 U |
| 1,4-Dichlorobenzene | mg/kg | 1000 | 0.00052 U | 0.00050 U | R | 0.00044 UJ | 0.00049 U | 0.00051 U |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 7600 | 0.00073 U | 0.00069 U | R | 0.00060 UJ | 0.00068 U | 0.00070 U |
| 2-Hexanone | mg/kg | 1.1 | 0.00057 U | 0.00054 U | R | 0.00047 UJ | 0.00053 U | 0.00055 U |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 10000 | 0.00054 U | 0.00051 U | R | 0.00045 UJ | 0.00050 U | 0.00052 U |
| Acetone | mg/kg | 10000 | 0.011 U | 0.0078 U | R | 0.0034 UJ | 0.0038 U | 0.0040 U |
| Benzene | mg/kg | 13 | 0.00056 U | 0.00053 U | R | 0.00046 UJ | 0.00052 U | 0.00054 U |
| Bromodichloromethane | mg/kg | 2.7 | 0.00046 U | 0.00044 U | R | 0.00038 UJ | 0.00043 U | 0.00045 U |
| Bromoform | mg/kg | 350 | 0.00036 U | 0.00035 U | R | 0.00030 UJ | 0.00034 U | 0.00035 U |
| Bromomethane (Methyl bromide) | mg/kg | 54 | 0.00061 U | 0.00058 U | R | 0.00051 UJ | 0.00057 U | 0.00059 U |
| Carbon disulfide | mg/kg | 530 | 0.00042 U | 0.00040 U | R | 0.00054 J | 0.0011 J | 0.00041 U |
| Carbon tetrachloride | mg/kg | 2.6 | 0.00037 U | 0.00035 U | R | 0.00031 UJ | 0.00034 U | 0.00036 U |
| Chlorobenzene | mg/kg | 610 | 0.00062 U | 0.00059 U | R | 0.00052 UJ | 0.00058 U | 0.00060 U |
| Chloroethane | mg/kg | 1900 | 0.0013 U | 0.0012 U | R | 0.0011 UJ | 0.0012 U | 0.0012 U |
| Chloroform (Trichloromethane) | mg/kg | 20 | 0.00048 U | 0.00046 U | R | 0.00040 UJ | 0.00045 U | 0.00047 U |
| Chloromethane (Methyl chloride) | mg/kg | 38 | 0.00070 U | 0.00067 U | R | 0.00058 UJ | 0.00065 U | 0.00068 U |
| cis-1,2-Dichloroethene | mg/kg | 16 | 0.00058 U | 0.00055 U | R | 0.00048 UJ | 0.00054 U | 0.00056 U |
| cis-1,3-Dichloropropene | mg/kg | | 0.00056 U | 0.00053 U | R | 0.00046 UJ | 0.00052 U | 0.00054 U |
| Cyclohexane | mg/kg | 6900 | 0.00031 U | 0.00029 U | R | 0.00025 UJ | 0.00028 U | 0.00030 U |
| Dibromochloromethane | mg/kg | 250 | 0.00058 U | 0.00056 U | R | 0.00049 UJ | 0.00054 U | 0.00056 U |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 10000 | 0.00055 U | 0.00052 U | R | 0.00046 UJ | 0.00051 U | 0.00053 U |
| Ethylbenzene | mg/kg | 4600 | 0.00053 U | 0.00050 U | R | 0.00044 UJ | 0.00049 U | 0.00051 U |
| Isopropyl benzene | mg/kg | 10000 | 0.00056 U | 0.00053 U | R | 0.00047 UJ | 0.00052 U | 0.00054 U |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-3** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_1.5-2-062514** | **ELC-SB-1_4.5-5-062514** | **ELC-SB-2_1.5-2-062514** | **ELC-SB-2_5-5.5-062514** | **ELC-SB-3_1.5-2-062514** | **ELC-SB-3_10-10.5_062514** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| m&p-Xylenes | mg/kg | | 0.0012 U | 0.0012 U | R | 0.0010 UJ | 0.0011 U | 0.0012 U |
| Methyl acetate | mg/kg | 1900 | 0.00074 U | 0.00071 U | R | 0.00062 UJ | 0.00069 U | 0.00072 U |
| Methyl cyclohexane | mg/kg | | 0.00060 U | 0.00057 U | R | 0.00050 UJ | 0.00056 U | 0.00058 U |
| Methyl tert butyl ether (MTBE) | mg/kg | 2.8 | 0.00062 U | 0.00059 U | R | 0.00051 UJ | 0.00057 U | 0.00059 U |
| Methylene chloride | mg/kg | 7.6 | 0.0041 J | 0.0034 J | 0.0032 J | 0.0028 J | 0.0037 J | 0.0038 J |
| o-Xylene | mg/kg | | 0.00064 U | 0.00061 U | R | 0.00053 UJ | 0.00060 U | 0.00062 U |
| Styrene | mg/kg | 2400 | 0.00058 U | 0.00055 U | R | 0.00048 UJ | 0.00054 U | 0.00056 U |
| Tetrachloroethene | mg/kg | 4.3 | 0.00056 U | 0.00053 U | R | 0.00047 UJ | 0.00052 U | 0.00054 U |
| Toluene | mg/kg | 4400 | 0.00060 U | 0.00057 U | R | 0.00050 UJ | 0.00056 U | 0.00058 U |
| trans-1,2-Dichloroethene | mg/kg | 23 | 0.00049 U | 0.00047 U | R | 0.00041 UJ | 0.00046 U | 0.00047 U |
| trans-1,3-Dichloropropene | mg/kg | | 0.00049 U | 0.00047 U | R | 0.00041 UJ | 0.00046 U | 0.00048 U |
| Trichloroethene | mg/kg | 1.7 | 0.00054 U | 0.00052 U | R | 0.00045 UJ | 0.00050 U | 0.00052 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 8700 | 0.00076 U | 0.00072 U | R | 0.00063 UJ | 0.00070 U | 0.00073 U |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 10000 | 0.00088 U | 0.00084 U | R | 0.00073 UJ | 0.00082 U | 0.00085 U |
| Vinyl chloride | mg/kg | 0.27 | 0.00039 U | 0.00037 U | R | 0.00032 UJ | 0.00036 U | 0.00037 U |
| Xylenes (total) | mg/kg | 10000 | 0.0018 U | 0.0018 U | R | 0.0015 UJ | 0.0017 U | 0.0018 U |
| **Semi-volatile Organic Compounds** | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 800 | 0.0038 U | 0.00082 U | R | 0.0038 U | 0.0036 U | 0.00082 U |
| 2,4,5-Trichlorophenol | mg/kg | 190000 | 0.019 U | 0.0041 U | R | 0.019 U | 0.018 U | 0.0040 U |
| 2,4,6-Trichlorophenol | mg/kg | 29000 | 0.027 U | 0.0057 U | R | 0.026 U | 0.025 U | 0.0057 U |
| 2,4-Dichlorophenol | mg/kg | 1000 | 0.0036 U | 0.00077 U | R | 0.0035 U | 0.0034 U | 0.00076 U |
| 2,4-Dimethylphenol | mg/kg | 10000 | 0.028 U | 0.0060 U | R | 0.028 U | 0.026 U | 0.0059 U |
| 2,4-Dinitrophenol | mg/kg | 2300 | R | 0.045 U | R | 0.21 U | 0.20 U | 0.045 U |
| 2,4-Dinitrotoluene | mg/kg | 200 | 0.014 U | 0.0031 U | R | 0.014 U | 0.014 U | 0.0030 U |
| 2,6-Dinitrotoluene | mg/kg | 3000 | 0.018 U | 0.0039 U | R | 0.018 U | 0.017 U | 0.0039 U |
| 2-Chloronaphthalene | mg/kg | 18000 | 0.0037 U | 0.00080 U | R | 0.0037 U | 0.0035 U | 0.00079 U |
| 2-Chlorophenol | mg/kg | 4.4 | 0.015 U | 0.0031 U | R | 0.014 U | 0.014 U | 0.0031 U |
| 2-Methylnaphthalene | mg/kg | 1600 | 0.056 | 0.00069 U | 0.0014 J | 0.0032 U | 0.0047 J | 0.00068 U |
| 2-Methylphenol | mg/kg | 8500 | 0.012 U | 0.0027 U | R | 0.012 U | 0.012 U | 0.0026 U |
| 2-Nitroaniline | mg/kg | 5.5 | 0.079 U | 0.017 U | R | 0.079 U | 0.075 U | 0.017 U |
| 2-Nitrophenol | mg/kg | 17000 | 0.020 U | 0.0042 U | R | 0.020 U | 0.019 U | 0.0042 U |
| 3,3'-Dichlorobenzidine | mg/kg | 17000 | 0.019 UJ | 0.0040 U | R | 0.019 U | 0.018 U | 0.0040 U |
| 3-Nitroaniline | mg/kg | 0.48 | 0.073 U | 0.016 U | R | 0.073 U | 0.069 U | 0.016 U |
| 4,6-Dinitro-2-methylphenol | mg/kg | 750 | 0.071 UJ | 0.015 U | R | 0.071 U | 0.068 U | 0.015 U |
| 4-Bromophenyl phenyl ether | mg/kg | | 0.015 U | 0.0033 U | R | 0.015 U | 0.015 U | 0.0033 U |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-3** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_1.5-2-062514** | **ELC-SB-1_4.5-5-062514** | **ELC-SB-2_1.5-2-062514** | **ELC-SB-2_5-5.5-062514** | **ELC-SB-3_1.5-2-062514** | **ELC-SB-3_10-10.5_062514** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| 4-Chloro-3-methylphenol | mg/kg | 110 | 0.016 U | 0.0035 U | R | 0.016 U | 0.016 U | 0.0035 U |
| 4-Chloroaniline | mg/kg | 1.6 | 0.014 U | 0.0031 U | R | 0.014 U | 0.013 U | 0.0030 U |
| 4-Chlorophenyl phenyl ether | mg/kg | | 0.020 U | 0.0042 U | R | 0.020 U | 0.019 U | 0.0042 U |
| 4-Methylphenol | mg/kg | 12000 | 0.017 U | 0.0037 U | R | 0.017 U | 0.016 U | 0.0037 U |
| 4-Nitroaniline | mg/kg | 1.9 | 0.072 U | 0.015 U | R | 0.072 U | 0.068 U | 0.015 U |
| 4-Nitrophenol | mg/kg | 4100 | 0.065 U | 0.014 U | R | 0.065 U | 0.061 U | 0.014 U |
| Acenaphthene | mg/kg | 4700 | 0.17 | 0.00073 U | 0.00076 J | 0.0046 J | 0.015 J | 0.00073 U |
| Acenaphthylene | mg/kg | 18000 | 0.026 J | 0.00087 U | 0.0069 J | 0.0041 U | 0.12 | 0.00086 U |
| Acetophenone | mg/kg | 540 | 0.015 U | 0.0031 U | R | 0.015 U | 0.014 U | 0.0031 U |
| Anthracene | mg/kg | 350 | 0.10 | 0.00075 U | 0.0088 J | 0.015 J | 0.15 | 0.00074 U |
| Atrazine | mg/kg | 0.13 | 0.017 U | 0.0037 U | R | 0.017 U | 0.016 U | 0.0037 U |
| Benzaldehyde | mg/kg | | R | R | R | R | R | R |
| Benzo(a)anthracene | mg/kg | 960 | 0.49 | 0.00096 U | 0.028 J | 0.067 | 0.44 | 0.00095 U |
| Benzo(a)pyrene | mg/kg | 860 | 1.0 | 0.00076 U | 0.037 J | 0.096 | 0.48 | 0.00076 U |
| Benzo(b)fluoranthene | mg/kg | 170 | 1.1 J | 0.0012 U | 0.070 J | 0.13 | 0.91 | 0.0012 U |
| Benzo(g,h,i)perylene | mg/kg | 180 | 0.92 | 0.00076 U | 0.039 J | 0.091 | 0.35 | 0.00075 U |
| Benzo(k)fluoranthene | mg/kg | 610 | 0.32 | 0.0015 U | 0.026 J | 0.043 | 0.35 | 0.0015 U |
| Biphenyl (1,1-Biphenyl) | mg/kg | 3100 | 0.018 J | 0.0034 U | R | 0.016 U | 0.015 U | 0.0034 U |
| bis(2-Chloroethoxy)methane | mg/kg | 8.2 | 0.012 U | 0.0025 U | R | 0.012 U | 0.011 U | 0.0025 U |
| bis(2-Chloroethyl)ether | mg/kg | 2.3 | 0.0048 U | 0.0010 U | R | 0.0047 U | 0.0045 U | 0.0010 U |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | 6300 | 0.029 U | 0.0078 J | R | 0.029 U | 0.027 U | 0.0061 U |
| Butyl benzylphthalate (BBP) | mg/kg | 10000 | 0.031 J | 0.0077 J | R | 0.024 U | 0.023 U | 0.0052 U |
| Caprolactam | mg/kg | | 0.13 U | 0.029 U | R | 0.13 U | 0.13 U | 0.029 U |
| Carbazole | mg/kg | 760 | 0.036 | 0.00070 U | 0.0016 J | 0.0033 U | 0.017 J | 0.00070 U |
| Chrysene | mg/kg | 230 | 0.52 | 0.00091 U | 0.045 J | 0.075 | 0.63 | 0.00090 U |
| Dibenz(a,h)anthracene | mg/kg | 270 | 0.20 | 0.00085 U | 0.0098 J | 0.025 J | 0.088 | 0.00084 U |
| Dibenzofuran | mg/kg | 12000 | 0.055 J | 0.0038 U | R | 0.017 U | 0.017 U | 0.0037 U |
| Diethyl phthalate | mg/kg | 10000 | 0.019 U | 0.0042 U | R | 0.019 U | 0.018 U | 0.0041 U |
| Dimethyl phthalate | mg/kg | | 0.019 U | 0.0042 U | R | 0.019 U | 0.018 U | 0.0041 U |
| Di-n-butylphthalate (DBP) | mg/kg | 10000 | 0.022 U | 0.0048 U | R | 0.022 U | 0.021 U | 0.0047 U |
| Di-n-octyl phthalate (DnOP) | mg/kg | 10000 | 0.019 U | 0.0040 U | R | 0.019 U | 0.018 U | 0.0040 U |
| Fluoranthene | mg/kg | 3200 | 0.56 | 0.00082 U | 0.029 J | 0.066 | 0.54 | 0.00081 U |
| Fluorene | mg/kg | 3800 | 0.040 | 0.0010 U | R | 0.0047 U | 0.012 J | 0.0010 U |
| Hexachlorobenzene | mg/kg | 5.8 | 0.0038 U | 0.00081 U | R | 0.0038 U | 0.0036 U | 0.00080 U |
| Hexachlorobutadiene | mg/kg | 3400 | 0.0040 U | 0.00085 U | R | 0.0040 U | 0.0038 U | 0.00084 U |
| Hexachlorocyclopentadiene | mg/kg | 3300 | 0.019 U | 0.0041 U | R | 0.019 U | 0.018 U | 0.0041 U |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-3** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_1.5-2-062514** | **ELC-SB-1_4.5-5-062514** | **ELC-SB-2_1.5-2-062514** | **ELC-SB-2_5-5.5-062514** | **ELC-SB-3_1.5-2-062514** | **ELC-SB-3_10-10.5_062514** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| Hexachloroethane | mg/kg | 56 | 0.013 U | 0.0027 U | R | 0.013 U | 0.012 U | 0.0027 U |
| Indeno(1,2,3-cd)pyrene | mg/kg | 190000 | 0.76 | 0.00079 U | 0.032 J | 0.079 | 0.33 | 0.00078 U |
| Isophorone | mg/kg | 1900 | 0.013 U | 0.0029 U | R | 0.013 U | 0.013 U | 0.0028 U |
| Naphthalene | mg/kg | 7500 | 0.080 | 0.00066 U | 0.0028 J | 0.0030 U | 0.0069 J | 0.00065 U |
| Nitrobenzene | mg/kg | 8700 | 0.015 U | 0.0032 U | R | 0.015 U | 0.014 U | 0.0031 U |
| N-Nitrosodi-n-propylamine | mg/kg | 5.1 | 0.0042 U | 0.00089 U | R | 0.0041 U | 0.0040 U | 0.00089 U |
| N-Nitrosodiphenylamine | mg/kg | 5500 | 0.016 U | 0.0035 U | R | 0.016 U | 0.016 U | 0.0035 U |
| Pentachlorophenol | mg/kg | 5000 | R | 0.0034 U | R | 0.016 U | 0.015 U | 0.0034 U |
| Phenanthrene | mg/kg | 10000 | 0.28 | 0.0012 U | 0.011 J | 0.031 J | 0.064 | 0.0012 U |
| Phenol | mg/kg | 3300 | 0.0042 U | 0.00090 U | R | 0.0042 U | 0.0040 U | 0.00089 U |
| Pyrene | mg/kg | 2200 | 0.59 | 0.00077 U | 0.032 J | 0.074 | 0.68 | 0.00076 U |
| **Metals** | | | | | | | | |
| Antimony | mg/kg | 27000 | 0.36 J | 0.14 J | 0.023 UJ | 0.024 UJ | 0.025 UJ | 0.10 J |
| Arsenic | mg/kg | 29000 | 4.7 | 6.6 | 2.5 | 2.4 | 3.0 | 4.4 |
| Beryllium | mg/kg | 190000 | 0.30 J | 0.42 | 0.56 J | 0.40 J | 2.2 | 0.32 |
| Cadmium | mg/kg | 38000 | 0.23 J | 0.022 J | 0.096 J | 0.11 J | 0.11 J | 0.069 J |
| Chromium | mg/kg | | 130 | 12 | 1400 | 2200 | 1200 | 8.0 |
| Copper | mg/kg | 190000 | 78 J | 9.1 J | 38 J | 28 J | 30 J | 9.2 J |
| Lead | mg/kg | 190000 | 40 | 9.6 | 6.6 | 10 | 14 | 6.8 |
| Mercury | mg/kg | 10000 | 0.080 | 0.012 U | 0.011 U | 0.012 U | 0.011 U | 0.012 U |
| Nickel | mg/kg | 190000 | 32 J | 15 J | 97 J | 36 J | 14 J | 13 J |
| Selenium | mg/kg | 26000 | 0.51 U | 0.30 J | 0.45 U | 0.46 U | 1.1 J | 0.14 J |
| Silver | mg/kg | 84000 | 0.040 U | 0.0041 U | 0.035 U | 0.036 U | 0.037 U | 0.0039 U |
| Thallium | mg/kg | 14000 | 0.075 J | 0.075 J | 0.018 U | 0.018 U | 0.019 U | 0.039 J |
| Zinc | mg/kg | 190000 | 120 | 35 | 38 | 54 | 64 | 32 |
| **PCBs** | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | 200 | 0.00013 U | 0.00014 U | 0.00013 U | 0.00013 U | 0.00013 U | 0.00014 U |
| Aroclor-1221 (PCB-1221) | mg/kg | 0.63 | 0.00017 U | 0.00018 U | 0.00017 U | 0.00017 U | 0.00016 U | 0.00018 U |
| Aroclor-1232 (PCB-1232) | mg/kg | 0.5 | 0.00015 U | 0.00016 U | 0.00015 U | 0.00015 U | 0.00015 U | 0.00016 U |
| Aroclor-1242 (PCB-1242) | mg/kg | 16 | 0.00015 U | 0.00015 U | 0.00014 U | 0.00014 U | 0.00014 U | 0.00015 U |
| Aroclor-1248 (PCB-1248) | mg/kg | 62 | 0.27 | 0.000089 U | 0.031 | 0.026 | 0.000080 U | 0.000089 U |
| Aroclor-1254 (PCB-1254) | mg/kg | 260 | 0.24 | 0.00013 U | 0.025 | 0.00013 U | 0.011 | 0.00013 U |
| Aroclor-1260 (PCB-1260) | mg/kg | 590 | 0.00013 U | 0.00013 U | 0.00013 U | 0.012 | 0.00012 U | 0.00013 U |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-3** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_1.5-2-062514** | **ELC-SB-1_4.5-5-062514** | **ELC-SB-2_1.5-2-062514** | **ELC-SB-2_5-5.5-062514** | **ELC-SB-3_1.5-2-062514** | **ELC-SB-3_10-10.5_062514** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| **Petroleum Products** | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | - | - | - |
| **General Chemistry** | | | | | | | | |
| Percent moisture | % | | 6.6 | 13 | 5.9 | 6.3 | 1.7 | 12 |
| pH | s.u. | | - | - | - | - | - | - |

Notes:

(1) PA Chapter 250, Appendix A, Tables 3 to 4, Medium Specific Concentrations (MSC) for organic and inorganic regulated substances in soil, Direct-contact Numerical values, Non-Residential, Soil-to-Groundwater, non-use aquifer.
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
\- Not analyzed

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-5** | **ELC-SB-5** | **ELC-SB-6** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-4_1.5-2_062614** | **DUP-002_062614** | **ELC-SB-4_7-7.5_062614** | **ELC-SB-5_1.5-2_062414** | **ELC-SB-5_10-10.5_062414** | **ELC-SB-6_1.5-2_062514** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(7-7.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** |
| | | **MSC Non-Residential** | | **(Duplicate)** | | | | |
| | | **Soil-to-Groundwater** | | | | | | |
| **Parameters** | **Units** | **Nonuse Aquifer** | | | | | | |
| | | **(1)** | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 72 | 0.00042 U | 0.00037 U | 0.00038 U | R | 0.00071 UJ | R |
| 1,1,2,2-Tetrachloroethane | mg/kg | 13 | 0.00062 U | 0.00054 U | 0.00057 U | R | 0.0010 UJ | R |
| 1,1,2-Trichloroethane | mg/kg | 1.5 | 0.00072 U | 0.00063 U | 0.00066 U | R | 0.0012 UJ | R |
| 1,1-Dichloroethane | mg/kg | 39 | 0.00050 U | 0.00043 U | 0.00045 U | R | 0.00084 UJ | R |
| 1,1-Dichloroethene | mg/kg | 1.9 | 0.00074 U | 0.00064 U | 0.00067 U | R | 0.0012 UJ | R |
| 1,2,4-Trichlorobenzene | mg/kg | 10000 | 0.00076 U | 0.00066 U | 0.00070 U | R | 0.0013 UJ | R |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 0.92 | 0.00065 U | 0.00056 U | 0.00059 U | R | 0.0011 UJ | R |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 0.12 | 0.00075 U | 0.00065 U | 0.00068 U | R | 0.0013 UJ | R |
| 1,2-Dichlorobenzene | mg/kg | 5900 | 0.00069 U | 0.00060 U | 0.00063 U | R | 0.0012 UJ | R |
| 1,2-Dichloroethane | mg/kg | 1 | 0.00053 U | 0.00046 U | 0.00048 U | R | 0.00089 UJ | R |
| 1,2-Dichloroethene (total) | mg/kg | | 0.0011 U | 0.00096 U | 0.0010 U | R | 0.0019 UJ | R |
| 1,2-Dichloropropane | mg/kg | 1.1 | 0.00047 U | 0.00041 U | 0.00043 U | R | 0.00079 UJ | R |
| 1,3-Dichlorobenzene | mg/kg | 6100 | 0.00057 U | 0.00049 U | 0.00052 U | R | 0.00096 UJ | R |
| 1,4-Dichlorobenzene | mg/kg | 1000 | 0.00055 U | 0.00048 U | 0.00050 U | R | 0.00093 UJ | R |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 7600 | 0.00076 U | 0.00066 U | 0.00070 U | R | 0.0013 UJ | R |
| 2-Hexanone | mg/kg | 1.1 | 0.00060 U | 0.00052 U | 0.00055 U | R | 0.0010 UJ | R |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 10000 | 0.00057 U | 0.00049 U | 0.00052 U | R | 0.00095 UJ | R |
| Acetone | mg/kg | 10000 | 0.0043 U | 0.0038 U | 0.0062 U | R | 0.0073 UJ | R |
| Benzene | mg/kg | 13 | 0.00059 U | 0.00051 U | 0.00053 U | R | 0.00098 UJ | R |
| Bromodichloromethane | mg/kg | 2.7 | 0.00049 U | 0.00042 U | 0.00044 U | R | 0.00082 UJ | R |
| Bromoform | mg/kg | 350 | 0.00038 U | 0.00033 U | 0.00035 U | R | 0.00064 UJ | R |
| Bromomethane (Methyl bromide) | mg/kg | 54 | 0.00064 U | 0.00056 U | 0.00058 U | R | 0.0011 UJ | R |
| Carbon disulfide | mg/kg | 530 | 0.00044 U | 0.00039 U | 0.00040 U | R | 0.0012 J | R |
| Carbon tetrachloride | mg/kg | 2.6 | 0.00039 U | 0.00034 U | 0.00035 U | R | 0.00065 UJ | R |
| Chlorobenzene | mg/kg | 610 | 0.00066 U | 0.00057 U | 0.00060 U | R | 0.0011 UJ | R |
| Chloroethane | mg/kg | 1900 | 0.0013 U | 0.0012 U | 0.0012 U | R | 0.0023 UJ | R |
| Chloroform (Trichloromethane) | mg/kg | 20 | 0.00051 U | 0.00044 U | 0.00046 U | R | 0.00085 UJ | R |
| Chloromethane (Methyl chloride) | mg/kg | 38 | 0.00074 U | 0.00064 U | 0.00067 U | R | 0.0012 UJ | R |
| cis-1,2-Dichloroethene | mg/kg | 16 | 0.00061 U | 0.00053 U | 0.00056 U | R | 0.0010 UJ | R |
| cis-1,3-Dichloropropene | mg/kg | | 0.00059 U | 0.00051 U | 0.00054 U | R | 0.00099 UJ | R |
| Cyclohexane | mg/kg | 6900 | 0.00032 U | 0.00028 U | 0.00029 U | R | 0.00054 UJ | R |
| Dibromochloromethane | mg/kg | 250 | 0.00062 U | 0.00053 U | 0.00056 U | R | 0.0010 UJ | R |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 10000 | 0.00058 U | 0.00050 U | 0.00053 U | R | 0.00097 UJ | R |
| Ethylbenzene | mg/kg | 4600 | 0.00056 U | 0.00048 U | 0.00051 U | R | 0.00094 UJ | R |
| Isopropyl benzene | mg/kg | 10000 | 0.00059 U | 0.00051 U | 0.00054 U | R | 0.00099 UJ | R |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-5** | **ELC-SB-5** | **ELC-SB-6** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-4_1.5-2_062614** | **DUP-002_062614** | **ELC-SB-4_7-7.5_062614** | **ELC-SB-5_1.5-2_062414** | **ELC-SB-5_10-10.5_062414** | **ELC-SB-6_1.5-2_062514** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(7-7.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** |
| | | **MSC Non-Residential** | | **(Duplicate)** | | | | |
| | | **Soil-to-Groundwater** | | | | | | |
| **Parameters** | **Units** | **Nonuse Aquifer** | | | | | | |
| | | **(1)** | | | | | | |
| m&p-Xylenes | mg/kg | | 0.0013 U | 0.0011 U | 0.0012 U | R | 0.0021 UJ | R |
| Methyl acetate | mg/kg | 1900 | 0.00078 U | 0.00068 U | 0.00071 U | R | 0.0013 UJ | R |
| Methyl cyclohexane | mg/kg | | 0.00063 U | 0.00055 U | 0.00057 U | R | 0.0011 UJ | R |
| Methyl tert butyl ether (MTBE) | mg/kg | 2.8 | 0.00065 U | 0.00056 U | 0.00059 U | R | 0.0011 UJ | R |
| Methylene chloride | mg/kg | 7.6 | 0.0032 U | 0.0030 U | 0.0030 U | 0.0020 J | 0.0040 J | 0.0032 J |
| o-Xylene | mg/kg | | 0.00068 U | 0.00059 U | 0.00062 U | R | 0.0011 UJ | R |
| Styrene | mg/kg | 2400 | 0.00061 U | 0.00053 U | 0.00056 U | R | 0.0010 UJ | R |
| Tetrachloroethene | mg/kg | 4.3 | 0.00059 U | 0.00051 U | 0.00054 U | R | 0.00099 UJ | R |
| Toluene | mg/kg | 4400 | 0.00063 U | 0.00055 U | 0.00058 U | R | 0.0011 UJ | R |
| trans-1,2-Dichloroethene | mg/kg | 23 | 0.00052 U | 0.00045 U | 0.00047 U | R | 0.00087 UJ | R |
| trans-1,3-Dichloropropene | mg/kg | | 0.00052 U | 0.00045 U | 0.00047 U | R | 0.00087 UJ | R |
| Trichloroethene | mg/kg | 1.7 | 0.00057 U | 0.00050 U | 0.00052 U | R | 0.00096 UJ | R |
| Trichlorofluoromethane (CFC-11) | mg/kg | 8700 | 0.00080 U | 0.00069 U | 0.00073 U | R | 0.0013 UJ | R |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 10000 | 0.00093 U | 0.00080 U | 0.00084 U | R | 0.0016 UJ | R |
| Vinyl chloride | mg/kg | 0.27 | 0.00041 U | 0.00035 U | 0.00037 U | R | 0.00068 UJ | R |
| Xylenes (total) | mg/kg | 10000 | 0.0019 U | 0.0017 U | 0.0018 U | R | 0.0033 UJ | R |
| **Semi-volatile Organic Compounds** | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 800 | 0.00081 U | 0.00079 U | 0.00083 U | R | 0.0061 U | R |
| 2,4,5-Trichlorophenol | mg/kg | 190000 | 0.0040 U | 0.0039 U | 0.0041 U | R | 0.030 U | R |
| 2,4,6-Trichlorophenol | mg/kg | 29000 | 0.0056 U | 0.0055 U | 0.0058 U | R | 0.043 U | R |
| 2,4-Dichlorophenol | mg/kg | 1000 | 0.00076 U | 0.00074 U | 0.00077 U | R | 0.0057 U | R |
| 2,4-Dimethylphenol | mg/kg | 10000 | 0.0059 U | 0.0057 U | 0.0060 U | R | 0.044 U | R |
| 2,4-Dinitrophenol | mg/kg | 2300 | 0.045 U | 0.044 U | 0.046 U | R | 0.34 U | R |
| 2,4-Dinitrotoluene | mg/kg | 200 | 0.0030 U | 0.0030 U | 0.0031 U | R | 0.023 U | R |
| 2,6-Dinitrotoluene | mg/kg | 3000 | 0.0039 U | 0.0038 U | 0.0040 U | R | 0.029 U | R |
| 2-Chloronaphthalene | mg/kg | 18000 | 0.00079 U | 0.00077 U | 0.00080 U | R | 0.0059 U | R |
| 2-Chlorophenol | mg/kg | 4.4 | 0.0031 U | 0.0030 U | 0.0032 U | R | 0.023 U | R |
| 2-Methylnaphthalene | mg/kg | 1600 | 0.0013 J | 0.0017 J | 0.00090 J | R | 0.033 J | 0.0019 J |
| 2-Methylphenol | mg/kg | 8500 | 0.0026 U | 0.0026 U | 0.0027 U | R | 0.020 U | R |
| 2-Nitroaniline | mg/kg | 5.5 | 0.017 U | 0.016 U | 0.017 U | R | 0.13 U | R |
| 2-Nitrophenol | mg/kg | 17000 | 0.0042 U | 0.0041 U | 0.0042 U | R | 0.031 U | R |
| 3,3'-Dichlorobenzidine | mg/kg | 17000 | 0.0040 U | 0.0039 U | 0.0041 U | R | 0.030 U | R |
| 3-Nitroaniline | mg/kg | 0.48 | 0.016 U | 0.015 U | 0.016 U | R | 0.12 U | R |
| 4,6-Dinitro-2-methylphenol | mg/kg | 750 | 0.015 U | 0.015 U | 0.015 U | R | 0.11 U | R |
| 4-Bromophenyl phenyl ether | mg/kg | | 0.0033 U | 0.0032 U | 0.0034 U | R | 0.025 U | R |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-5** | **ELC-SB-5** | **ELC-SB-6** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-4_1.5-2_062614** | **DUP-002_062614** | **ELC-SB-4_7-7.5_062614** | **ELC-SB-5_1.5-2_062414** | **ELC-SB-5_10-10.5_062414** | **ELC-SB-6_1.5-2_062514** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(7-7.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** |
| | | | | **(Duplicate)** | | | | |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| 4-Chloro-3-methylphenol | mg/kg | 110 | 0.0035 U | 0.0034 U | 0.0035 U | R | 0.026 U | R |
| 4-Chloroaniline | mg/kg | 1.6 | 0.0030 U | 0.0029 U | 0.0031 U | R | 0.023 U | R |
| 4-Chlorophenyl phenyl ether | mg/kg | | 0.0042 U | 0.0041 U | 0.0043 U | R | 0.032 U | R |
| 4-Methylphenol | mg/kg | 12000 | 0.0037 U | 0.0036 U | 0.0038 U | R | 0.033 J | R |
| 4-Nitroaniline | mg/kg | 1.9 | 0.015 U | 0.015 U | 0.016 U | R | 0.12 U | R |
| 4-Nitrophenol | mg/kg | 4100 | 0.014 U | 0.013 U | 0.014 U | R | 0.10 U | R |
| Acenaphthene | mg/kg | 4700 | 0.00072 U | 0.00071 U | 0.0012 J | R | 0.0088 J | 0.0020 J |
| Acenaphthylene | mg/kg | 18000 | 0.0033 J | 0.0024 J | 0.0039 J | R | 0.038 J | R |
| Acetophenone | mg/kg | 540 | 0.012 J | 0.0096 J | 0.013 J | R | 0.023 U | R |
| Anthracene | mg/kg | 350 | 0.0024 J | 0.0020 J | 0.0026 J | R | 0.050 J | 0.0011 J |
| Atrazine | mg/kg | 0.13 | 0.0037 U | 0.0036 U | 0.0038 U | R | 0.028 U | R |
| Benzaldehyde | mg/kg | | R | R | R | R | 0.21 J | R |
| Benzo(a)anthracene | mg/kg | 960 | 0.012 | 0.011 | 0.012 | R | 0.10 | 0.017 J |
| Benzo(a)pyrene | mg/kg | 860 | 0.016 | 0.015 | 0.015 | 0.0022 J | 0.11 | 0.021 J |
| Benzo(b)fluoranthene | mg/kg | 170 | 0.021 | 0.021 | 0.016 | 0.0034 J | 0.14 | 0.030 J |
| Benzo(g,h,i)perylene | mg/kg | 180 | 0.012 | 0.010 | 0.011 | R | 0.098 | 0.020 J |
| Benzo(k)fluoranthene | mg/kg | 610 | 0.0081 | 0.0067 J | 0.012 | R | 0.054 J | 0.015 J |
| Biphenyl (1,1-Biphenyl) | mg/kg | 3100 | 0.0034 U | 0.0033 U | 0.0034 U | R | 0.025 U | R |
| bis(2-Chloroethoxy)methane | mg/kg | 8.2 | 0.0025 U | 0.0024 U | 0.0025 U | R | 0.019 U | R |
| bis(2-Chloroethyl)ether | mg/kg | 2.3 | 0.0010 U | 0.00099 U | 0.0010 U | R | 0.0076 U | R |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | 6300 | 0.0087 J | 0.0059 U | 0.0062 U | 0.024 J | 0.058 J | R |
| Butyl benzylphthalate (BBP) | mg/kg | 10000 | 0.0085 J | 0.0058 J | 0.0053 U | 0.0088 J | 0.039 U | R |
| Caprolactam | mg/kg | | 0.028 U | 0.028 U | 0.029 U | R | 0.21 U | R |
| Carbazole | mg/kg | 760 | 0.0011 J | 0.00068 U | 0.00071 U | R | 0.011 J | R |
| Chrysene | mg/kg | 230 | 0.018 | 0.016 | 0.019 | R | 0.16 | 0.039 J |
| Dibenz(a,h)anthracene | mg/kg | 270 | 0.0027 J | 0.00082 U | 0.00086 U | R | 0.025 J | 0.0060 J |
| Dibenzofuran | mg/kg | 12000 | 0.0037 U | 0.0036 U | 0.0038 U | R | 0.028 U | R |
| Diethyl phthalate | mg/kg | 10000 | 0.0041 U | 0.0040 U | 0.0042 U | R | 0.031 U | R |
| Dimethyl phthalate | mg/kg | | 0.0041 U | 0.0040 U | 0.0042 U | R | 0.031 U | R |
| Di-n-butylphthalate (DBP) | mg/kg | 10000 | 0.0047 U | 0.0046 U | 0.0048 U | 0.0054 J | 0.036 U | R |
| Di-n-octyl phthalate (DnOP) | mg/kg | 10000 | 0.0040 U | 0.0039 U | 0.0041 U | R | 0.030 U | R |
| Fluoranthene | mg/kg | 3200 | 0.023 | 0.021 | 0.025 | 0.0038 J | 0.22 | 0.012 J |
| Fluorene | mg/kg | 3800 | 0.00099 U | 0.00097 U | 0.0015 J | R | 0.025 J | R |
| Hexachlorobenzene | mg/kg | 5.8 | 0.00080 U | 0.00078 U | 0.00082 U | 0.095 J | 0.091 | R |
| Hexachlorobutadiene | mg/kg | 3400 | 0.00084 U | 0.00082 U | 0.00086 U | R | 0.0064 U | R |
| Hexachlorocyclopentadiene | mg/kg | 3300 | 0.0041 U | 0.0040 U | 0.0042 U | R | 0.031 U | R |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-5** | **ELC-SB-5** | **ELC-SB-6** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-4_1.5-2_062614** | **DUP-002_062614** | **ELC-SB-4_7-7.5_062614** | **ELC-SB-5_1.5-2_062414** | **ELC-SB-5_10-10.5_062414** | **ELC-SB-6_1.5-2_062514** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(7-7.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** |
| | | **MSC Non-Residential** | | **(Duplicate)** | | | | |
| | | **Soil-to-Groundwater** | | | | | | |
| **Parameters** | **Units** | **Nonuse Aquifer** | | | | | | |
| | | **(1)** | | | | | | |
| Hexachloroethane | mg/kg | 56 | 0.0027 U | 0.0026 U | 0.0028 U | R | 0.020 U | R |
| Indeno(1,2,3-cd)pyrene | mg/kg | 190000 | 0.0090 | 0.0089 | 0.0091 | R | 0.087 | 0.016 J |
| Isophorone | mg/kg | 1900 | 0.0028 U | 0.0028 U | 0.0029 U | R | 0.021 U | R |
| Naphthalene | mg/kg | 7500 | 0.00065 U | 0.00063 U | 0.00066 U | R | 0.065 | R |
| Nitrobenzene | mg/kg | 8700 | 0.0031 U | 0.0031 U | 0.0032 U | R | 0.024 U | R |
| N-Nitrosodi-n-propylamine | mg/kg | 5.1 | 0.00088 U | 0.00086 U | 0.00090 U | R | 0.0067 U | R |
| N-Nitrosodiphenylamine | mg/kg | 5500 | 0.0035 U | 0.0034 U | 0.0036 U | R | 0.026 U | R |
| Pentachlorophenol | mg/kg | 5000 | 0.0034 U | 0.0033 U | 0.0034 U | R | 0.025 U | R |
| Phenanthrene | mg/kg | 10000 | 0.014 | 0.011 | 0.017 | 0.0031 J | 0.14 | 0.0092 J |
| Phenol | mg/kg | 3300 | 0.00089 U | 0.00087 U | 0.00091 U | R | 0.0067 U | R |
| Pyrene | mg/kg | 2200 | 0.030 | 0.027 | 0.030 | 0.0024 J | 0.18 | 0.016 J |
| **Metals** | | | | | | | | |
| Antimony | mg/kg | 27000 | 0.20 | 0.17 J | 0.23 | 0.29 J | 1.2 J | 0.025 UJ |
| Arsenic | mg/kg | 29000 | 11 | 8.3 | 13 | 2.5 | 6.5 | 2.3 |
| Beryllium | mg/kg | 190000 | 0.54 | 0.54 | 0.52 | 2.5 | 1.9 | 0.61 J |
| Cadmium | mg/kg | 38000 | 0.13 | 0.12 | 0.14 | 0.056 J | 8.1 | 0.067 U |
| Chromium | mg/kg | | 58 J | 14 J | 12 | 1400 | 120 | 2400 |
| Copper | mg/kg | 190000 | 29 | 31 | 46 | 34 J | 180 J | 13 J |
| Lead | mg/kg | 190000 | 30 | 22 | 24 | 8.0 | 240 | 4.5 |
| Mercury | mg/kg | 10000 | 0.072 | 0.030 J | 0.077 | 0.012 U | 0.77 | 0.011 U |
| Nickel | mg/kg | 190000 | 12 | 13 | 12 | 13 | 56 | 20 J |
| Selenium | mg/kg | 26000 | 0.43 J | 0.34 J | 0.38 J | 1.1 J | 2.2 J | 0.48 U |
| Silver | mg/kg | 84000 | 0.18 | 0.019 J | 0.011 J | 0.021 U | 1.5 | 0.037 U |
| Thallium | mg/kg | 14000 | 0.094 J | 0.098 J | 0.092 J | 0.058 J | 0.29 J | 0.019 U |
| Zinc | mg/kg | 190000 | 63 | 45 | 49 | 56 J | 1900 J | 25 |
| **PCBs** | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | 200 | 0.00014 U | 0.00014 U | 0.00014 U | 0.00013 U | 0.00021 U | 0.00013 U |
| Aroclor-1221 (PCB-1221) | mg/kg | 0.63 | 0.00018 U | 0.00017 U | 0.00018 U | 0.00017 U | 0.00027 U | 0.00017 U |
| Aroclor-1232 (PCB-1232) | mg/kg | 0.5 | 0.00016 U | 0.00016 U | 0.00017 U | 0.00015 U | 0.00024 U | 0.00015 U |
| Aroclor-1242 (PCB-1242) | mg/kg | 16 | 0.00015 U | 0.00015 U | 0.00016 U | 0.00015 U | 0.00023 U | 0.00014 U |
| Aroclor-1248 (PCB-1248) | mg/kg | 62 | 0.000088 U | 0.000086 U | 0.000092 U | 0.000085 U | 0.00014 U | 0.0013 |
| Aroclor-1254 (PCB-1254) | mg/kg | 260 | 0.00013 U | 0.00013 U | 0.00014 U | 0.0016 | 0.11 | 0.00012 U |
| Aroclor-1260 (PCB-1260) | mg/kg | 590 | 0.00013 U | 0.0017 | 0.0018 | 0.00013 U | 0.00020 U | 0.0025 |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-5** | **ELC-SB-5** | **ELC-SB-6** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-4_1.5-2_062614** | **DUP-002_062614** | **ELC-SB-4_7-7.5_062614** | **ELC-SB-5_1.5-2_062414** | **ELC-SB-5_10-10.5_062414** | **ELC-SB-6_1.5-2_062514** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(7-7.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** |
| | | | | **(Duplicate)** | | | | |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| **Petroleum Products** | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | - | - | - |
| **General Chemistry** | | | | | | | | |
| Percent moisture | % | | 11 | 9.9 | 14 | 8.2 | 42 | 4.4 |
| pH | s.u. | | - | - | - | - | - | - |

Notes:

(1) PA Chapter 250, Appendix A, Tables 3 to 4, Medium Specific Concentrations (MSC) for organic and inorganic regulated substances in soil, Direct-contact Numerical values, Non-Residential, Soil-to-Groundwater, non-use aquifer.

mg/kg milligrams per kilogram

J Estimated concentration.

R Rejected.

U Not detected at the associated reporting limit.

UJ Not detected; associated reporting limit is estimated.

\- Not analyzed

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-8** | **ELC-SB-9** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_10-10.5_062514** | **ELC-SB-7_1.5-2_062414** | **ELC-SB-7_6.5-7_062414** | **ELC-SB-8_1.5-2-062514** | **ELC-SB-8_3-3.5-062514** | **ELC-SB-9_0.5-1_062614** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** | **(6.5-7) ft BGS** | **(1.5-2) ft BGS** | **(3-3.5) ft BGS** | **(0.5-1) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 72 | 0.00046 U | 0.00040 U | 0.00037 U | 0.00039 U | 0.00035 U | 0.00037 U |
| 1,1,2,2-Tetrachloroethane | mg/kg | 13 | 0.00068 U | 0.00059 U | 0.00055 U | 0.00058 U | 0.00052 U | 0.00055 U |
| 1,1,2-Trichloroethane | mg/kg | 1.5 | 0.00079 U | 0.00069 U | 0.00064 U | 0.00067 U | 0.00061 U | 0.00063 U |
| 1,1-Dichloroethane | mg/kg | 39 | 0.00054 U | 0.00048 U | 0.00044 U | 0.00047 U | 0.00042 U | 0.00044 U |
| 1,1-Dichloroethene | mg/kg | 1.9 | 0.00080 U | 0.00070 U | 0.00065 U | 0.00069 U | 0.00062 U | 0.00065 U |
| 1,2,4-Trichlorobenzene | mg/kg | 10000 | 0.00083 U | 0.00073 U | 0.00068 U | 0.00071 U | 0.00064 U | 0.00067 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 0.92 | 0.00071 U | 0.00062 U | 0.00057 U | 0.00061 U | 0.00055 U | 0.00057 U |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 0.12 | 0.00082 U | 0.00071 U | 0.00066 U | 0.00070 U | 0.00063 U | 0.00066 U |
| 1,2-Dichlorobenzene | mg/kg | 5900 | 0.00075 U | 0.00066 U | 0.00061 U | 0.00065 U | 0.00058 U | 0.00061 U |
| 1,2-Dichloroethane | mg/kg | 1 | 0.00058 U | 0.00051 U | 0.00047 U | 0.00050 U | 0.00045 U | 0.00047 U |
| 1,2-Dichloroethene (total) | mg/kg | | 0.0012 U | 0.0011 U | 0.00098 U | 0.0010 U | 0.013 | 0.00098 U |
| 1,2-Dichloropropane | mg/kg | 1.1 | 0.00051 U | 0.00045 U | 0.00042 U | 0.00044 U | 0.00040 U | 0.00041 U |
| 1,3-Dichlorobenzene | mg/kg | 6100 | 0.00062 U | 0.00054 U | 0.00050 U | 0.00053 U | 0.00048 U | 0.00050 U |
| 1,4-Dichlorobenzene | mg/kg | 1000 | 0.00060 U | 0.00053 U | 0.00049 U | 0.00052 U | 0.00046 U | 0.00049 U |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 7600 | 0.00083 U | 0.00073 U | 0.00067 U | 0.00071 U | 0.00064 U | 0.00067 U |
| 2-Hexanone | mg/kg | 1.1 | 0.00065 U | 0.00057 U | 0.00053 U | 0.00056 U | 0.00050 U | 0.00053 U |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 10000 | 0.00062 U | 0.00054 U | 0.00050 U | 0.00053 U | 0.00048 U | 0.00050 U |
| Acetone | mg/kg | 10000 | 0.0047 U | 0.0049 J | 0.0038 U | 0.0040 U | 0.0036 U | 0.0038 U |
| Benzene | mg/kg | 13 | 0.00064 U | 0.00056 U | 0.00052 U | 0.00055 U | 0.00049 U | 0.00051 U |
| Bromodichloromethane | mg/kg | 2.7 | 0.00053 U | 0.00046 U | 0.00043 U | 0.00045 U | 0.00041 U | 0.00043 U |
| Bromoform | mg/kg | 350 | 0.00042 U | 0.00037 U | 0.00034 U | 0.00036 U | 0.00032 U | 0.00034 U |
| Bromomethane (Methyl bromide) | mg/kg | 54 | 0.00070 U | 0.00061 U | 0.00057 U | 0.00060 U | 0.00054 U | 0.00056 U |
| Carbon disulfide | mg/kg | 530 | 0.00048 U | 0.00042 U | 0.00039 U | 0.00041 U | 0.00065 J | 0.00039 U |
| Carbon tetrachloride | mg/kg | 2.6 | 0.00042 U | 0.00037 U | 0.00034 U | 0.00036 U | 0.00033 U | 0.00034 U |
| Chlorobenzene | mg/kg | 610 | 0.00072 U | 0.00063 U | 0.00058 U | 0.00061 U | 0.00055 U | 0.00058 U |
| Chloroethane | mg/kg | 1900 | 0.0015 U | 0.0013 U | 0.0012 U | 0.0013 U | 0.0011 U | 0.0012 U |
| Chloroform (Trichloromethane) | mg/kg | 20 | 0.00055 U | 0.00048 U | 0.00045 U | 0.00047 U | 0.00043 U | 0.00045 U |
| Chloromethane (Methyl chloride) | mg/kg | 38 | 0.00081 U | 0.00071 U | 0.00065 U | 0.00069 U | 0.00062 U | 0.00065 U |
| cis-1,2-Dichloroethene | mg/kg | 16 | 0.00067 U | 0.00058 U | 0.00054 U | 0.00057 U | 0.013 | 0.00054 U |
| cis-1,3-Dichloropropene | mg/kg | | 0.00064 U | 0.00056 U | 0.00052 U | 0.00055 U | 0.00049 U | 0.00052 U |
| Cyclohexane | mg/kg | 6900 | 0.00035 U | 0.00031 U | 0.00028 U | 0.00030 U | 0.00027 U | 0.00028 U |
| Dibromochloromethane | mg/kg | 250 | 0.00067 U | 0.00059 U | 0.00054 U | 0.00057 U | 0.00052 U | 0.00054 U |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 10000 | 0.00063 U | 0.00055 U | 0.00051 U | 0.00054 U | 0.00049 U | 0.00051 U |
| Ethylbenzene | mg/kg | 4600 | 0.00061 U | 0.00053 U | 0.00049 U | 0.00052 U | 0.00047 U | 0.00049 U |
| Isopropyl benzene | mg/kg | 10000 | 0.00064 U | 0.00056 U | 0.00052 U | 0.00055 U | 0.00050 U | 0.00052 U |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-8** | **ELC-SB-9** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_10-10.5_062514** | **ELC-SB-7_1.5-2_062414** | **ELC-SB-7_6.5-7_062414** | **ELC-SB-8_1.5-2-062514** | **ELC-SB-8_3-3.5-062514** | **ELC-SB-9_0.5-1_062614** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** | **(6.5-7) ft BGS** | **(1.5-2) ft BGS** | **(3-3.5) ft BGS** | **(0.5-1) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| m&p-Xylenes | mg/kg | | 0.0014 U | 0.0012 U | 0.0011 U | 0.0012 U | 0.0011 U | 0.0011 U |
| Methyl acetate | mg/kg | 1900 | 0.00085 U | 0.00075 U | 0.00069 U | 0.00073 U | 0.00066 U | 0.00069 U |
| Methyl cyclohexane | mg/kg | | 0.00069 U | 0.00060 U | 0.00056 U | 0.00059 U | 0.00053 U | 0.00055 U |
| Methyl tert butyl ether (MTBE) | mg/kg | 2.8 | 0.00071 U | 0.00062 U | 0.00057 U | 0.00061 U | 0.00055 U | 0.00057 U |
| Methylene chloride | mg/kg | 7.6 | 0.0017 U | 0.0019 J | 0.0016 J | 0.0022 U | 0.0029 U | 0.0039 J |
| o-Xylene | mg/kg | | 0.00074 U | 0.00065 U | 0.00060 U | 0.00063 U | 0.00057 U | 0.00059 U |
| Styrene | mg/kg | 2400 | 0.00067 U | 0.00058 U | 0.00054 U | 0.00057 U | 0.00051 U | 0.00054 U |
| Tetrachloroethene | mg/kg | 4.3 | 0.00064 U | 0.00056 U | 0.00052 U | 0.00055 U | 0.018 | 0.00052 U |
| Toluene | mg/kg | 4400 | 0.00069 U | 0.00060 U | 0.00056 U | 0.00059 U | 0.00053 U | 0.00056 U |
| trans-1,2-Dichloroethene | mg/kg | 23 | 0.00056 U | 0.00049 U | 0.00046 U | 0.00048 U | 0.00043 U | 0.00045 U |
| trans-1,3-Dichloropropene | mg/kg | | 0.00057 U | 0.00049 U | 0.00046 U | 0.00048 U | 0.00044 U | 0.00046 U |
| Trichloroethene | mg/kg | 1.7 | 0.00062 U | 0.00054 U | 0.00050 U | 0.00053 U | 0.0019 J | 0.00050 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 8700 | 0.00087 U | 0.00076 U | 0.00070 U | 0.00074 U | 0.00067 U | 0.00070 U |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 10000 | 0.0010 U | 0.00088 U | 0.00082 U | 0.00086 U | 0.00078 U | 0.00081 U |
| Vinyl chloride | mg/kg | 0.27 | 0.00044 U | 0.00039 U | 0.00036 U | 0.00038 U | 0.00034 U | 0.00036 U |
| Xylenes (total) | mg/kg | 10000 | 0.0021 U | 0.0019 U | 0.0017 U | 0.0018 U | 0.0016 U | 0.0017 U |
| **Semi-volatile Organic Compounds** | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 800 | 0.00083 U | 0.0038 U | 0.00081 U | 0.0041 U | 0.0079 U | 0.0038 U |
| 2,4,5-Trichlorophenol | mg/kg | 190000 | 0.0041 U | 0.019 U | 0.0040 U | 0.020 U | 0.039 U | 0.019 U |
| 2,4,6-Trichlorophenol | mg/kg | 29000 | 0.0057 U | 0.026 U | 0.0056 U | 0.029 U | 0.055 U | 0.027 U |
| 2,4-Dichlorophenol | mg/kg | 1000 | 0.00077 U | 0.0035 U | 0.00075 U | 0.0038 U | 0.0074 U | 0.0036 U |
| 2,4-Dimethylphenol | mg/kg | 10000 | 0.0060 U | 0.027 U | 0.0059 U | 0.030 U | 0.057 U | 0.028 U |
| 2,4-Dinitrophenol | mg/kg | 2300 | 0.046 U | 0.21 U | 0.045 U | 0.23 U | 0.44 U | R |
| 2,4-Dinitrotoluene | mg/kg | 200 | 0.0031 U | 0.014 U | 0.0030 U | 0.015 U | 0.030 U | 0.014 U |
| 2,6-Dinitrotoluene | mg/kg | 3000 | 0.0040 U | 0.018 U | 0.0039 U | 0.020 U | 0.038 U | 0.018 U |
| 2-Chloronaphthalene | mg/kg | 18000 | 0.00080 U | 0.0037 U | 0.00078 U | 0.0040 U | 0.0077 U | 0.0037 U |
| 2-Chlorophenol | mg/kg | 4.4 | 0.0031 U | 0.014 U | 0.0031 U | 0.016 U | 0.030 U | 0.014 U |
| 2-Methylnaphthalene | mg/kg | 1600 | 0.00069 U | 0.014 J | 0.00068 U | 0.018 J | 0.027 J | 0.0032 U |
| 2-Methylphenol | mg/kg | 8500 | 0.0027 U | 0.012 U | 0.0026 U | 0.013 U | 0.026 U | 0.012 U |
| 2-Nitroaniline | mg/kg | 5.5 | 0.017 U | 0.079 U | 0.017 U | 0.086 U | 0.16 U | 0.079 U |
| 2-Nitrophenol | mg/kg | 17000 | 0.0042 U | 0.019 U | 0.0041 U | 0.021 U | 0.040 U | 0.020 U |
| 3,3'-Dichlorobenzidine | mg/kg | 17000 | 0.0040 U | 0.019 U | 0.0040 U | 0.020 U | 0.039 U | 0.019 UJ |
| 3-Nitroaniline | mg/kg | 0.48 | 0.016 U | 0.072 U | 0.015 U | 0.079 U | 0.15 U | 0.073 U |
| 4,6-Dinitro-2-methylphenol | mg/kg | 750 | 0.015 U | 0.070 U | 0.015 U | 0.077 U | 0.15 U | 0.071 U |
| 4-Bromophenyl phenyl ether | mg/kg | | 0.0033 U | 0.015 U | 0.0033 U | 0.017 U | 0.032 U | 0.015 U |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-8** | **ELC-SB-9** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_10-10.5_062514** | **ELC-SB-7_1.5-2_062414** | **ELC-SB-7_6.5-7_062414** | **ELC-SB-8_1.5-2-062514** | **ELC-SB-8_3-3.5-062514** | **ELC-SB-9_0.5-1_062614** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** | **(6.5-7) ft BGS** | **(1.5-2) ft BGS** | **(3-3.5) ft BGS** | **(0.5-1) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| 4-Chloro-3-methylphenol | mg/kg | 110 | 0.0035 U | 0.016 U | 0.0035 U | 0.018 U | 0.034 U | 0.016 U |
| 4-Chloroaniline | mg/kg | 1.6 | 0.0031 U | 0.014 U | 0.0030 U | 0.015 U | 0.029 U | 0.014 U |
| 4-Chlorophenyl phenyl ether | mg/kg | | 0.0043 U | 0.019 U | 0.0042 U | 0.021 U | 0.041 U | 0.020 U |
| 4-Methylphenol | mg/kg | 12000 | 0.0037 U | 0.017 U | 0.0037 U | 0.019 U | 0.036 U | 0.017 U |
| 4-Nitroaniline | mg/kg | 1.9 | 0.016 U | 0.071 U | 0.015 U | 0.078 U | 0.15 U | 0.072 U |
| 4-Nitrophenol | mg/kg | 4100 | 0.014 U | 0.064 U | 0.014 U | 0.070 U | 0.13 U | 0.065 U |
| Acenaphthene | mg/kg | 4700 | 0.00074 U | 0.0065 J | 0.00072 U | 0.0057 J | 0.055 J | 0.0034 U |
| Acenaphthylene | mg/kg | 18000 | 0.00088 U | 0.095 | 0.00086 U | 0.011 J | 0.050 J | 0.0041 U |
| Acetophenone | mg/kg | 540 | 0.0035 J | 0.014 U | 0.0031 U | 0.016 U | 0.030 U | 0.015 U |
| Anthracene | mg/kg | 350 | 0.00075 U | 0.054 | 0.00074 U | 0.022 J | 0.078 | 0.0036 J |
| Atrazine | mg/kg | 0.13 | 0.0037 U | 0.017 U | 0.0037 U | 0.019 U | 0.036 U | 0.017 U |
| Benzaldehyde | mg/kg | | R | R | 0.028 J | R | R | R |
| Benzo(a)anthracene | mg/kg | 960 | 0.00096 U | 0.23 | 0.00094 U | 0.069 | 0.34 | 0.014 J |
| Benzo(a)pyrene | mg/kg | 860 | 0.00077 U | 0.24 | 0.00075 U | 0.084 | 0.39 | 0.018 J |
| Benzo(b)fluoranthene | mg/kg | 170 | 0.0012 U | 0.28 | 0.0012 U | 0.13 | 0.49 | 0.031 J |
| Benzo(g,h,i)perylene | mg/kg | 180 | 0.00076 U | 0.21 | 0.00075 U | 0.061 | 0.39 | 0.017 J |
| Benzo(k)fluoranthene | mg/kg | 610 | 0.0015 U | 0.11 | 0.0015 U | 0.042 | 0.15 | 0.010 J |
| Biphenyl (1,1-Biphenyl) | mg/kg | 3100 | 0.0034 U | 0.016 U | 0.0034 U | 0.017 U | 0.033 U | 0.016 U |
| bis(2-Chloroethoxy)methane | mg/kg | 8.2 | 0.0025 U | 0.012 U | 0.0025 U | 0.013 U | 0.024 U | 0.012 U |
| bis(2-Chloroethyl)ether | mg/kg | 2.3 | 0.0010 U | 0.0047 U | 0.0010 U | 0.0051 U | 0.0098 U | 0.0048 U |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | 6300 | 0.0062 U | 0.029 J | 0.018 J | 0.031 U | 0.059 U | 0.029 U |
| Butyl benzylphthalate (BBP) | mg/kg | 10000 | 0.0052 U | 0.024 U | 0.0081 J | 0.026 U | 0.050 U | 0.024 U |
| Caprolactam | mg/kg | | 0.029 U | 0.13 U | 0.028 U | 0.14 U | 0.28 U | R |
| Carbazole | mg/kg | 760 | 0.00071 U | 0.020 J | 0.00069 U | 0.0035 U | 0.027 J | 0.0033 U |
| Chrysene | mg/kg | 230 | 0.00091 U | 0.24 | 0.00090 U | 0.097 | 0.45 | 0.016 J |
| Dibenz(a,h)anthracene | mg/kg | 270 | 0.00085 U | 0.056 | 0.00084 U | 0.022 J | 0.070 J | 0.0039 U |
| Dibenzofuran | mg/kg | 12000 | 0.0038 U | 0.024 J | 0.0037 U | 0.019 U | 0.036 U | 0.017 U |
| Diethyl phthalate | mg/kg | 10000 | 0.0042 U | 0.019 U | 0.0041 U | 0.021 U | 0.040 U | 0.019 U |
| Dimethyl phthalate | mg/kg | | 0.0042 U | 0.019 U | 0.0041 U | 0.021 U | 0.040 U | 0.019 U |
| Di-n-butylphthalate (DBP) | mg/kg | 10000 | 0.0048 U | 0.022 U | 0.0067 J | 0.024 U | 0.046 U | 0.022 U |
| Di-n-octyl phthalate (DnOP) | mg/kg | 10000 | 0.0040 U | 0.018 U | 0.0040 U | 0.020 U | 0.039 U | 0.019 U |
| Fluoranthene | mg/kg | 3200 | 0.00082 U | 0.41 | 0.0017 J | 0.088 | 0.55 | 0.018 J |
| Fluorene | mg/kg | 3800 | 0.0010 U | 0.019 J | 0.00099 U | 0.0050 U | 0.045 J | 0.0047 U |
| Hexachlorobenzene | mg/kg | 5.8 | 0.00082 U | 0.0037 U | 0.046 | 0.0041 U | 0.0078 U | 0.0038 U |
| Hexachlorobutadiene | mg/kg | 3400 | 0.00086 U | 0.0039 U | 0.00084 U | 0.0043 U | 0.0082 U | 0.0040 U |
| Hexachlorocyclopentadiene | mg/kg | 3300 | 0.0041 U | 0.019 U | 0.0041 U | 0.021 U | 0.040 U | 0.019 U |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-8** | **ELC-SB-9** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_10-10.5_062514** | **ELC-SB-7_1.5-2_062414** | **ELC-SB-7_6.5-7_062414** | **ELC-SB-8_1.5-2-062514** | **ELC-SB-8_3-3.5-062514** | **ELC-SB-9_0.5-1_062614** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** | **(6.5-7) ft BGS** | **(1.5-2) ft BGS** | **(3-3.5) ft BGS** | **(0.5-1) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| Hexachloroethane | mg/kg | 56 | 0.0028 U | 0.013 U | 0.0027 U | 0.014 U | 0.026 U | 0.013 U |
| Indeno(1,2,3-cd)pyrene | mg/kg | 190000 | 0.00079 U | 0.19 | 0.00077 U | 0.056 | 0.26 | 0.015 J |
| Isophorone | mg/kg | 1900 | 0.0029 U | 0.013 U | 0.0028 U | 0.014 U | 0.028 U | 0.013 U |
| Naphthalene | mg/kg | 7500 | 0.00066 U | 0.055 | 0.00065 U | 0.025 J | 0.054 J | 0.0031 U |
| Nitrobenzene | mg/kg | 8700 | 0.0032 U | 0.015 U | 0.0031 U | 0.016 U | 0.031 U | 0.015 U |
| N-Nitrosodi-n-propylamine | mg/kg | 5.1 | 0.00090 U | 0.0041 U | 0.00088 U | 0.0045 U | 0.0086 U | 0.0042 U |
| N-Nitrosodiphenylamine | mg/kg | 5500 | 0.0035 U | 0.016 U | 0.0035 U | 0.018 U | 0.034 U | 0.016 U |
| Pentachlorophenol | mg/kg | 5000 | 0.0034 U | 0.016 U | 0.0034 U | 0.017 U | 0.033 U | 0.016 U |
| Phenanthrene | mg/kg | 10000 | 0.0012 U | 0.19 | 0.0012 U | 0.061 | 0.30 | 0.0089 J |
| Phenol | mg/kg | 3300 | 0.00090 U | 0.0041 U | 0.0063 J | 0.0045 U | 0.0087 U | 0.0042 U |
| Pyrene | mg/kg | 2200 | 0.00077 U | 0.25 | 0.0011 J | 0.097 | 0.56 | 0.020 J |
| **Metals** | | | | | | | | |
| Antimony | mg/kg | 27000 | 0.13 J | 0.18 J | 0.12 J | 0.30 J | 20 J | 0.12 J |
| Arsenic | mg/kg | 29000 | 4.7 | 5.8 | 5.6 | 3.9 | 6.3 | 5.3 |
| Beryllium | mg/kg | 190000 | 0.31 | 0.62 | 0.33 | 0.54 | 2.2 | 0.39 |
| Cadmium | mg/kg | 38000 | 0.095 J | 0.17 | 0.040 J | 0.30 | 0.55 J | 0.10 |
| Chromium | mg/kg | | 8.6 | 87 | 8.6 | 350 | 580 | 42 |
| Copper | mg/kg | 190000 | 10 J | 14 J | 9.3 J | 9.6 J | 3200 J | 13 |
| Lead | mg/kg | 190000 | 7.3 | 17 | 7.8 | 41 | 500 | 14 |
| Mercury | mg/kg | 10000 | 0.012 U | 0.011 U | 0.012 U | 0.029 J | 0.014 J | 0.012 J |
| Nickel | mg/kg | 190000 | 14 J | 13 | 14 | 8.7 J | 36 J | 13 |
| Selenium | mg/kg | 26000 | 0.15 J | 0.65 J | 0.18 J | 0.25 J | 1.9 J | 0.21 J |
| Silver | mg/kg | 84000 | 0.0041 U | 0.018 J | 0.0065 J | 0.026 J | 0.98 | 0.0037 U |
| Thallium | mg/kg | 14000 | 0.046 J | 0.055 | 0.041 J | 0.085 J | 0.052 J | 0.053 J |
| Zinc | mg/kg | 190000 | 31 | 54 J | 33 J | 90 | 160 | 39 |
| **PCBs** | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | 200 | 0.00014 U | 0.0026 U | 0.00014 U | 0.00014 U | 0.0014 U | 0.00066 U |
| Aroclor-1221 (PCB-1221) | mg/kg | 0.63 | 0.00018 U | 0.0033 U | 0.00018 U | 0.00018 U | 0.0017 U | 0.00085 U |
| Aroclor-1232 (PCB-1232) | mg/kg | 0.5 | 0.00016 U | 0.0030 U | 0.00016 U | 0.00016 U | 0.0016 U | 0.00076 U |
| Aroclor-1242 (PCB-1242) | mg/kg | 16 | 0.00015 U | 0.0029 U | 0.00015 U | 0.00016 U | 0.0015 U | 0.00073 U |
| Aroclor-1248 (PCB-1248) | mg/kg | 62 | 0.00039 J | 0.0017 U | 0.000088 U | 0.016 | 0.00086 U | 0.00042 U |
| Aroclor-1254 (PCB-1254) | mg/kg | 260 | 0.00014 U | 1.2 | 0.0019 | 0.0080 | 0.34 | 0.074 |
| Aroclor-1260 (PCB-1260) | mg/kg | 590 | 0.00027 J | 1.2 | 0.00013 U | 0.00014 U | 0.0013 U | 0.00063 U |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-8** | **ELC-SB-9** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_10-10.5_062514** | **ELC-SB-7_1.5-2_062414** | **ELC-SB-7_6.5-7_062414** | **ELC-SB-8_1.5-2-062514** | **ELC-SB-8_3-3.5-062514** | **ELC-SB-9_0.5-1_062614** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** | **(6.5-7) ft BGS** | **(1.5-2) ft BGS** | **(3-3.5) ft BGS** | **(0.5-1) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| **Petroleum Products** | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | - | - | - |
| **General Chemistry** | | | | | | | | |
| Percent moisture | % | | 13 | 5.5 | 12 | 13 | 9.1 | 6.4 |
| pH | s.u. | | - | - | - | - | - | - |

Notes:

(1) PA Chapter 250, Appendix A, Tables 3 to 4, Medium Specific Concentrations (MSC) for organic and inorganic regulated substances in soil, Direct-contact Numerical values, Non-Residential, Soil-to-Groundwater, non-use aquifer.
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
\- Not analyzed

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-10** | **ELC-SB-11** | **ELC-SB-11** | **ELC-SB-12** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-9_5-5.5_062614** | **ELC-SB-10_1.5-2_062414** | **ELC-SB-10_6-6.5_062414** | **ELC-SB-11_1.5-2-062514** | **ELC-SB-11_5-5.5-062514** | **ELC-SB-12_1.5-2_062614** |
| **Sample Date:** | | | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(6-6.5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 72 | 0.00035 U | 0.00039 U | 0.00036 UJ | 0.00037 U | 0.00040 U | 0.00038 U |
| 1,1,2,2-Tetrachloroethane | mg/kg | 13 | 0.00052 U | 0.00057 U | 0.00054 UJ | 0.00055 U | 0.00059 U | 0.00056 U |
| 1,1,2-Trichloroethane | mg/kg | 1.5 | 0.00060 U | 0.00066 U | 0.00062 UJ | 0.00064 U | 0.00069 U | 0.00065 U |
| 1,1-Dichloroethane | mg/kg | 39 | 0.00042 U | 0.00046 U | 0.00043 UJ | 0.00044 U | 0.00048 U | 0.00045 U |
| 1,1-Dichloroethene | mg/kg | 1.9 | 0.00062 U | 0.00067 U | 0.00063 UJ | 0.00065 U | 0.00070 U | 0.00066 U |
| 1,2,4-Trichlorobenzene | mg/kg | 10000 | 0.00064 U | 0.00070 U | 0.00066 UJ | 0.00068 U | 0.00073 U | 0.00069 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 0.92 | 0.00054 U | 0.00059 U | 0.00056 UJ | 0.00057 U | 0.00062 U | 0.00058 U |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 0.12 | 0.00063 U | 0.00068 U | 0.00064 UJ | 0.00066 U | 0.00071 U | 0.00067 U |
| 1,2-Dichlorobenzene | mg/kg | 5900 | 0.00058 U | 0.00063 U | 0.00060 UJ | 0.00061 U | 0.00066 U | 0.00062 U |
| 1,2-Dichloroethane | mg/kg | 1 | 0.00045 U | 0.00049 U | 0.00046 UJ | 0.00047 U | 0.00051 U | 0.00048 U |
| 1,2-Dichloroethene (total) | mg/kg | | 0.00093 U | 0.0010 U | 0.00096 UJ | 0.00098 U | 0.0011 U | 0.0010 U |
| 1,2-Dichloropropane | mg/kg | 1.1 | 0.00040 U | 0.00043 U | 0.00041 UJ | 0.00042 U | 0.00045 U | 0.00042 U |
| 1,3-Dichlorobenzene | mg/kg | 6100 | 0.00048 U | 0.00052 U | 0.00049 UJ | 0.00050 U | 0.00054 U | 0.00051 U |
| 1,4-Dichlorobenzene | mg/kg | 1000 | 0.00046 U | 0.00050 U | 0.00048 UJ | 0.00049 U | 0.00053 U | 0.00050 U |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 7600 | 0.00064 U | 0.00070 U | 0.00066 UJ | 0.00068 U | 0.00073 U | 0.00069 U |
| 2-Hexanone | mg/kg | 1.1 | 0.00050 U | 0.00055 U | 0.00052 UJ | 0.00053 U | 0.00057 U | 0.00054 U |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 10000 | 0.00047 U | 0.00052 U | 0.00049 UJ | 0.00050 U | 0.00054 U | 0.00051 U |
| Acetone | mg/kg | 10000 | 0.0036 U | 0.0040 U | 0.0037 UJ | 0.0038 U | 0.0047 U | 0.0039 U |
| Benzene | mg/kg | 13 | 0.00049 U | 0.00054 U | 0.00050 UJ | 0.00052 U | 0.00056 U | 0.00053 U |
| Bromodichloromethane | mg/kg | 2.7 | 0.00041 U | 0.00044 U | 0.00042 UJ | 0.00043 U | 0.00046 U | 0.00044 U |
| Bromoform | mg/kg | 350 | 0.00032 U | 0.00035 U | 0.00033 UJ | 0.00034 U | 0.00037 U | 0.00035 U |
| Bromomethane (Methyl bromide) | mg/kg | 54 | 0.00054 U | 0.00059 U | 0.00055 UJ | 0.00057 U | 0.00061 U | 0.00058 U |
| Carbon disulfide | mg/kg | 530 | 0.00070 J | 0.00041 U | 0.00038 J | 0.00039 U | 0.00042 U | 0.00040 U |
| Carbon tetrachloride | mg/kg | 2.6 | 0.00032 U | 0.00035 U | 0.00033 UJ | 0.00034 U | 0.00037 U | 0.00035 U |
| Chlorobenzene | mg/kg | 610 | 0.00055 U | 0.00060 U | 0.00057 UJ | 0.00058 U | 0.00063 U | 0.00059 U |
| Chloroethane | mg/kg | 1900 | 0.0011 U | 0.0012 U | 0.0012 UJ | 0.0012 U | 0.0013 U | 0.0012 U |
| Chloroform (Trichloromethane) | mg/kg | 20 | 0.00043 U | 0.00046 U | 0.00044 UJ | 0.00045 U | 0.00048 U | 0.00046 U |
| Chloromethane (Methyl chloride) | mg/kg | 38 | 0.00062 U | 0.00068 U | 0.00064 UJ | 0.00065 U | 0.00070 U | 0.00067 U |
| cis-1,2-Dichloroethene | mg/kg | 16 | 0.00051 U | 0.00056 U | 0.00052 UJ | 0.00054 U | 0.00058 U | 0.00055 U |
| cis-1,3-Dichloropropene | mg/kg | | 0.00049 U | 0.00054 U | 0.00051 UJ | 0.00052 U | 0.00056 U | 0.00053 U |
| Cyclohexane | mg/kg | 6900 | 0.00093 J | 0.00029 U | 0.00028 UJ | 0.00028 U | 0.00031 U | 0.00029 U |
| Dibromochloromethane | mg/kg | 250 | 0.00052 U | 0.00056 U | 0.00053 UJ | 0.00054 U | 0.00059 U | 0.00055 U |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 10000 | 0.00048 U | 0.00053 U | 0.00050 UJ | 0.00051 U | 0.00055 U | 0.00052 U |
| Ethylbenzene | mg/kg | 4600 | 0.0026 J | 0.00051 U | 0.00048 UJ | 0.00049 U | 0.00053 U | 0.00050 U |
| Isopropyl benzene | mg/kg | 10000 | 0.0029 J | 0.00054 U | 0.00051 UJ | 0.00052 U | 0.00056 U | 0.00053 U |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-10** | **ELC-SB-11** | **ELC-SB-11** | **ELC-SB-12** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-9_5-5.5_062614** | **ELC-SB-10_1.5-2_062414** | **ELC-SB-10_6-6.5_062414** | **ELC-SB-11_1.5-2-062514** | **ELC-SB-11_5-5.5-062514** | **ELC-SB-12_1.5-2_062614** |
| **Sample Date:** | | | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(6-6.5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| m&p-Xylenes | mg/kg | | 0.0059 J | 0.0012 U | 0.0011 UJ | 0.0011 U | 0.0012 U | 0.0011 U |
| Methyl acetate | mg/kg | 1900 | 0.00066 U | 0.00071 U | 0.00067 UJ | 0.00069 U | 0.00075 U | 0.00070 U |
| Methyl cyclohexane | mg/kg | | 0.0080 | 0.00057 U | 0.00054 UJ | 0.00056 U | 0.00060 U | 0.00057 U |
| Methyl tert butyl ether (MTBE) | mg/kg | 2.8 | 0.00054 U | 0.00059 U | 0.00056 UJ | 0.00057 U | 0.00062 U | 0.00058 U |
| Methylene chloride | mg/kg | 7.6 | 0.0035 J | 0.0017 J | 0.0018 UJ | 0.0020 U | 0.0020 U | 0.0017 U |
| o-Xylene | mg/kg | | 0.0082 | 0.00062 U | 0.00058 UJ | 0.00060 U | 0.00064 U | 0.00061 U |
| Styrene | mg/kg | 2400 | 0.00051 U | 0.00056 U | 0.00053 UJ | 0.00054 U | 0.00058 U | 0.00055 U |
| Tetrachloroethene | mg/kg | 4.3 | 0.00050 U | 0.00054 U | 0.00051 UJ | 0.00052 U | 0.00056 U | 0.00053 U |
| Toluene | mg/kg | 4400 | 0.00053 U | 0.00058 U | 0.00054 UJ | 0.00056 U | 0.00060 U | 0.00057 U |
| trans-1,2-Dichloroethene | mg/kg | 23 | 0.00043 U | 0.00047 U | 0.00044 UJ | 0.00046 U | 0.00049 U | 0.00047 U |
| trans-1,3-Dichloropropene | mg/kg | | 0.00043 U | 0.00047 U | 0.00045 UJ | 0.00046 U | 0.00049 U | 0.00047 U |
| Trichloroethene | mg/kg | 1.7 | 0.00048 U | 0.00052 U | 0.00049 UJ | 0.00050 U | 0.00054 U | 0.00051 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 8700 | 0.00067 U | 0.00073 U | 0.00069 UJ | 0.00070 U | 0.00076 U | 0.00072 U |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 10000 | 0.00078 U | 0.00085 U | 0.00080 UJ | 0.00082 U | 0.00088 U | 0.00083 U |
| Vinyl chloride | mg/kg | 0.27 | 0.00034 U | 0.00037 U | 0.00035 UJ | 0.00036 U | 0.00039 U | 0.00037 U |
| Xylenes (total) | mg/kg | 10000 | 0.014 | 0.0018 U | 0.0017 UJ | 0.0017 U | 0.0019 U | 0.0018 U |
| **Semi-volatile Organic Compounds** | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 800 | 0.0040 U | R | 0.00078 UJ | 0.00075 UJ | 0.00086 U | 0.0037 U |
| 2,4,5-Trichlorophenol | mg/kg | 190000 | 0.020 U | R | 0.0039 UJ | 0.0037 UJ | 0.0042 U | 0.018 U |
| 2,4,6-Trichlorophenol | mg/kg | 29000 | 0.028 U | R | 0.0054 UJ | 0.0052 UJ | 0.0060 U | 0.026 U |
| 2,4-Dichlorophenol | mg/kg | 1000 | 0.0037 U | R | 0.00073 UJ | 0.00070 UJ | 0.00080 U | 0.0034 U |
| 2,4-Dimethylphenol | mg/kg | 10000 | 0.029 U | R | 0.0057 UJ | 0.0055 UJ | 0.0062 U | 0.027 U |
| 2,4-Dinitrophenol | mg/kg | 2300 | 0.22 U | R | 0.043 UJ | 0.042 UJ | 0.047 U | 0.20 U |
| 2,4-Dinitrotoluene | mg/kg | 200 | 0.015 U | R | 0.0029 UJ | 0.0028 UJ | 0.0032 U | 0.014 U |
| 2,6-Dinitrotoluene | mg/kg | 3000 | 0.019 U | R | 0.0037 UJ | 0.0036 UJ | 0.0041 U | 0.018 U |
| 2-Chloronaphthalene | mg/kg | 18000 | 0.0039 U | R | 0.00075 UJ | 0.00073 UJ | 0.00083 U | 0.0036 U |
| 2-Chlorophenol | mg/kg | 4.4 | 0.015 U | R | 0.0030 UJ | 0.0029 UJ | 0.0032 U | 0.014 U |
| 2-Methylnaphthalene | mg/kg | 1600 | 5.4 | 0.0021 J | 0.0025 J | 0.0012 J | 0.00071 U | 0.013 J |
| 2-Methylphenol | mg/kg | 8500 | 0.013 U | R | 0.0025 UJ | 0.0024 UJ | 0.0028 U | 0.012 U |
| 2-Nitroaniline | mg/kg | 5.5 | 0.083 U | R | 0.016 UJ | 0.016 UJ | 0.018 U | 0.076 U |
| 2-Nitrophenol | mg/kg | 17000 | 0.021 U | R | 0.0040 UJ | 0.0038 UJ | 0.0044 U | 0.019 U |
| 3,3'-Dichlorobenzidine | mg/kg | 17000 | 0.020 U | R | 0.0038 UJ | 0.0037 UJ | 0.0042 U | 0.018 U |
| 3-Nitroaniline | mg/kg | 0.48 | 0.077 U | R | 0.015 UJ | 0.014 UJ | 0.016 U | 0.070 U |
| 4,6-Dinitro-2-methylphenol | mg/kg | 750 | 0.075 U | R | 0.015 UJ | 0.014 UJ | 0.016 U | 0.068 U |
| 4-Bromophenyl phenyl ether | mg/kg | | 0.016 U | R | 0.0031 UJ | 0.0030 UJ | 0.0035 U | 0.015 U |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-10** | **ELC-SB-11** | **ELC-SB-11** | **ELC-SB-12** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-9_5-5.5_062614** | **ELC-SB-10_1.5-2_062414** | **ELC-SB-10_6-6.5_062414** | **ELC-SB-11_1.5-2-062514** | **ELC-SB-11_5-5.5-062514** | **ELC-SB-12_1.5-2_062614** |
| **Sample Date:** | | | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(6-6.5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| 4-Chloro-3-methylphenol | mg/kg | 110 | 0.017 U | R | 0.0033 UJ | 0.0032 UJ | 0.0037 U | 0.016 U |
| 4-Chloroaniline | mg/kg | 1.6 | 0.015 U | R | 0.0029 UJ | 0.0028 UJ | 0.0032 U | 0.014 U |
| 4-Chlorophenyl phenyl ether | mg/kg | | 0.021 U | R | 0.0040 UJ | 0.0039 UJ | 0.0044 U | 0.019 U |
| 4-Methylphenol | mg/kg | 12000 | 0.018 U | R | 0.0035 UJ | 0.0034 UJ | 0.0039 U | 0.017 U |
| 4-Nitroaniline | mg/kg | 1.9 | 0.075 U | R | 0.015 UJ | 0.014 UJ | 0.016 U | 0.069 U |
| 4-Nitrophenol | mg/kg | 4100 | 0.068 U | R | 0.013 UJ | 0.013 UJ | 0.014 U | 0.062 U |
| Acenaphthene | mg/kg | 4700 | 0.75 | R | 0.0073 J | 0.00067 UJ | 0.00076 U | 0.0033 U |
| Acenaphthylene | mg/kg | 18000 | 0.0043 U | R | 0.0011 J | 0.0021 J | 0.00091 U | 0.012 J |
| Acetophenone | mg/kg | 540 | 1.0 | 0.0029 J | 0.0079 J | 0.0077 J | 0.0033 U | 0.023 J |
| Anthracene | mg/kg | 350 | 0.46 | 0.00072 J | 0.012 J | 0.0024 J | 0.00078 U | 0.013 J |
| Atrazine | mg/kg | 0.13 | 0.018 U | R | 0.0035 UJ | 0.011 J | 0.0039 U | 0.017 U |
| Benzaldehyde | mg/kg | | R | R | 0.0054 UJ | 0.029 J | R | R |
| Benzo(a)anthracene | mg/kg | 960 | 0.058 | 0.0065 J | 0.055 J | 0.011 J | 0.0028 J | 0.081 |
| Benzo(a)pyrene | mg/kg | 860 | 0.056 | 0.0076 J | 0.095 J | 0.011 J | 0.00080 U | 0.085 |
| Benzo(b)fluoranthene | mg/kg | 170 | 0.081 | 0.013 J | 0.097 J | 0.014 J | 0.0030 J | 0.11 |
| Benzo(g,h,i)perylene | mg/kg | 180 | 0.068 | 0.012 J | 0.10 J | 0.0094 J | 0.00079 U | 0.060 |
| Benzo(k)fluoranthene | mg/kg | 610 | 0.042 | 0.0051 J | 0.039 J | 0.0068 J | 0.0016 U | 0.048 |
| Biphenyl (1,1-Biphenyl) | mg/kg | 3100 | 0.59 | R | 0.0032 UJ | 0.0031 UJ | 0.0035 U | 0.015 U |
| bis(2-Chloroethoxy)methane | mg/kg | 8.2 | 0.012 U | R | 0.0024 UJ | 0.0023 UJ | 0.0026 U | 0.011 U |
| bis(2-Chloroethyl)ether | mg/kg | 2.3 | 0.0050 U | R | 0.00097 UJ | 0.00094 UJ | 0.0011 U | 0.0046 U |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | 6300 | 0.10 J | 0.020 J | 0.0058 UJ | 0.016 J | 0.0066 J | 0.028 U |
| Butyl benzylphthalate (BBP) | mg/kg | 10000 | 0.025 U | 0.012 J | 0.0049 UJ | 0.026 J | 0.0065 J | 0.023 U |
| Caprolactam | mg/kg | | 0.14 U | R | 0.027 UJ | 0.026 UJ | 0.030 U | 0.13 U |
| Carbazole | mg/kg | 760 | 0.0034 U | R | 0.0059 J | 0.00064 UJ | 0.00073 U | 0.0031 U |
| Chrysene | mg/kg | 230 | 0.074 | 0.012 J | 0.060 J | 0.014 J | 0.0025 J | 0.077 |
| Dibenz(a,h)anthracene | mg/kg | 270 | 0.0041 U | R | 0.021 J | 0.0025 J | 0.00088 U | 0.0038 U |
| Dibenzofuran | mg/kg | 12000 | 0.018 U | R | 0.0036 UJ | 0.0034 UJ | 0.0039 U | 0.017 U |
| Diethyl phthalate | mg/kg | 10000 | 0.020 U | R | 0.0039 UJ | 0.0038 UJ | 0.0043 U | 0.019 U |
| Dimethyl phthalate | mg/kg | | 0.020 U | R | 0.0039 UJ | 0.0038 UJ | 0.0043 U | 0.019 U |
| Di-n-butylphthalate (DBP) | mg/kg | 10000 | 0.023 U | 0.0056 J | 0.0045 UJ | 0.0050 J | 0.0050 U | 0.021 U |
| Di-n-octyl phthalate (DnOP) | mg/kg | 10000 | 0.020 U | R | 0.0038 UJ | 0.0037 UJ | 0.0042 U | 0.018 U |
| Fluoranthene | mg/kg | 3200 | 0.16 | 0.013 J | 0.091 J | 0.019 J | 0.0032 J | 0.080 |
| Fluorene | mg/kg | 3800 | 0.95 | R | 0.0039 J | 0.00092 UJ | 0.0010 U | 0.0045 U |
| Hexachlorobenzene | mg/kg | 5.8 | 0.0040 U | R | 0.00077 UJ | 0.00074 UJ | 0.00085 U | 0.0036 U |
| Hexachlorobutadiene | mg/kg | 3400 | 0.0042 U | R | 0.00081 UJ | 0.00078 UJ | 0.00089 U | 0.0038 U |
| Hexachlorocyclopentadiene | mg/kg | 3300 | 0.020 U | R | 0.0039 UJ | 0.0038 UJ | 0.0043 U | 0.018 U |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-10** | **ELC-SB-11** | **ELC-SB-11** | **ELC-SB-12** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-9_5-5.5_062614** | **ELC-SB-10_1.5-2_062414** | **ELC-SB-10_6-6.5_062414** | **ELC-SB-11_1.5-2-062514** | **ELC-SB-11_5-5.5-062514** | **ELC-SB-12_1.5-2_062614** |
| **Sample Date:** | | | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(6-6.5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| Hexachloroethane | mg/kg | 56 | 0.013 U | R | 0.0026 UJ | 0.0025 UJ | 0.0029 U | 0.012 U |
| Indeno(1,2,3-cd)pyrene | mg/kg | 190000 | 0.040 | 0.0078 J | 0.083 J | 0.0081 J | 0.00082 U | 0.045 |
| Isophorone | mg/kg | 1900 | 0.014 U | R | 0.0027 UJ | 0.0026 UJ | 0.0030 U | 0.013 U |
| Naphthalene | mg/kg | 7500 | 0.42 | 0.0020 J | 0.0033 J | 0.0028 J | 0.00069 U | 0.0067 J |
| Nitrobenzene | mg/kg | 8700 | 0.015 U | R | 0.0030 UJ | 0.0029 UJ | 0.0033 U | 0.014 U |
| N-Nitrosodi-n-propylamine | mg/kg | 5.1 | 0.0044 U | R | 0.00085 UJ | 0.00082 UJ | 0.00093 U | 0.0040 U |
| N-Nitrosodiphenylamine | mg/kg | 5500 | 0.017 U | R | 0.0033 UJ | 0.0032 UJ | 0.0037 U | 0.016 U |
| Pentachlorophenol | mg/kg | 5000 | 0.017 U | R | 0.0032 UJ | 0.0031 UJ | 0.0036 U | 0.015 U |
| Phenanthrene | mg/kg | 10000 | 1.7 | 0.0074 J | 0.042 J | 0.0098 J | 0.0019 J | 0.018 J |
| Phenol | mg/kg | 3300 | 0.0044 U | R | 0.00085 UJ | 0.00082 UJ | 0.00094 U | 0.0040 U |
| Pyrene | mg/kg | 2200 | 0.22 | 0.010 J | 0.064 J | 0.00071 UJ | 0.0031 J | 0.084 |
| **Metals** | | | | | | | | |
| Antimony | mg/kg | 27000 | 8.3 | 0.17 J | 0.15 J | 0.28 J | 0.25 J | 0.027 J |
| Arsenic | mg/kg | 29000 | 11 | 2.7 | 2.1 | 3.3 | 5.0 | 5.0 |
| Beryllium | mg/kg | 190000 | 0.39 | 0.71 | 0.82 | 0.49 J | 0.43 | 0.18 |
| Cadmium | mg/kg | 38000 | 3.4 | 0.11 J | 0.12 J | 0.56 J | 0.040 J | 0.038 J |
| Chromium | mg/kg | | 34 | 2400 | 1600 | 1700 | 22 | 7.7 |
| Copper | mg/kg | 190000 | 110 | 33 J | 26 J | 69 J | 9.4 J | 2.1 |
| Lead | mg/kg | 190000 | 170 | 23 | 23 | 20 | 9.3 | 2.9 |
| Mercury | mg/kg | 10000 | 0.16 | 0.010 U | 0.011 U | 0.011 U | 0.012 U | 0.011 U |
| Nickel | mg/kg | 190000 | 34 | 29 | 24 | 24 J | 15 J | 1.6 |
| Selenium | mg/kg | 26000 | 0.45 J | 0.37 J | 0.48 J | 0.74 J | 0.32 J | 0.13 J |
| Silver | mg/kg | 84000 | 0.30 | 0.020 U | 0.021 U | 0.040 U | 0.0042 U | 0.0038 U |
| Thallium | mg/kg | 14000 | 0.076 J | 0.015 J | 0.012 J | 0.020 U | 0.081 J | 0.017 J |
| Zinc | mg/kg | 190000 | 310 | 58 J | 64 J | 190 | 43 | 7.1 |
| **PCBs** | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | 200 | 0.00069 U | 0.00013 U | 0.00013 U | 0.00013 U | 0.00015 U | 0.00063 U |
| Aroclor-1221 (PCB-1221) | mg/kg | 0.63 | 0.00089 U | 0.00017 U | 0.00017 U | 0.00017 U | 0.00019 U | 0.00081 U |
| Aroclor-1232 (PCB-1232) | mg/kg | 0.5 | 0.00080 U | 0.00015 U | 0.00015 U | 0.00015 U | 0.00017 U | 0.00072 U |
| Aroclor-1242 (PCB-1242) | mg/kg | 16 | 0.00076 U | 0.00014 U | 0.00015 U | 0.00014 U | 0.00016 U | 0.00069 U |
| Aroclor-1248 (PCB-1248) | mg/kg | 62 | 0.00044 U | 0.030 | 0.0061 | 0.000082 U | 0.000095 U | 0.00040 U |
| Aroclor-1254 (PCB-1254) | mg/kg | 260 | 0.10 J | 0.00012 U | 0.00013 U | 0.012 | 0.0021 | 0.00060 U |
| Aroclor-1260 (PCB-1260) | mg/kg | 590 | 0.071 J | 0.00012 U | 0.00013 U | 0.00012 U | 0.00014 U | 0.00060 U |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-10** | **ELC-SB-11** | **ELC-SB-11** | **ELC-SB-12** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-9_5-5.5_062614** | **ELC-SB-10_1.5-2_062414** | **ELC-SB-10_6-6.5_062414** | **ELC-SB-11_1.5-2-062514** | **ELC-SB-11_5-5.5-062514** | **ELC-SB-12_1.5-2_062614** |
| **Sample Date:** | | | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(6-6.5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| **Petroleum Products** | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | - | - | - |
| **General Chemistry** | | | | | | | | |
| Percent moisture | % | | 10 | 3.9 | 8.3 | 5.0 | 17 | 2.1 |
| pH | s.u. | | - | - | - | - | - | - |

Notes:

(1) PA Chapter 250, Appendix A, Tables 3 to 4, Medium Specific Concentrations (MSC) for organic and inorganic regulated substances in soil, Direct-contact Numerical values, Non-Residential, Soil-to-Groundwater, non-use aquifer.
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
\- Not analyzed

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-13** | **ELC-SB-14** | **ELC-SB-14** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **DUP-001_062614** | **ELC-SB-12_5-5.5_062614** | **ELC-SB-13-1.5-2_062414** | **ELC-SB-13-4.5-5_062414** | **ELC-SB-14_1.5-2_062414** | **ELC-SB-14_4.5-5_062414** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | **(Duplicate)** | | | | | |
| **Volatile Organic Compounds** | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 72 | 0.00038 U | 0.00040 U | R | 0.00046 UJ | 0.00050 UJ | 0.00048 U |
| 1,1,2,2-Tetrachloroethane | mg/kg | 13 | 0.00056 U | 0.00059 U | R | 0.00068 UJ | 0.00073 UJ | 0.00071 U |
| 1,1,2-Trichloroethane | mg/kg | 1.5 | 0.00065 U | 0.00069 U | R | 0.00078 UJ | 0.00085 UJ | 0.00082 U |
| 1,1-Dichloroethane | mg/kg | 39 | 0.00045 U | 0.00048 U | R | 0.00054 UJ | 0.00059 UJ | 0.00057 U |
| 1,1-Dichloroethene | mg/kg | 1.9 | 0.00066 U | 0.00070 U | R | 0.00080 UJ | 0.00087 UJ | 0.00084 U |
| 1,2,4-Trichlorobenzene | mg/kg | 10000 | 0.00069 U | 0.00073 U | R | 0.00083 UJ | 0.00090 UJ | 0.00087 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 0.92 | 0.00058 U | 0.00062 U | R | 0.00071 UJ | 0.00076 UJ | 0.00074 U |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 0.12 | 0.00067 U | 0.00071 U | R | 0.00081 UJ | 0.00088 UJ | 0.00085 U |
| 1,2-Dichlorobenzene | mg/kg | 5900 | 0.00062 U | 0.00066 U | R | 0.00075 UJ | 0.00081 UJ | 0.00079 U |
| 1,2-Dichloroethane | mg/kg | 1 | 0.00048 U | 0.00051 U | R | 0.00058 UJ | 0.00063 UJ | 0.00061 U |
| 1,2-Dichloroethene (total) | mg/kg | | 0.0010 U | 0.0011 U | R | 0.0012 UJ | 0.0013 UJ | 0.0013 U |
| 1,2-Dichloropropane | mg/kg | 1.1 | 0.00042 U | 0.00045 U | R | 0.00051 UJ | 0.00055 UJ | 0.00054 U |
| 1,3-Dichlorobenzene | mg/kg | 6100 | 0.00051 U | 0.00054 U | R | 0.00062 UJ | 0.00067 UJ | 0.00065 U |
| 1,4-Dichlorobenzene | mg/kg | 1000 | 0.00050 U | 0.00053 U | R | 0.00060 UJ | 0.00065 UJ | 0.00063 U |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 7600 | 0.00069 U | 0.00073 U | R | 0.00083 UJ | 0.00090 UJ | 0.00087 U |
| 2-Hexanone | mg/kg | 1.1 | 0.00054 U | 0.00057 U | R | 0.00065 UJ | 0.00071 UJ | 0.00068 U |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 10000 | 0.00051 U | 0.00054 U | R | 0.00061 UJ | 0.00067 UJ | 0.00064 U |
| Acetone | mg/kg | 10000 | 0.0039 U | 0.0041 U | R | 0.0047 UJ | 0.0051 UJ | 0.0049 U |
| Benzene | mg/kg | 13 | 0.00052 U | 0.00056 U | R | 0.00064 UJ | 0.00069 UJ | 0.00067 U |
| Bromodichloromethane | mg/kg | 2.7 | 0.00044 U | 0.00046 U | R | 0.00053 UJ | 0.00057 UJ | 0.00055 U |
| Bromoform | mg/kg | 350 | 0.00034 U | 0.00037 U | R | 0.00042 UJ | 0.00045 UJ | 0.00044 U |
| Bromomethane (Methyl bromide) | mg/kg | 54 | 0.00057 U | 0.00061 U | R | 0.00070 UJ | 0.00075 UJ | 0.00073 U |
| Carbon disulfide | mg/kg | 530 | 0.00040 U | 0.00042 U | R | 0.00060 J | 0.00084 J | 0.00051 U |
| Carbon tetrachloride | mg/kg | 2.6 | 0.00035 U | 0.00037 U | R | 0.00042 UJ | 0.00046 UJ | 0.00044 U |
| Chlorobenzene | mg/kg | 610 | 0.00059 U | 0.00063 U | R | 0.00071 UJ | 0.00077 UJ | 0.00075 U |
| Chloroethane | mg/kg | 1900 | 0.0012 U | 0.0013 U | R | 0.0015 UJ | 0.0016 UJ | 0.0015 U |
| Chloroform (Trichloromethane) | mg/kg | 20 | 0.00045 U | 0.00048 U | R | 0.00055 UJ | 0.00060 UJ | 0.00058 U |
| Chloromethane (Methyl chloride) | mg/kg | 38 | 0.00066 U | 0.00070 U | R | 0.00080 UJ | 0.00087 UJ | 0.00084 U |
| cis-1,2-Dichloroethene | mg/kg | 16 | 0.00055 U | 0.00058 U | R | 0.00066 UJ | 0.00072 UJ | 0.00069 U |
| cis-1,3-Dichloropropene | mg/kg | | 0.00053 U | 0.00056 U | R | 0.00064 UJ | 0.00069 UJ | 0.00067 U |
| Cyclohexane | mg/kg | 6900 | 0.00029 U | 0.00031 U | R | 0.00035 UJ | 0.00038 UJ | 0.00037 U |
| Dibromochloromethane | mg/kg | 250 | 0.00055 U | 0.00059 U | R | 0.00067 UJ | 0.00072 UJ | 0.00070 U |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 10000 | 0.00052 U | 0.00055 U | R | 0.00063 UJ | 0.00068 UJ | 0.00066 U |
| Ethylbenzene | mg/kg | 4600 | 0.00050 U | 0.00053 U | R | 0.00061 UJ | 0.00066 UJ | 0.00063 U |
| Isopropyl benzene | mg/kg | 10000 | 0.00053 U | 0.00056 U | R | 0.00064 UJ | 0.00069 UJ | 0.00067 U |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-13** | **ELC-SB-14** | **ELC-SB-14** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **DUP-001_062614** | **ELC-SB-12_5-5.5_062614** | **ELC-SB-13-1.5-2_062414** | **ELC-SB-13-4.5-5_062414** | **ELC-SB-14_1.5-2_062414** | **ELC-SB-14_4.5-5_062414** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | **(Duplicate)** | | | | | |
| m&p-Xylenes | mg/kg | | 0.0011 U | 0.0012 U | R | 0.0014 UJ | 0.0015 UJ | 0.0015 U |
| Methyl acetate | mg/kg | 1900 | 0.00070 U | 0.00074 U | R | 0.00085 UJ | 0.00092 UJ | 0.00089 U |
| Methyl cyclohexane | mg/kg | | 0.00056 U | 0.00060 U | R | 0.00068 UJ | 0.00074 UJ | 0.00072 U |
| Methyl tert butyl ether (MTBE) | mg/kg | 2.8 | 0.00058 U | 0.00062 U | R | 0.00070 UJ | 0.00076 UJ | 0.00074 U |
| Methylene chloride | mg/kg | 7.6 | 0.0029 U | 0.0028 U | 0.0015 UJ | 0.0020 UJ | 0.0022 UJ | 0.0023 UJ |
| o-Xylene | mg/kg | | 0.00061 U | 0.00064 U | R | 0.00073 UJ | 0.00080 UJ | 0.00077 U |
| Styrene | mg/kg | 2400 | 0.00055 U | 0.00058 U | R | 0.00066 UJ | 0.00072 UJ | 0.00070 U |
| Tetrachloroethene | mg/kg | 4.3 | 0.00053 U | 0.00056 U | R | 0.00064 UJ | 0.00069 UJ | 0.00067 U |
| Toluene | mg/kg | 4400 | 0.00057 U | 0.00060 U | R | 0.00069 UJ | 0.00075 UJ | 0.00072 U |
| trans-1,2-Dichloroethene | mg/kg | 23 | 0.00046 U | 0.00049 U | R | 0.00056 UJ | 0.00061 UJ | 0.00059 U |
| trans-1,3-Dichloropropene | mg/kg | | 0.00046 U | 0.00049 U | R | 0.00056 UJ | 0.00061 UJ | 0.00059 U |
| Trichloroethene | mg/kg | 1.7 | 0.00051 U | 0.00054 U | R | 0.00062 UJ | 0.00067 UJ | 0.00065 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 8700 | 0.00071 U | 0.00076 U | R | 0.00087 UJ | 0.00094 UJ | 0.00091 U |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 10000 | 0.00083 U | 0.00088 U | R | 0.0010 UJ | 0.0011 UJ | 0.0011 U |
| Vinyl chloride | mg/kg | 0.27 | 0.00037 U | 0.00039 U | R | 0.00044 UJ | 0.00048 UJ | 0.00046 U |
| Xylenes (total) | mg/kg | 10000 | 0.0017 U | 0.0019 U | R | 0.0021 UJ | 0.0023 UJ | 0.0022 U |
| **Semi-volatile Organic Compounds** | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 800 | 0.00074 U | 0.00085 U | R | 0.00083 U | 0.00076 U | 0.00080 U |
| 2,4,5-Trichlorophenol | mg/kg | 190000 | 0.0036 U | 0.0042 U | R | 0.0041 U | 0.0038 U | 0.0040 U |
| 2,4,6-Trichlorophenol | mg/kg | 29000 | 0.0051 U | 0.0059 U | R | 0.0058 U | 0.0053 U | 0.0056 U |
| 2,4-Dichlorophenol | mg/kg | 1000 | 0.00068 U | 0.00079 U | R | 0.00077 U | 0.00071 U | 0.00075 U |
| 2,4-Dimethylphenol | mg/kg | 10000 | 0.0053 U | 0.0062 U | R | 0.0060 U | 0.0055 U | 0.0058 U |
| 2,4-Dinitrophenol | mg/kg | 2300 | 0.041 U | 0.047 U | R | 0.046 U | 0.042 U | 0.044 U |
| 2,4-Dinitrotoluene | mg/kg | 200 | 0.0028 U | 0.0032 U | R | 0.0031 U | 0.0028 U | 0.0030 U |
| 2,6-Dinitrotoluene | mg/kg | 3000 | 0.0035 U | 0.0041 U | R | 0.0040 U | 0.0036 U | 0.0038 U |
| 2-Chloronaphthalene | mg/kg | 18000 | 0.00071 U | 0.00082 U | R | 0.00080 U | 0.00074 U | 0.00078 U |
| 2-Chlorophenol | mg/kg | 4.4 | 0.0028 U | 0.0032 U | R | 0.0031 U | 0.0029 U | 0.0030 U |
| 2-Methylnaphthalene | mg/kg | 1600 | 0.016 | 0.00071 U | 0.00094 J | 0.0027 J | 0.0013 J | 0.00067 U |
| 2-Methylphenol | mg/kg | 8500 | 0.0024 U | 0.0028 U | R | 0.0027 U | 0.0025 U | 0.0026 U |
| 2-Nitroaniline | mg/kg | 5.5 | 0.015 U | 0.018 U | R | 0.017 U | 0.016 U | 0.017 U |
| 2-Nitrophenol | mg/kg | 17000 | 0.0038 U | 0.0043 U | R | 0.0042 U | 0.0039 U | 0.0041 U |
| 3,3'-Dichlorobenzidine | mg/kg | 17000 | 0.0036 U | 0.0042 U | R | 0.0041 U | 0.0037 U | 0.0039 U |
| 3-Nitroaniline | mg/kg | 0.48 | 0.014 U | 0.016 U | R | 0.016 U | 0.015 U | 0.015 U |
| 4,6-Dinitro-2-methylphenol | mg/kg | 750 | 0.014 U | 0.016 U | R | 0.015 U | 0.014 U | 0.015 U |
| 4-Bromophenyl phenyl ether | mg/kg | | 0.0030 U | 0.0034 U | R | 0.0033 U | 0.0031 U | 0.0032 U |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-13** | **ELC-SB-14** | **ELC-SB-14** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **DUP-001_062614** | **ELC-SB-12_5-5.5_062614** | **ELC-SB-13-1.5-2_062414** | **ELC-SB-13-4.5-5_062414** | **ELC-SB-14_1.5-2_062414** | **ELC-SB-14_4.5-5_062414** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | **(Duplicate)** | | | | | |
| 4-Chloro-3-methylphenol | mg/kg | 110 | 0.0031 U | 0.0036 U | R | 0.0035 U | 0.0032 U | 0.0034 U |
| 4-Chloroaniline | mg/kg | 1.6 | 0.0027 U | 0.0032 U | R | 0.0031 U | 0.0028 U | 0.0030 U |
| 4-Chlorophenyl phenyl ether | mg/kg | | 0.0038 U | 0.0044 U | R | 0.0043 U | 0.0039 U | 0.0041 U |
| 4-Methylphenol | mg/kg | 12000 | 0.0033 U | 0.0039 U | R | 0.0038 U | 0.0035 U | 0.0036 U |
| 4-Nitroaniline | mg/kg | 1.9 | 0.014 U | 0.016 U | R | 0.016 U | 0.014 U | 0.015 U |
| 4-Nitrophenol | mg/kg | 4100 | 0.012 U | 0.014 U | R | 0.014 U | 0.013 U | 0.014 U |
| Acenaphthene | mg/kg | 4700 | 0.00066 U | 0.00076 U | R | 0.00074 U | 0.00068 J | 0.0015 J |
| Acenaphthylene | mg/kg | 18000 | 0.0058 J | 0.00090 U | R | 0.00088 U | 0.00081 U | 0.00085 U |
| Acetophenone | mg/kg | 540 | 0.023 J | 0.017 J | R | 0.0032 U | 0.0029 U | 0.0031 U |
| Anthracene | mg/kg | 350 | 0.0062 J | 0.00077 U | 0.00088 J | 0.0017 J | 0.0010 J | 0.0013 J |
| Atrazine | mg/kg | 0.13 | 0.0033 U | 0.0038 U | R | 0.0037 U | 0.0034 U | 0.0036 U |
| Benzaldehyde | mg/kg | | 0.0085 J | R | R | 0.029 J | R | R |
| Benzo(a)anthracene | mg/kg | 960 | 0.036 | 0.00099 U | 0.0049 J | 0.0042 J | 0.0053 J | 0.0071 J |
| Benzo(a)pyrene | mg/kg | 860 | 0.041 | 0.00079 U | 0.0043 J | 0.0043 J | 0.0056 J | 0.012 |
| Benzo(b)fluoranthene | mg/kg | 170 | 0.052 | 0.0012 U | 0.0083 J | 0.0054 J | 0.0075 | 0.014 |
| Benzo(g,h,i)perylene | mg/kg | 180 | 0.030 | 0.00078 U | 0.0065 J | 0.0043 J | 0.0083 | 0.017 |
| Benzo(k)fluoranthene | mg/kg | 610 | 0.023 | 0.0016 U | 0.0030 J | 0.0035 J | 0.0056 J | 0.0068 J |
| Biphenyl (1,1-Biphenyl) | mg/kg | 3100 | 0.0030 U | 0.0035 U | R | 0.0034 U | 0.0031 U | 0.0033 U |
| bis(2-Chloroethoxy)methane | mg/kg | 8.2 | 0.0022 U | 0.0026 U | R | 0.0025 U | 0.0023 U | 0.0024 U |
| bis(2-Chloroethyl)ether | mg/kg | 2.3 | 0.00092 U | 0.0011 U | R | 0.0010 U | 0.00095 U | 0.0010 U |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | 6300 | 0.0055 U | 0.0069 J | 0.017 J | 0.017 J | 0.011 J | 2.3 |
| Butyl benzylphthalate (BBP) | mg/kg | 10000 | 0.0059 J | 0.0076 J | 0.012 J | 0.010 J | 0.0090 J | 0.0070 J |
| Caprolactam | mg/kg | | 0.026 U | 0.030 U | R | 0.029 U | 0.027 U | 0.028 U |
| Carbazole | mg/kg | 760 | 0.0015 J | 0.00073 U | R | 0.00071 U | 0.0012 J | 0.00069 U |
| Chrysene | mg/kg | 230 | 0.039 | 0.00094 U | 0.0079 J | 0.0068 J | 0.0065 J | 0.0098 |
| Dibenz(a,h)anthracene | mg/kg | 270 | 0.011 | 0.00088 U | R | 0.00086 U | 0.00079 U | 0.0050 J |
| Dibenzofuran | mg/kg | 12000 | 0.0057 J | 0.0039 U | R | 0.0038 U | 0.0035 U | 0.0037 U |
| Diethyl phthalate | mg/kg | 10000 | 0.0037 U | 0.0043 U | R | 0.0042 U | 0.0039 U | 0.0041 U |
| Dimethyl phthalate | mg/kg | | 0.0037 U | 0.0043 U | R | 0.0042 U | 0.0038 U | 0.0041 U |
| Di-n-butylphthalate (DBP) | mg/kg | 10000 | 0.0043 U | 0.0049 U | 0.0049 J | 0.0063 J | 0.0053 J | 0.0055 J |
| Di-n-octyl phthalate (DnOP) | mg/kg | 10000 | 0.0036 U | 0.0042 U | R | 0.0041 U | 0.0037 U | 0.0039 U |
| Fluoranthene | mg/kg | 3200 | 0.038 | 0.00084 U | 0.0097 J | 0.0099 | 0.0069 J | 0.0090 |
| Fluorene | mg/kg | 3800 | 0.0022 J | 0.0010 U | R | 0.0010 U | 0.00093 U | 0.00098 U |
| Hexachlorobenzene | mg/kg | 5.8 | 0.00073 U | 0.00084 U | R | 0.00082 U | 0.00075 U | 0.00079 U |
| Hexachlorobutadiene | mg/kg | 3400 | 0.00076 U | 0.00088 U | R | 0.00086 U | 0.00079 U | 0.00083 U |
| Hexachlorocyclopentadiene | mg/kg | 3300 | 0.0037 U | 0.0043 U | R | 0.0041 U | 0.0038 U | 0.0040 U |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-13** | **ELC-SB-14** | **ELC-SB-14** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **DUP-001_062614** | **ELC-SB-12_5-5.5_062614** | **ELC-SB-13-1.5-2_062414** | **ELC-SB-13-4.5-5_062414** | **ELC-SB-14_1.5-2_062414** | **ELC-SB-14_4.5-5_062414** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | **(Duplicate)** | | | | | |
| Hexachloroethane | mg/kg | 56 | 0.0025 U | 0.0028 U | R | 0.0028 U | 0.0025 U | 0.0027 U |
| Indeno(1,2,3-cd)pyrene | mg/kg | 190000 | 0.027 | 0.00081 U | 0.0051 J | 0.0038 J | 0.0062 J | 0.014 |
| Isophorone | mg/kg | 1900 | 0.0026 U | 0.0030 U | R | 0.0029 U | 0.0027 U | 0.0028 U |
| Naphthalene | mg/kg | 7500 | 0.0092 | 0.00068 U | R | 0.0029 J | 0.0016 J | 0.00064 U |
| Nitrobenzene | mg/kg | 8700 | 0.0028 U | 0.0033 U | R | 0.0032 U | 0.0029 U | 0.0031 U |
| N-Nitrosodi-n-propylamine | mg/kg | 5.1 | 0.00080 U | 0.00093 U | R | 0.00090 U | 0.00083 U | 0.00087 U |
| N-Nitrosodiphenylamine | mg/kg | 5500 | 0.0032 U | 0.0037 U | R | 0.0036 U | 0.0033 U | 0.0034 U |
| Pentachlorophenol | mg/kg | 5000 | 0.0031 U | 0.0035 U | R | 0.0034 U | 0.0032 U | 0.0033 U |
| Phenanthrene | mg/kg | 10000 | 0.020 | 0.0013 U | 0.0073 J | 0.0072 J | 0.014 | 0.0035 J |
| Phenol | mg/kg | 3300 | 0.00081 U | 0.00093 U | R | 0.00091 U | 0.00083 U | 0.00088 U |
| Pyrene | mg/kg | 2200 | 0.040 | 0.00080 U | 0.0087 J | 0.0059 J | 0.0075 | 0.0078 |
| **Metals** | | | | | | | | |
| Antimony | mg/kg | 27000 | 0.014 J | 0.12 J | 0.17 J | 0.21 J | 0.21 J | 0.23 J |
| Arsenic | mg/kg | 29000 | 5.5 | 5.9 | 2.2 | 3.8 | 2.8 | 2.9 |
| Beryllium | mg/kg | 190000 | 0.13 | 0.49 | 3.5 | 0.61 | 3.8 | 0.43 |
| Cadmium | mg/kg | 38000 | 0.078 J | 0.045 J | 0.092 J | 1.1 | 0.16 J | 0.093 |
| Chromium | mg/kg | | 9.8 | 12 | 1200 | 1000 | 1900 | 170 |
| Copper | mg/kg | 190000 | 1.9 | 9.3 | 17 J | 31 J | 84 J | 17 J |
| Lead | mg/kg | 190000 | 3.5 | 9.9 | 9.8 | 29 | 43 | 17 |
| Mercury | mg/kg | 10000 | 0.011 U | 0.015 J | 0.011 U | 0.021 J | 0.011 U | 0.014 J |
| Nickel | mg/kg | 190000 | 1.7 | 14 | 7.1 | 11 | 41 | 12 |
| Selenium | mg/kg | 26000 | 0.083 J | 0.34 J | 3.2 J | 0.76 J | 1.3 J | 0.32 J |
| Silver | mg/kg | 84000 | 0.0037 U | 0.0045 U | 0.018 U | 0.11 J | 0.020 U | 0.020 J |
| Thallium | mg/kg | 14000 | 0.019 J | 0.093 J | 0.035 J | 0.060 J | 0.012 J | 0.035 J |
| Zinc | mg/kg | 190000 | 9.1 | 39 | 57 J | 240 J | 580 J | 50 J |
| **PCBs** | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | 200 | 0.00013 U | 0.00015 U | 0.00013 U | 0.00014 U | 0.00013 U | 0.00069 U |
| Aroclor-1221 (PCB-1221) | mg/kg | 0.63 | 0.00016 U | 0.00019 U | 0.00017 U | 0.00018 U | 0.00017 U | 0.00089 U |
| Aroclor-1232 (PCB-1232) | mg/kg | 0.5 | 0.00015 U | 0.00017 U | 0.00015 U | 0.00017 U | 0.00015 U | 0.00079 U |
| Aroclor-1242 (PCB-1242) | mg/kg | 16 | 0.00014 U | 0.00016 U | 0.00014 U | 0.00016 U | 0.00014 U | 0.00076 U |
| Aroclor-1248 (PCB-1248) | mg/kg | 62 | 0.000081 U | 0.000093 U | 0.000082 U | 0.000091 U | 0.000083 U | 0.00044 U |
| Aroclor-1254 (PCB-1254) | mg/kg | 260 | 0.0029 | 0.00014 U | 0.00084 J | 0.0091 | 0.00013 U | 0.25 |
| Aroclor-1260 (PCB-1260) | mg/kg | 590 | 0.00012 U | 0.00014 U | 0.00012 U | 0.00014 U | 0.0012 | 0.16 |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-13** | **ELC-SB-14** | **ELC-SB-14** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **DUP-001_062614** | **ELC-SB-12_5-5.5_062614** | **ELC-SB-13-1.5-2_062414** | **ELC-SB-13-4.5-5_062414** | **ELC-SB-14_1.5-2_062414** | **ELC-SB-14_4.5-5_062414** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** |
| | | | **(Duplicate)** | | | | | |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | |
| **Petroleum Products** | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | - | - | - |
| **General Chemistry** | | | | | | | | |
| Percent moisture | % | | 2.2 | 16 | 5.0 | 14 | 6.1 | 10 |
| pH | s.u. | | - | - | - | - | - | - |

Notes:

(1) PA Chapter 250, Appendix A, Tables 3 to 4, Medium Specific Concentrations (MSC) for organic and inorganic regulated substances in soil, Direct-contact Numerical values, Non-Residential, Soil-to-Groundwater, non-use aquifer.
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
- Not analyzed

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **L1P3-MW-4** | **L1P3-MW-5** | **L1P3-MW-5** | **L1P3-MW-6** | **L1P3-SED-1** | **L1P3-SED-2** | **L1P3-SED-3** | **L1P3-TP-1** | **L1P3-TP-10** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **MW-4 10-11'** | **MW-5 7.5-12'** | **MW-5 12-14'** | **MW-6 15-17'** | **SED-1** | **SED-2** | **SED-3** | **TP-1 7'-7-6"** | **TP-10 3-3'9"** |
| **Sample Date:** | | | **9/15/1998** | **9/15/1998** | **9/15/1998** | **9/16/1998** | **9/23/1998** | **9/23/1998** | **9/23/1998** | **9/22/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(10-11) ft BGS** | **(7.5-12) ft BGS** | **(12-14) ft BGS** | **(15-17) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(7-7.5) ft BGS** | **(3-3.75) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 72 | - | - | - | - | - | - | - | - | - |
| 1,1,2,2-Tetrachloroethane | mg/kg | 13 | - | - | - | - | - | - | - | - | - |
| 1,1,2-Trichloroethane | mg/kg | 1.5 | - | - | - | - | - | - | - | - | - |
| 1,1-Dichloroethane | mg/kg | 39 | - | - | - | - | - | - | - | - | - |
| 1,1-Dichloroethene | mg/kg | 1.9 | - | - | - | - | - | - | - | - | - |
| 1,2,4-Trichlorobenzene | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 0.92 | - | - | - | - | - | - | - | - | - |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 0.12 | - | - | - | - | - | - | - | - | - |
| 1,2-Dichlorobenzene | mg/kg | 5900 | - | - | - | - | - | - | - | - | - |
| 1,2-Dichloroethane | mg/kg | 1 | - | - | - | - | - | - | - | - | - |
| 1,2-Dichloroethene (total) | mg/kg | | - | - | - | - | - | - | - | - | - |
| 1,2-Dichloropropane | mg/kg | 1.1 | - | - | - | - | - | - | - | - | - |
| 1,3-Dichlorobenzene | mg/kg | 6100 | - | - | - | - | - | - | - | - | - |
| 1,4-Dichlorobenzene | mg/kg | 1000 | - | - | - | - | - | - | - | - | - |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 7600 | - | - | - | - | - | - | - | - | - |
| 2-Hexanone | mg/kg | 1.1 | - | - | - | - | - | - | - | - | - |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Acetone | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Benzene | mg/kg | 13 | - | - | - | - | - | - | - | - | - |
| Bromodichloromethane | mg/kg | 2.7 | - | - | - | - | - | - | - | - | - |
| Bromoform | mg/kg | 350 | - | - | - | - | - | - | - | - | - |
| Bromomethane (Methyl bromide) | mg/kg | 54 | - | - | - | - | - | - | - | - | - |
| Carbon disulfide | mg/kg | 530 | - | - | - | - | - | - | - | - | - |
| Carbon tetrachloride | mg/kg | 2.6 | - | - | - | - | - | - | - | - | - |
| Chlorobenzene | mg/kg | 610 | - | - | - | - | - | - | - | - | - |
| Chloroethane | mg/kg | 1900 | - | - | - | - | - | - | - | - | - |
| Chloroform (Trichloromethane) | mg/kg | 20 | - | - | - | - | - | - | - | - | - |
| Chloromethane (Methyl chloride) | mg/kg | 38 | - | - | - | - | - | - | - | - | - |
| cis-1,2-Dichloroethene | mg/kg | 16 | - | - | - | - | - | - | - | - | - |
| cis-1,3-Dichloropropene | mg/kg | | - | - | - | - | - | - | - | - | - |
| Cyclohexane | mg/kg | 6900 | - | - | - | - | - | - | - | - | - |
| Dibromochloromethane | mg/kg | 250 | - | - | - | - | - | - | - | - | - |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | mg/kg | 4600 | 0.005 U | 0.23 J | 0.0031 J | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Isopropyl benzene | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **L1P3-MW-4** | **L1P3-MW-5** | **L1P3-MW-5** | **L1P3-MW-6** | **L1P3-SED-1** | **L1P3-SED-2** | **L1P3-SED-3** | **L1P3-TP-1** | **L1P3-TP-10** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **MW-4 10-11'** | **MW-5 7.5-12'** | **MW-5 12-14'** | **MW-6 15-17'** | **SED-1** | **SED-2** | **SED-3** | **TP-1 7'-7-6"** | **TP-10 3-3'9"** |
| **Sample Date:** | | | **9/15/1998** | **9/15/1998** | **9/15/1998** | **9/16/1998** | **9/23/1998** | **9/23/1998** | **9/23/1998** | **9/22/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(10-11) ft BGS** | **(7.5-12) ft BGS** | **(12-14) ft BGS** | **(15-17) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(7-7.5) ft BGS** | **(3-3.75) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | | | | |
| m&p-Xylenes | mg/kg | | - | - | - | - | - | - | - | - | - |
| Methyl acetate | mg/kg | 1900 | - | - | - | - | - | - | - | - | - |
| Methyl cyclohexane | mg/kg | | - | - | - | - | - | - | - | - | - |
| Methyl tert butyl ether (MTBE) | mg/kg | 2.8 | - | - | - | - | - | - | - | - | - |
| Methylene chloride | mg/kg | 7.6 | 0.0035 JB | 0.92 | 0.0031 JB | 0.0036 JB | 0.0023 JB | 0.0013 JB | 0.0006 JB | 0.0013 JB | 0.0018 JB |
| o-Xylene | mg/kg | | - | - | - | - | - | - | - | - | - |
| Styrene | mg/kg | 2400 | - | - | - | - | - | - | - | - | - |
| Tetrachloroethene | mg/kg | 4.3 | - | - | - | - | - | - | - | - | - |
| Toluene | mg/kg | 4400 | 0.0013 JB | 0.13 J | 0.0027 J | 0.005 U | 0.00056 J | 0.005 U | 0.0006 J | 0.00091 J | 0.00056 JB |
| trans-1,2-Dichloroethene | mg/kg | 23 | - | - | - | - | - | - | - | - | - |
| trans-1,3-Dichloropropene | mg/kg | | - | - | - | - | - | - | - | - | - |
| Trichloroethene | mg/kg | 1.7 | 0.00079 JB | 0.00079 J | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 8700 | - | - | - | - | - | - | - | - | - |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Vinyl chloride | mg/kg | 0.27 | - | - | - | - | - | - | - | - | - |
| Xylenes (total) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| **Semi-volatile Organic Compounds** | | | | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 800 | - | - | - | - | - | - | - | - | - |
| 2,4,5-Trichlorophenol | mg/kg | 190000 | - | - | - | - | - | - | - | - | - |
| 2,4,6-Trichlorophenol | mg/kg | 29000 | - | - | - | - | - | - | - | - | - |
| 2,4-Dichlorophenol | mg/kg | 1000 | - | - | - | - | - | - | - | - | - |
| 2,4-Dimethylphenol | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| 2,4-Dinitrophenol | mg/kg | 2300 | - | - | - | - | - | - | - | - | - |
| 2,4-Dinitrotoluene | mg/kg | 200 | - | - | - | - | - | - | - | - | - |
| 2,6-Dinitrotoluene | mg/kg | 3000 | - | - | - | - | - | - | - | - | - |
| 2-Chloronaphthalene | mg/kg | 18000 | - | - | - | - | - | - | - | - | - |
| 2-Chlorophenol | mg/kg | 4.4 | - | - | - | - | - | - | - | - | - |
| 2-Methylnaphthalene | mg/kg | 1600 | - | - | - | - | - | - | - | - | - |
| 2-Methylphenol | mg/kg | 8500 | - | - | - | - | - | - | - | - | - |
| 2-Nitroaniline | mg/kg | 5.5 | - | - | - | - | - | - | - | - | - |
| 2-Nitrophenol | mg/kg | 17000 | - | - | - | - | - | - | - | - | - |
| 3,3'-Dichlorobenzidine | mg/kg | 17000 | - | - | - | - | - | - | - | - | - |
| 3-Nitroaniline | mg/kg | 0.48 | - | - | - | - | - | - | - | - | - |
| 4,6-Dinitro-2-methylphenol | mg/kg | 750 | - | - | - | - | - | - | - | - | - |
| 4-Bromophenyl phenyl ether | mg/kg | | - | - | - | - | - | - | - | - | - |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **L1P3-MW-4** | **L1P3-MW-5** | **L1P3-MW-5** | **L1P3-MW-6** | **L1P3-SED-1** | **L1P3-SED-2** | **L1P3-SED-3** | **L1P3-TP-1** | **L1P3-TP-10** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **MW-4 10-11'** | **MW-5 7.5-12'** | **MW-5 12-14'** | **MW-6 15-17'** | **SED-1** | **SED-2** | **SED-3** | **TP-1 7'-7-6"** | **TP-10 3-3'9"** |
| **Sample Date:** | | | **9/15/1998** | **9/15/1998** | **9/15/1998** | **9/16/1998** | **9/23/1998** | **9/23/1998** | **9/23/1998** | **9/22/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(10-11) ft BGS** | **(7.5-12) ft BGS** | **(12-14) ft BGS** | **(15-17) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(7-7.5) ft BGS** | **(3-3.75) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | | | | |
| 4-Chloro-3-methylphenol | mg/kg | 110 | - | - | - | - | - | - | - | - | - |
| 4-Chloroaniline | mg/kg | 1.6 | - | - | - | - | - | - | - | - | - |
| 4-Chlorophenyl phenyl ether | mg/kg | | - | - | - | - | - | - | - | - | - |
| 4-Methylphenol | mg/kg | 12000 | - | - | - | - | - | - | - | - | - |
| 4-Nitroaniline | mg/kg | 1.9 | - | - | - | - | - | - | - | - | - |
| 4-Nitrophenol | mg/kg | 4100 | - | - | - | - | - | - | - | - | - |
| Acenaphthene | mg/kg | 4700 | 0.33 U | 200 | 2.9 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Acenaphthylene | mg/kg | 18000 | 0.33 U | 29 | 0.71 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Acetophenone | mg/kg | 540 | - | - | - | - | - | - | - | - | - |
| Anthracene | mg/kg | 350 | 0.33 U | 200 | 3.4 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Atrazine | mg/kg | 0.13 | - | - | - | - | - | - | - | - | - |
| Benzaldehyde | mg/kg | | - | - | - | - | - | - | - | - | - |
| Benzo(a)anthracene | mg/kg | 960 | 0.33 U | 89 | 1.7 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(a)pyrene | mg/kg | 860 | 0.33 U | 37 | 1.1 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(b)fluoranthene | mg/kg | 170 | 0.33 U | 32 | 1.2 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(g,h,i)perylene | mg/kg | 180 | 0.33 U | 15 | 0.54 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(k)fluoranthene | mg/kg | 610 | 0.33 U | 38 | 1.2 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Biphenyl (1,1-Biphenyl) | mg/kg | 3100 | - | - | - | - | - | - | - | - | - |
| bis(2-Chloroethoxy)methane | mg/kg | 8.2 | - | - | - | - | - | - | - | - | - |
| bis(2-Chloroethyl)ether | mg/kg | 2.3 | - | - | - | - | - | - | - | - | - |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | 6300 | 0.42 | 3.2 J | 0.48 | 0.35 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Butyl benzylphthalate (BBP) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Caprolactam | mg/kg | | - | - | - | - | - | - | - | - | - |
| Carbazole | mg/kg | 760 | - | - | - | - | - | - | - | - | - |
| Chrysene | mg/kg | 230 | 0.33 U | 81 | 1.9 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Dibenz(a,h)anthracene | mg/kg | 270 | 0.33 U | 8.2 | 0.24 J | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Dibenzofuran | mg/kg | 12000 | - | - | - | - | - | - | - | - | - |
| Diethyl phthalate | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Dimethyl phthalate | mg/kg | | - | - | - | - | - | - | - | - | - |
| Di-n-butylphthalate (DBP) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Di-n-octyl phthalate (DnOP) | mg/kg | 10000 | - | - | - | - | - | - | - | - | - |
| Fluoranthene | mg/kg | 3200 | 0.33 U | 440 | 7.9 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Fluorene | mg/kg | 3800 | 0.33 U | 280 | 4.5 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Hexachlorobenzene | mg/kg | 5.8 | - | - | - | - | - | - | - | - | - |
| Hexachlorobutadiene | mg/kg | 3400 | - | - | - | - | - | - | - | - | - |
| Hexachlorocyclopentadiene | mg/kg | 3300 | - | - | - | - | - | - | - | - | - |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **L1P3-MW-4** | **L1P3-MW-5** | **L1P3-MW-5** | **L1P3-MW-6** | **L1P3-SED-1** | **L1P3-SED-2** | **L1P3-SED-3** | **L1P3-TP-1** | **L1P3-TP-10** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **MW-4 10-11'** | **MW-5 7.5-12'** | **MW-5 12-14'** | **MW-6 15-17'** | **SED-1** | **SED-2** | **SED-3** | **TP-1 7'-7-6"** | **TP-10 3-3'9"** |
| **Sample Date:** | | | **9/15/1998** | **9/15/1998** | **9/15/1998** | **9/16/1998** | **9/23/1998** | **9/23/1998** | **9/23/1998** | **9/22/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(10-11) ft BGS** | **(7.5-12) ft BGS** | **(12-14) ft BGS** | **(15-17) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(7-7.5) ft BGS** | **(3-3.75) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | | | | |
| Hexachloroethane | mg/kg | 56 | - | - | - | - | - | - | - | - | - |
| Indeno(1,2,3-cd)pyrene | mg/kg | 190000 | 0.33 U | 16 | 0.56 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Isophorone | mg/kg | 1900 | - | - | - | - | - | - | - | - | - |
| Naphthalene | mg/kg | 7500 | 0.33 U | 280 | 4 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Nitrobenzene | mg/kg | 8700 | - | - | - | - | - | - | - | - | - |
| N-Nitrosodi-n-propylamine | mg/kg | 5.1 | - | - | - | - | - | - | - | - | - |
| N-Nitrosodiphenylamine | mg/kg | 5500 | - | - | - | - | - | - | - | - | - |
| Pentachlorophenol | mg/kg | 5000 | - | - | - | - | - | - | - | - | - |
| Phenanthrene | mg/kg | 10000 | 0.33 U | 830 | 13 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Phenol | mg/kg | 3300 | - | - | - | - | - | - | - | - | - |
| Pyrene | mg/kg | 2200 | 0.33 U | 270 | 5.4 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| **Metals** | | | | | | | | | | | |
| Antimony | mg/kg | 27000 | 0.64 | 0.64 | 0.54 | 0.89 | 0.5 U | 0.78 | 0.76 | 2.5 | 0.5 U |
| Arsenic | mg/kg | 29000 | 3.5 | 0.2 U | 1.1 | 2.3 | 0.91 | 1.6 | 2.3 | 0.2 U | 11 |
| Beryllium | mg/kg | 190000 | 0.25 | 0.2 U | 0.26 | 0.26 | 0.2 U | 0.2 U | 0.35 | 0.2 U | 0.44 |
| Cadmium | mg/kg | 38000 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.45 | 0.99 | 0.2 U | 0.2 U |
| Chromium | mg/kg | | 7.6 | 560 | 160 | 16 | 44 | 20 | 49 | 860 | 9.7 |
| Copper | mg/kg | 190000 | 9.2 | 7.2 | 24 | 8.2 | 19 | 64 | 93 | 18 | 25 |
| Lead | mg/kg | 190000 | 10 | 73 | 45 | 8 | 43 | 61 | 110 | 59 | 20 |
| Mercury | mg/kg | 10000 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.20 | 0.1 U | 0.1 U | 0.1 U |
| Nickel | mg/kg | 190000 | 10 | 110 | 31 | 8.6 | 5.6 | 4.9 | 11 | 8.4 | 11 |
| Selenium | mg/kg | 26000 | 0.2 U | 0.2 U | 0.39 | 0.2 U | 0.2 U | 0.9 | 2.2 | 0.2 U | 0.2 U |
| Silver | mg/kg | 84000 | 0.2 U | 0.3 | 0.2 U | 0.2 U | 0.2 U | 3.6 | 4.8 | 0.88 | 0.2 U |
| Thallium | mg/kg | 14000 | - | - | - | - | - | - | - | - | - |
| Zinc | mg/kg | 190000 | 32 | 19 | 270 | 34 | 120 | 170 | 330 | 54 | 50 |
| **PCBs** | | | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | 200 | - | - | - | - | - | - | - | - | - |
| Aroclor-1221 (PCB-1221) | mg/kg | 0.63 | - | - | - | - | - | - | - | - | - |
| Aroclor-1232 (PCB-1232) | mg/kg | 0.5 | - | - | - | - | - | - | - | - | - |
| Aroclor-1242 (PCB-1242) | mg/kg | 16 | - | - | - | - | - | - | - | - | - |
| Aroclor-1248 (PCB-1248) | mg/kg | 62 | - | - | - | - | - | - | - | - | - |
| Aroclor-1254 (PCB-1254) | mg/kg | 260 | - | - | - | - | - | - | - | - | - |
| Aroclor-1260 (PCB-1260) | mg/kg | 590 | - | - | - | - | - | - | - | - | - |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **L1P3-MW-4** | **L1P3-MW-5** | **L1P3-MW-5** | **L1P3-MW-6** | **L1P3-SED-1** | **L1P3-SED-2** | **L1P3-SED-3** | **L1P3-TP-1** | **L1P3-TP-10** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **MW-4 10-11'** | **MW-5 7.5-12'** | **MW-5 12-14'** | **MW-6 15-17'** | **SED-1** | **SED-2** | **SED-3** | **TP-1 7'-7-6"** | **TP-10 3-3'9"** |
| **Sample Date:** | | | **9/15/1998** | **9/15/1998** | **9/15/1998** | **9/16/1998** | **9/23/1998** | **9/23/1998** | **9/23/1998** | **9/22/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(10-11) ft BGS** | **(7.5-12) ft BGS** | **(12-14) ft BGS** | **(15-17) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(7-7.5) ft BGS** | **(3-3.75) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | | | | |
| **Petroleum Products** | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | 49 | - | 61 | 38 J | 280 | 110 | 310 | 590 | 55 |
| **General Chemistry** | | | | | | | | | | | |
| Percent moisture | % | | - | - | - | - | - | - | - | - | - |
| pH | s.u. | | 8.48 | 9.98 | 9.36 | 8.44 | 7.19 | 7.06 | 6.88 | 11.24 | 8.39 |

Notes:

(1) PA Chapter 250, Appendix A, Tables 3 to 4, Medium Specific Concentrations (MSC) for organic and inorganic regulated substances in soil, Direct-contact Numerical values, Non-Residential, Soil-to-Groundwater, non-use aquifer.
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
- Not analyzed

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **L1P3-TP-2** | **L1P3-TP-3** | **L1P3-TP-4** | **L1P3-TP-5** | **L1P3-TP-6** | **L1P3-TP-7** | **L1P3-TP-8** | **L1P3-TP-9** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **TP-2 6-9'** | **TP-3 5-6'** | **TP-4 5-6'6"** | **TP-5 5-6'** | **TP-6 3-4'** | **TP-7 9-10'** | **TP-8 9-10'** | **TP-9 5-6'** |
| **Sample Date:** | | | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(6-9) ft BGS** | **(5-6) ft BGS** | **(5-6.5) ft BGS** | **(5-6) ft BGS** | **(3-4) ft BGS** | **(9-10) ft BGS** | **(9-10) ft BGS** | **(5-6) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 72 | - | - | - | - | - | - | - | - |
| 1,1,2,2-Tetrachloroethane | mg/kg | 13 | - | - | - | - | - | - | - | - |
| 1,1,2-Trichloroethane | mg/kg | 1.5 | - | - | - | - | - | - | - | - |
| 1,1-Dichloroethane | mg/kg | 39 | - | - | - | - | - | - | - | - |
| 1,1-Dichloroethene | mg/kg | 1.9 | - | - | - | - | - | - | - | - |
| 1,2,4-Trichlorobenzene | mg/kg | 10000 | - | - | - | - | - | - | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 0.92 | - | - | - | - | - | - | - | - |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 0.12 | - | - | - | - | - | - | - | - |
| 1,2-Dichlorobenzene | mg/kg | 5900 | - | - | - | - | - | - | - | - |
| 1,2-Dichloroethane | mg/kg | 1 | - | - | - | - | - | - | - | - |
| 1,2-Dichloroethene (total) | mg/kg | | - | - | - | - | - | - | - | - |
| 1,2-Dichloropropane | mg/kg | 1.1 | - | - | - | - | - | - | - | - |
| 1,3-Dichlorobenzene | mg/kg | 6100 | - | - | - | - | - | - | - | - |
| 1,4-Dichlorobenzene | mg/kg | 1000 | - | - | - | - | - | - | - | - |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 7600 | - | - | - | - | - | - | - | - |
| 2-Hexanone | mg/kg | 1.1 | - | - | - | - | - | - | - | - |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 10000 | - | - | - | - | - | - | - | - |
| Acetone | mg/kg | 10000 | - | - | - | - | - | - | - | - |
| Benzene | mg/kg | 13 | - | - | - | - | - | - | - | - |
| Bromodichloromethane | mg/kg | 2.7 | - | - | - | - | - | - | - | - |
| Bromoform | mg/kg | 350 | - | - | - | - | - | - | - | - |
| Bromomethane (Methyl bromide) | mg/kg | 54 | - | - | - | - | - | - | - | - |
| Carbon disulfide | mg/kg | 530 | - | - | - | - | - | - | - | - |
| Carbon tetrachloride | mg/kg | 2.6 | - | - | - | - | - | - | - | - |
| Chlorobenzene | mg/kg | 610 | - | - | - | - | - | - | - | - |
| Chloroethane | mg/kg | 1900 | - | - | - | - | - | - | - | - |
| Chloroform (Trichloromethane) | mg/kg | 20 | - | - | - | - | - | - | - | - |
| Chloromethane (Methyl chloride) | mg/kg | 38 | - | - | - | - | - | - | - | - |
| cis-1,2-Dichloroethene | mg/kg | 16 | - | - | - | - | - | - | - | - |
| cis-1,3-Dichloropropene | mg/kg | | - | - | - | - | - | - | - | - |
| Cyclohexane | mg/kg | 6900 | - | - | - | - | - | - | - | - |
| Dibromochloromethane | mg/kg | 250 | - | - | - | - | - | - | - | - |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 10000 | - | - | - | - | - | - | - | - |
| Ethylbenzene | mg/kg | 4600 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Isopropyl benzene | mg/kg | 10000 | - | - | - | - | - | - | - | - |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **L1P3-TP-2** | **L1P3-TP-3** | **L1P3-TP-4** | **L1P3-TP-5** | **L1P3-TP-6** | **L1P3-TP-7** | **L1P3-TP-8** | **L1P3-TP-9** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **TP-2 6-9'** | **TP-3 5-6'** | **TP-4 5-6'6"** | **TP-5 5-6'** | **TP-6 3-4'** | **TP-7 9-10'** | **TP-8 9-10'** | **TP-9 5-6'** |
| **Sample Date:** | | | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(6-9) ft BGS** | **(5-6) ft BGS** | **(5-6.5) ft BGS** | **(5-6) ft BGS** | **(3-4) ft BGS** | **(9-10) ft BGS** | **(9-10) ft BGS** | **(5-6) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | | | |
| m&p-Xylenes | mg/kg | | - | - | - | - | - | - | - | - |
| Methyl acetate | mg/kg | 1900 | - | - | - | - | - | - | - | - |
| Methyl cyclohexane | mg/kg | | - | - | - | - | - | - | - | - |
| Methyl tert butyl ether (MTBE) | mg/kg | 2.8 | - | - | - | - | - | - | - | - |
| Methylene chloride | mg/kg | 7.6 | 0.0019 JB | 0.0012 JB | 0.0014 JB | 0.0015 JB | 0.0011 JB | 0.0017 JB | 0.0011 JB | 0.0013 JB |
| o-Xylene | mg/kg | | - | - | - | - | - | - | - | - |
| Styrene | mg/kg | 2400 | - | - | - | - | - | - | - | - |
| Tetrachloroethene | mg/kg | 4.3 | - | - | - | - | - | - | - | - |
| Toluene | mg/kg | 4400 | 0.00075 JB | 0.00055 JB | 0.00062 JB | 0.0006 JB | 0.00059 JB | 0.00051 JB | 0.00051 JB | 0.00052 JB |
| trans-1,2-Dichloroethene | mg/kg | 23 | - | - | - | - | - | - | - | - |
| trans-1,3-Dichloropropene | mg/kg | | - | - | - | - | - | - | - | - |
| Trichloroethene | mg/kg | 1.7 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 8700 | - | - | - | - | - | - | - | - |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 10000 | - | - | - | - | - | - | - | - |
| Vinyl chloride | mg/kg | 0.27 | - | - | - | - | - | - | - | - |
| Xylenes (total) | mg/kg | 10000 | - | - | - | - | - | - | - | - |
| **Semi-volatile Organic Compounds** | | | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 800 | - | - | - | - | - | - | - | - |
| 2,4,5-Trichlorophenol | mg/kg | 190000 | - | - | - | - | - | - | - | - |
| 2,4,6-Trichlorophenol | mg/kg | 29000 | - | - | - | - | - | - | - | - |
| 2,4-Dichlorophenol | mg/kg | 1000 | - | - | - | - | - | - | - | - |
| 2,4-Dimethylphenol | mg/kg | 10000 | - | - | - | - | - | - | - | - |
| 2,4-Dinitrophenol | mg/kg | 2300 | - | - | - | - | - | - | - | - |
| 2,4-Dinitrotoluene | mg/kg | 200 | - | - | - | - | - | - | - | - |
| 2,6-Dinitrotoluene | mg/kg | 3000 | - | - | - | - | - | - | - | - |
| 2-Chloronaphthalene | mg/kg | 18000 | - | - | - | - | - | - | - | - |
| 2-Chlorophenol | mg/kg | 4.4 | - | - | - | - | - | - | - | - |
| 2-Methylnaphthalene | mg/kg | 1600 | - | - | - | - | - | - | - | - |
| 2-Methylphenol | mg/kg | 8500 | - | - | - | - | - | - | - | - |
| 2-Nitroaniline | mg/kg | 5.5 | - | - | - | - | - | - | - | - |
| 2-Nitrophenol | mg/kg | 17000 | - | - | - | - | - | - | - | - |
| 3,3'-Dichlorobenzidine | mg/kg | 17000 | - | - | - | - | - | - | - | - |
| 3-Nitroaniline | mg/kg | 0.48 | - | - | - | - | - | - | - | - |
| 4,6-Dinitro-2-methylphenol | mg/kg | 750 | - | - | - | - | - | - | - | - |
| 4-Bromophenyl phenyl ether | mg/kg | | - | - | - | - | - | - | - | - |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **L1P3-TP-2** | **L1P3-TP-3** | **L1P3-TP-4** | **L1P3-TP-5** | **L1P3-TP-6** | **L1P3-TP-7** | **L1P3-TP-8** | **L1P3-TP-9** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **TP-2 6-9'** | **TP-3 5-6'** | **TP-4 5-6'6"** | **TP-5 5-6'** | **TP-6 3-4'** | **TP-7 9-10'** | **TP-8 9-10'** | **TP-9 5-6'** |
| **Sample Date:** | | | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(6-9) ft BGS** | **(5-6) ft BGS** | **(5-6.5) ft BGS** | **(5-6) ft BGS** | **(3-4) ft BGS** | **(9-10) ft BGS** | **(9-10) ft BGS** | **(5-6) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | | | |
| 4-Chloro-3-methylphenol | mg/kg | 110 | - | - | - | - | - | - | - | - |
| 4-Chloroaniline | mg/kg | 1.6 | - | - | - | - | - | - | - | - |
| 4-Chlorophenyl phenyl ether | mg/kg | | - | - | - | - | - | - | - | - |
| 4-Methylphenol | mg/kg | 12000 | - | - | - | - | - | - | - | - |
| 4-Nitroaniline | mg/kg | 1.9 | - | - | - | - | - | - | - | - |
| 4-Nitrophenol | mg/kg | 4100 | - | - | - | - | - | - | - | - |
| Acenaphthene | mg/kg | 4700 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Acenaphthylene | mg/kg | 18000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Acetophenone | mg/kg | 540 | - | - | - | - | - | - | - | - |
| Anthracene | mg/kg | 350 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Atrazine | mg/kg | 0.13 | - | - | - | - | - | - | - | - |
| Benzaldehyde | mg/kg | | - | - | - | - | - | - | - | - |
| Benzo(a)anthracene | mg/kg | 960 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(a)pyrene | mg/kg | 860 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(b)fluoranthene | mg/kg | 170 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(g,h,i)perylene | mg/kg | 180 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(k)fluoranthene | mg/kg | 610 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Biphenyl (1,1-Biphenyl) | mg/kg | 3100 | - | - | - | - | - | - | - | - |
| bis(2-Chloroethoxy)methane | mg/kg | 8.2 | - | - | - | - | - | - | - | - |
| bis(2-Chloroethyl)ether | mg/kg | 2.3 | - | - | - | - | - | - | - | - |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | 6300 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Butyl benzylphthalate (BBP) | mg/kg | 10000 | - | - | - | - | - | - | - | - |
| Caprolactam | mg/kg | | - | - | - | - | - | - | - | - |
| Carbazole | mg/kg | 760 | - | - | - | - | - | - | - | - |
| Chrysene | mg/kg | 230 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Dibenz(a,h)anthracene | mg/kg | 270 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Dibenzofuran | mg/kg | 12000 | - | - | - | - | - | - | - | - |
| Diethyl phthalate | mg/kg | 10000 | - | - | - | - | - | - | - | - |
| Dimethyl phthalate | mg/kg | | - | - | - | - | - | - | - | - |
| Di-n-butylphthalate (DBP) | mg/kg | 10000 | - | - | - | - | - | - | - | - |
| Di-n-octyl phthalate (DnOP) | mg/kg | 10000 | - | - | - | - | - | - | - | - |
| Fluoranthene | mg/kg | 3200 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Fluorene | mg/kg | 3800 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Hexachlorobenzene | mg/kg | 5.8 | - | - | - | - | - | - | - | - |
| Hexachlorobutadiene | mg/kg | 3400 | - | - | - | - | - | - | - | - |
| Hexachlorocyclopentadiene | mg/kg | 3300 | - | - | - | - | - | - | - | - |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **L1P3-TP-2** | **L1P3-TP-3** | **L1P3-TP-4** | **L1P3-TP-5** | **L1P3-TP-6** | **L1P3-TP-7** | **L1P3-TP-8** | **L1P3-TP-9** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **TP-2 6-9'** | **TP-3 5-6'** | **TP-4 5-6'6"** | **TP-5 5-6'** | **TP-6 3-4'** | **TP-7 9-10'** | **TP-8 9-10'** | **TP-9 5-6'** |
| **Sample Date:** | | | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(6-9) ft BGS** | **(5-6) ft BGS** | **(5-6.5) ft BGS** | **(5-6) ft BGS** | **(3-4) ft BGS** | **(9-10) ft BGS** | **(9-10) ft BGS** | **(5-6) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | | | |
| Hexachloroethane | mg/kg | 56 | - | - | - | - | - | - | - | - |
| Indeno(1,2,3-cd)pyrene | mg/kg | 190000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Isophorone | mg/kg | 1900 | - | - | - | - | - | - | - | - |
| Naphthalene | mg/kg | 7500 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Nitrobenzene | mg/kg | 8700 | - | - | - | - | - | - | - | - |
| N-Nitrosodi-n-propylamine | mg/kg | 5.1 | - | - | - | - | - | - | - | - |
| N-Nitrosodiphenylamine | mg/kg | 5500 | - | - | - | - | - | - | - | - |
| Pentachlorophenol | mg/kg | 5000 | - | - | - | - | - | - | - | - |
| Phenanthrene | mg/kg | 10000 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Phenol | mg/kg | 3300 | - | - | - | - | - | - | - | - |
| Pyrene | mg/kg | 2200 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| **Metals** | | | | | | | | | | |
| Antimony | mg/kg | 27000 | 0.5 U | 0.88 | 0.96 | 0.5 U | 1.2 | 0.75 | 0.52 | 1.2 |
| Arsenic | mg/kg | 29000 | 1.1 | 3.5 | 6.7 | 7.2 | 4.8 | 4.2 | 3.6 | 0.5 |
| Beryllium | mg/kg | 190000 | 0.2 U | 0.29 | 0.46 | 0.48 | 0.29 | 0.25 | 0.26 | 0.46 |
| Cadmium | mg/kg | 38000 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Chromium | mg/kg | | 550 | 7.6 | 22 | 6.1 | 20 | 8.1 | 6.8 | 51 |
| Copper | mg/kg | 190000 | 15 | 9.6 | 9.2 | 8 | 11 | 8.8 | 7.8 | 12 |
| Lead | mg/kg | 190000 | 15 | 8.8 | 15 | 15 | 20 | 8.3 | 8.1 | 17 |
| Mercury | mg/kg | 10000 | 0.1 U | 0.1 U | 0.1 U | 0.11 | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Nickel | mg/kg | 190000 | 6.8 | 12 | 11 | 11 | 14 | 11 | 12 | 11 |
| Selenium | mg/kg | 26000 | 0.2 U | 0.98 | 0.2 U | 0.67 | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Silver | mg/kg | 84000 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Thallium | mg/kg | 14000 | - | - | - | - | - | - | - | - |
| Zinc | mg/kg | 190000 | 55 | 52 | 50 | 41 | 63 | 47 | 45 | 51 |
| **PCBs** | | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | 200 | - | - | - | - | - | - | - | - |
| Aroclor-1221 (PCB-1221) | mg/kg | 0.63 | - | - | - | - | - | - | - | - |
| Aroclor-1232 (PCB-1232) | mg/kg | 0.5 | - | - | - | - | - | - | - | - |
| Aroclor-1242 (PCB-1242) | mg/kg | 16 | - | - | - | - | - | - | - | - |
| Aroclor-1248 (PCB-1248) | mg/kg | 62 | - | - | - | - | - | - | - | - |
| Aroclor-1254 (PCB-1254) | mg/kg | 260 | - | - | - | - | - | - | - | - |
| Aroclor-1260 (PCB-1260) | mg/kg | 590 | - | - | - | - | - | - | - | - |

**Table 4.3**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Non-Use Aquifer Impact to Groundwater Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**

| **Sample Location:** | | | **L1P3-TP-2** | **L1P3-TP-3** | **L1P3-TP-4** | **L1P3-TP-5** | **L1P3-TP-6** | **L1P3-TP-7** | **L1P3-TP-8** | **L1P3-TP-9** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **TP-2 6-9'** | **TP-3 5-6'** | **TP-4 5-6'6"** | **TP-5 5-6'** | **TP-6 3-4'** | **TP-7 9-10'** | **TP-8 9-10'** | **TP-9 5-6'** |
| **Sample Date:** | | | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(6-9) ft BGS** | **(5-6) ft BGS** | **(5-6.5) ft BGS** | **(5-6) ft BGS** | **(3-4) ft BGS** | **(9-10) ft BGS** | **(9-10) ft BGS** | **(5-6) ft BGS** |
| **Parameters** | **Units** | **MSC Non-Residential Soil-to-Groundwater Nonuse Aquifer (1)** | | | | | | | | |
| **Petroleum Products** | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | 32 J | 32 J | 49 | 32 JB | 49 | 49 | 44 | 32 J |
| **General Chemistry** | | | | | | | | | | |
| Percent moisture | % | | - | - | - | - | - | - | - | - |
| pH | s.u. | | 9.06 | 6.11 | 7.2 | 7.13 | 7.73 | 8.43 | 7.57 | 7.66 |

Notes:

(1) PA Chapter 250, Appendix A, Tables 3 to 4, Medium Specific Concentrations (MSC) for organic and inorganic regulated substances in soil, Direct-contact Numerical values, Non-Residential, Soil-to-Groundwater, non-use aquifer.
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
- Not analyzed

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-3** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_1.5-2-062514** | **ELC-SB-1_4.5-5-062514** | **ELC-SB-2_1.5-2-062514** | **ELC-SB-2_5-5.5-062514** | **ELC-SB-3_1.5-2-062514** | **ELC-SB-3_10-10.5_062514** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 170 | 0.00040 U | 0.00038 U | R | 0.00033 UJ | 0.00037 U | 0.00039 U |
| 1,1,2,2-Tetrachloroethane | mg/kg | 2 | 0.00059 U | 0.00056 U | R | 0.00049 UJ | 0.00055 U | 0.00057 U |
| 1,1,2-Trichloroethane | mg/kg | 2.4 | 0.00068 U | 0.00065 U | R | 0.00057 UJ | 0.00064 U | 0.00066 U |
| 1,1-Dichloroethane | mg/kg | 2.7 | 0.00047 U | 0.00045 U | R | 0.00039 UJ | 0.00044 U | 0.00046 U |
| 1,1-Dichloroethene | mg/kg | 7.6 | 0.00070 U | 0.00067 U | R | 0.00058 UJ | 0.00065 U | 0.00067 U |
| 1,2,4-Trichlorobenzene | mg/kg | NOC | 0.00073 U | 0.00069 U | R | 0.00060 UJ | 0.00068 U | 0.00070 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 3.2 | 0.00062 U | 0.00059 U | R | 0.00051 UJ | 0.00057 U | 0.00060 U |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 0.29 | 0.00071 U | 0.00068 U | R | 0.00059 UJ | 0.00066 U | 0.00069 U |
| 1,2-Dichlorobenzene | mg/kg | 150 | 0.00066 U | 0.00063 U | R | 0.00055 UJ | 0.00061 U | 0.00063 U |
| 1,2-Dichloroethane | mg/kg | 0.83 | 0.00050 U | 0.00048 U | R | 0.00042 UJ | 0.00047 U | 0.00049 U |
| 1,2-Dichloroethene (total) | mg/kg | | 0.0011 U | 0.0010 U | R | 0.00088 UJ | 0.00098 U | 0.0010 U |
| 1,2-Dichloropropane | mg/kg | 0.88 | 0.00045 U | 0.00043 U | R | 0.00037 UJ | 0.00042 U | 0.00043 U |
| 1,3-Dichlorobenzene | mg/kg | NA | 0.00054 U | 0.00052 U | R | 0.00045 UJ | 0.00050 U | 0.00052 U |
| 1,4-Dichlorobenzene | mg/kg | 13 | 0.00052 U | 0.00050 U | R | 0.00044 UJ | 0.00049 U | 0.00051 U |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 14000 | 0.00073 U | 0.00069 U | R | 0.00060 UJ | 0.00068 U | 0.00070 U |
| 2-Hexanone | mg/kg | | 0.00057 U | 0.00054 U | R | 0.00047 UJ | 0.00053 U | 0.00055 U |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 120 | 0.00054 U | 0.00051 U | R | 0.00045 UJ | 0.00050 U | 0.00052 U |
| Acetone | mg/kg | 110000 | 0.011 U | 0.0078 U | R | 0.0034 UJ | 0.0038 U | 0.0040 U |
| Benzene | mg/kg | 0.63 | 0.00056 U | 0.00053 U | R | 0.00046 UJ | 0.00052 U | 0.00054 U |
| Bromodichloromethane | mg/kg | 0.85 | 0.00046 U | 0.00044 U | R | 0.00038 UJ | 0.00043 U | 0.00045 U |
| Bromoform | mg/kg | 160 | 0.00036 U | 0.00035 U | R | 0.00030 UJ | 0.00034 U | 0.00035 U |
| Bromomethane (Methyl bromide) | mg/kg | 1.3 | 0.00061 U | 0.00058 U | R | 0.00051 UJ | 0.00057 U | 0.00059 U |
| Carbon disulfide | mg/kg | 66 | 0.00042 U | 0.00040 U | R | 0.00054 J | 0.0011 J | 0.00041 U |
| Carbon tetrachloride | mg/kg | 0.12 | 0.00037 U | 0.00035 U | R | 0.00031 UJ | 0.00034 U | 0.00036 U |
| Chlorobenzene | mg/kg | 13 | 0.00062 U | 0.00059 U | R | 0.00052 UJ | 0.00058 U | 0.00060 U |
| Chloroethane | mg/kg | 1.8 | 0.0013 U | 0.0012 U | R | 0.0011 UJ | 0.0012 U | 0.0012 U |
| Chloroform (Trichloromethane) | mg/kg | 0.074 | 0.00048 U | 0.00046 U | R | 0.00040 UJ | 0.00045 U | 0.00047 U |
| Chloromethane (Methyl chloride) | mg/kg | 0.64 | 0.00070 U | 0.00067 U | R | 0.00058 UJ | 0.00065 U | 0.00068 U |
| cis-1,2-Dichloroethene | mg/kg | 7.6 | 0.00058 U | 0.00055 U | R | 0.00048 UJ | 0.00054 U | 0.00056 U |
| cis-1,3-Dichloropropene | mg/kg | | 0.00056 U | 0.00053 U | R | 0.00046 UJ | 0.00052 U | 0.00054 U |
| Cyclohexane | mg/kg | | 0.00031 U | 0.00029 U | R | 0.00025 UJ | 0.00028 U | 0.00030 U |
| Dibromochloromethane | mg/kg | 2.2 | 0.00058 U | 0.00056 U | R | 0.00049 UJ | 0.00054 U | 0.00056 U |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 2.6 | 0.00055 U | 0.00052 U | R | 0.00046 UJ | 0.00051 U | 0.00053 U |
| Ethylbenzene | mg/kg | 9.5 | 0.00053 U | 0.00050 U | R | 0.00044 UJ | 0.00049 U | 0.00051 U |
| Isopropyl benzene | mg/kg | 360 | 0.00056 U | 0.00053 U | R | 0.00047 UJ | 0.00052 U | 0.00054 U |
| m&p-Xylenes | mg/kg | | 0.0012 U | 0.0012 U | R | 0.0010 UJ | 0.0011 U | 0.0012 U |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-3** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_1.5-2-062514** | **ELC-SB-1_4.5-5-062514** | **ELC-SB-2_1.5-2-062514** | **ELC-SB-2_5-5.5-062514** | **ELC-SB-3_1.5-2-062514** | **ELC-SB-3_10-10.5_062514** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| Methyl acetate | mg/kg | 19000 | 0.00074 U | 0.00071 U | R | 0.00062 UJ | 0.00069 U | 0.00072 U |
| Methyl cyclohexane | mg/kg | | 0.00060 U | 0.00057 U | R | 0.00050 UJ | 0.00056 U | 0.00058 U |
| Methyl tert butyl ether (MTBE) | mg/kg | 86 | 0.00062 U | 0.00059 U | R | 0.00051 UJ | 0.00057 U | 0.00059 U |
| Methylene chloride | mg/kg | 14 | 0.0041 J | 0.0034 J | 0.0032 J | 0.0028 J | 0.0037 J | 0.0038 J |
| o-Xylene | mg/kg | | 0.00064 U | 0.00061 U | R | 0.00053 UJ | 0.00060 U | 0.00062 U |
| Styrene | mg/kg | 720 | 0.00058 U | 0.00055 U | R | 0.00048 UJ | 0.00054 U | 0.00056 U |
| Tetrachloroethene | mg/kg | 10 | 0.00056 U | 0.00053 U | R | 0.00047 UJ | 0.00052 U | 0.00054 U |
| Toluene | mg/kg | 110 | 0.00060 U | 0.00057 U | R | 0.00050 UJ | 0.00056 U | 0.00058 U |
| trans-1,2-Dichloroethene | mg/kg | 6.4 | 0.00049 U | 0.00047 U | R | 0.00041 UJ | 0.00046 U | 0.00047 U |
| trans-1,3-Dichloropropene | mg/kg | | 0.00049 U | 0.00047 U | R | 0.00041 UJ | 0.00046 U | 0.00048 U |
| Trichloroethene | mg/kg | 2.2 | 0.00054 U | 0.00052 U | R | 0.00045 UJ | 0.00050 U | 0.00052 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 13 | 0.00076 U | 0.00072 U | R | 0.00063 UJ | 0.00070 U | 0.00073 U |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 670 | 0.00088 U | 0.00084 U | R | 0.00073 UJ | 0.00082 U | 0.00085 U |
| Vinyl chloride | mg/kg | 0.061 | 0.00039 U | 0.00037 U | R | 0.00032 UJ | 0.00036 U | 0.00037 U |
| Xylenes (total) | mg/kg | 77 | 0.0018 U | 0.0018 U | R | 0.0015 UJ | 0.0017 U | 0.0018 U |
| **Semi-volatile Organic Compounds** | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 28 | 0.0038 U | 0.00082 U | R | 0.0038 U | 0.0036 U | 0.00082 U |
| 2,4,5-Trichlorophenol | mg/kg | | 0.019 U | 0.0041 U | R | 0.019 U | 0.018 U | 0.0040 U |
| 2,4,6-Trichlorophenol | mg/kg | | 0.027 U | 0.0057 U | R | 0.026 U | 0.025 U | 0.0057 U |
| 2,4-Dichlorophenol | mg/kg | | 0.0036 U | 0.00077 U | R | 0.0035 U | 0.0034 U | 0.00076 U |
| 2,4-Dimethylphenol | mg/kg | | 0.028 U | 0.0060 U | R | 0.028 U | 0.026 U | 0.0059 U |
| 2,4-Dinitrophenol | mg/kg | | R | 0.045 U | R | 0.21 U | 0.20 U | 0.045 U |
| 2,4-Dinitrotoluene | mg/kg | | 0.014 U | 0.0031 U | R | 0.014 U | 0.014 U | 0.0030 U |
| 2,6-Dinitrotoluene | mg/kg | | 0.018 U | 0.0039 U | R | 0.018 U | 0.017 U | 0.0039 U |
| 2-Chloronaphthalene | mg/kg | NOC | 0.0037 U | 0.00080 U | R | 0.0037 U | 0.0035 U | 0.00079 U |
| 2-Chlorophenol | mg/kg | 270 | 0.015 U | 0.0031 U | R | 0.014 U | 0.014 U | 0.0031 U |
| 2-Methylnaphthalene | mg/kg | NOC | 0.056 | 0.00069 U | 0.0014 J | 0.0032 U | 0.0047 J | 0.00068 U |
| 2-Methylphenol | mg/kg | NOC | 0.012 U | 0.0027 U | R | 0.012 U | 0.012 U | 0.0026 U |
| 2-Nitroaniline | mg/kg | | 0.079 U | 0.017 U | R | 0.079 U | 0.075 U | 0.017 U |
| 2-Nitrophenol | mg/kg | NOC | 0.020 U | 0.0042 U | R | 0.020 U | 0.019 U | 0.0042 U |
| 3,3'-Dichlorobenzidine | mg/kg | | 0.019 UJ | 0.0040 U | R | 0.019 U | 0.018 U | 0.0040 U |
| 3-Nitroaniline | mg/kg | | 0.073 U | 0.016 U | R | 0.073 U | 0.069 U | 0.016 U |
| 4,6-Dinitro-2-methylphenol | mg/kg | | 0.071 UJ | 0.015 U | R | 0.071 U | 0.068 U | 0.015 U |
| 4-Bromophenyl phenyl ether | mg/kg | | 0.015 U | 0.0033 U | R | 0.015 U | 0.015 U | 0.0033 U |
| 4-Chloro-3-methylphenol | mg/kg | | 0.016 U | 0.0035 U | R | 0.016 U | 0.016 U | 0.0035 U |
| 4-Chloroaniline | mg/kg | | 0.014 U | 0.0031 U | R | 0.014 U | 0.013 U | 0.0030 U |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-3** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_1.5-2-062514** | **ELC-SB-1_4.5-5-062514** | **ELC-SB-2_1.5-2-062514** | **ELC-SB-2_5-5.5-062514** | **ELC-SB-3_1.5-2-062514** | **ELC-SB-3_10-10.5_062514** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| 4-Chlorophenyl phenyl ether | mg/kg | | 0.020 U | 0.0042 U | R | 0.020 U | 0.019 U | 0.0042 U |
| 4-Methylphenol | mg/kg | | 0.017 U | 0.0037 U | R | 0.017 U | 0.016 U | 0.0037 U |
| 4-Nitroaniline | mg/kg | | 0.072 U | 0.015 U | R | 0.072 U | 0.068 U | 0.015 U |
| 4-Nitrophenol | mg/kg | | 0.065 U | 0.014 U | R | 0.065 U | 0.061 U | 0.014 U |
| Acenaphthene | mg/kg | NOC | 0.17 | 0.00073 U | 0.00076 J | 0.0046 J | 0.015 J | 0.00073 U |
| Acenaphthylene | mg/kg | NOC | 0.026 J | 0.00087 U | 0.0069 J | 0.0041 U | 0.12 | 0.00086 U |
| Acetophenone | mg/kg | NOC | 0.015 U | 0.0031 U | R | 0.015 U | 0.014 U | 0.0031 U |
| Anthracene | mg/kg | NOC | 0.10 | 0.00075 U | 0.0088 J | 0.015 J | 0.15 | 0.00074 U |
| Atrazine | mg/kg | | 0.017 U | 0.0037 U | R | 0.017 U | 0.016 U | 0.0037 U |
| Benzaldehyde | mg/kg | | R | R | R | R | R | R |
| Benzo(a)anthracene | mg/kg | | 0.49 | 0.00096 U | 0.028 J | 0.067 | 0.44 | 0.00095 U |
| Benzo(a)pyrene | mg/kg | | 1.0 | 0.00076 U | 0.037 J | 0.096 | 0.48 | 0.00076 U |
| Benzo(b)fluoranthene | mg/kg | | 1.1 J | 0.0012 U | 0.070 J | 0.13 | 0.91 | 0.0012 U |
| Benzo(g,h,i)perylene | mg/kg | | 0.92 | 0.00076 U | 0.039 J | 0.091 | 0.35 | 0.00075 U |
| Benzo(k)fluoranthene | mg/kg | | 0.32 | 0.0015 U | 0.026 J | 0.043 | 0.35 | 0.0015 U |
| Biphenyl (1,1-Biphenyl) | mg/kg | NOC | 0.018 J | 0.0034 U | R | 0.016 U | 0.015 U | 0.0034 U |
| bis(2-Chloroethoxy)methane | mg/kg | | 0.012 U | 0.0025 U | R | 0.012 U | 0.011 U | 0.0025 U |
| bis(2-Chloroethyl)ether | mg/kg | 7.1 | 0.0048 U | 0.0010 U | R | 0.0047 U | 0.0045 U | 0.0010 U |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | | 0.029 U | 0.0078 J | R | 0.029 U | 0.027 U | 0.0061 U |
| Butyl benzylphthalate (BBP) | mg/kg | | 0.031 J | 0.0077 J | R | 0.024 U | 0.023 U | 0.0052 U |
| Caprolactam | mg/kg | | 0.13 U | 0.029 U | R | 0.13 U | 0.13 U | 0.029 U |
| Carbazole | mg/kg | | 0.036 | 0.00070 U | 0.0016 J | 0.0033 U | 0.017 J | 0.00070 U |
| Chrysene | mg/kg | | 0.52 | 0.00091 U | 0.045 J | 0.075 | 0.63 | 0.00090 U |
| Dibenz(a,h)anthracene | mg/kg | | 0.20 | 0.00085 U | 0.0098 J | 0.025 J | 0.088 | 0.00084 U |
| Dibenzofuran | mg/kg | | 0.055 J | 0.0038 U | R | 0.017 U | 0.017 U | 0.0037 U |
| Diethyl phthalate | mg/kg | | 0.019 U | 0.0042 U | R | 0.019 U | 0.018 U | 0.0041 U |
| Dimethyl phthalate | mg/kg | | 0.019 U | 0.0042 U | R | 0.019 U | 0.018 U | 0.0041 U |
| Di-n-butylphthalate (DBP) | mg/kg | | 0.022 U | 0.0048 U | R | 0.022 U | 0.021 U | 0.0047 U |
| Di-n-octyl phthalate (DnOP) | mg/kg | | 0.019 U | 0.0040 U | R | 0.019 U | 0.018 U | 0.0040 U |
| Fluoranthene | mg/kg | | 0.56 | 0.00082 U | 0.029 J | 0.066 | 0.54 | 0.00081 U |
| Fluorene | mg/kg | NOC | 0.040 | 0.0010 U | R | 0.0047 U | 0.012 J | 0.0010 U |
| Hexachlorobenzene | mg/kg | | 0.0038 U | 0.00081 U | R | 0.0038 U | 0.0036 U | 0.00080 U |
| Hexachlorobutadiene | mg/kg | | 0.0040 U | 0.00085 U | R | 0.0040 U | 0.0038 U | 0.00084 U |
| Hexachlorocyclopentadiene | mg/kg | | 0.019 U | 0.0041 U | R | 0.019 U | 0.018 U | 0.0041 U |
| Hexachloroethane | mg/kg | | 0.013 U | 0.0027 U | R | 0.013 U | 0.012 U | 0.0027 U |
| Indeno(1,2,3-cd)pyrene | mg/kg | | 0.76 | 0.00079 U | 0.032 J | 0.079 | 0.33 | 0.00078 U |
| Isophorone | mg/kg | | 0.013 U | 0.0029 U | R | 0.013 U | 0.013 U | 0.0028 U |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-3** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_1.5-2-062514** | **ELC-SB-1_4.5-5-062514** | **ELC-SB-2_1.5-2-062514** | **ELC-SB-2_5-5.5-062514** | **ELC-SB-3_1.5-2-062514** | **ELC-SB-3_10-10.5_062514** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| Naphthalene | mg/kg | NOC | 0.080 | 0.00066 U | 0.0028 J | 0.0030 U | 0.0069 J | 0.00065 U |
| Nitrobenzene | mg/kg | 190 | 0.015 U | 0.0032 U | R | 0.015 U | 0.014 U | 0.0031 U |
| N-Nitrosodi-n-propylamine | mg/kg | | 0.0042 U | 0.00089 U | R | 0.0041 U | 0.0040 U | 0.00089 U |
| N-Nitrosodiphenylamine | mg/kg | | 0.016 U | 0.0035 U | R | 0.016 U | 0.016 U | 0.0035 U |
| Pentachlorophenol | mg/kg | | R | 0.0034 U | R | 0.016 U | 0.015 U | 0.0034 U |
| Phenanthrene | mg/kg | NOC | 0.28 | 0.0012 U | 0.011 J | 0.031 J | 0.064 | 0.0012 U |
| Phenol | mg/kg | NOC | 0.0042 U | 0.00090 U | R | 0.0042 U | 0.0040 U | 0.00089 U |
| Pyrene | mg/kg | | 0.59 | 0.00077 U | 0.032 J | 0.074 | 0.68 | 0.00076 U |
| **Metals** | | | | | | | | |
| Antimony | mg/kg | | 0.36 J | 0.14 J | 0.023 UJ | 0.024 UJ | 0.025 UJ | 0.10 J |
| Arsenic | mg/kg | | 4.7 | 6.6 | 2.5 | 2.4 | 3.0 | 4.4 |
| Beryllium | mg/kg | | 0.30 J | 0.42 | 0.56 J | 0.40 J | 2.2 | 0.32 |
| Cadmium | mg/kg | | 0.23 J | 0.022 J | 0.096 J | 0.11 J | 0.11 J | 0.069 J |
| Chromium | mg/kg | | 130 | 12 | 1400 | 2200 | 1200 | 8.0 |
| Copper | mg/kg | | 78 J | 9.1 J | 38 J | 28 J | 30 J | 9.2 J |
| Lead | mg/kg | | 40 | 9.6 | 6.6 | 10 | 14 | 6.8 |
| Mercury | mg/kg | | 0.080 | 0.012 U | 0.011 U | 0.012 U | 0.011 U | 0.012 U |
| Nickel | mg/kg | | 32 J | 15 J | 97 J | 36 J | 14 J | 13 J |
| Selenium | mg/kg | | 0.51 U | 0.30 J | 0.45 U | 0.46 U | 1.1 J | 0.14 J |
| Silver | mg/kg | | 0.040 U | 0.0041 U | 0.035 U | 0.036 U | 0.037 U | 0.0039 U |
| Thallium | mg/kg | | 0.075 J | 0.075 J | 0.018 U | 0.018 U | 0.019 U | 0.039 J |
| Zinc | mg/kg | | 120 | 35 | 38 | 54 | 64 | 32 |
| **PCBs** | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | | 0.00013 U | 0.00014 U | 0.00013 U | 0.00013 U | 0.00013 U | 0.00014 U |
| Aroclor-1221 (PCB-1221) | mg/kg | NA | 0.00017 U | 0.00018 U | 0.00017 U | 0.00017 U | 0.00016 U | 0.00018 U |
| Aroclor-1232 (PCB-1232) | mg/kg | | 0.00015 U | 0.00016 U | 0.00015 U | 0.00015 U | 0.00015 U | 0.00016 U |
| Aroclor-1242 (PCB-1242) | mg/kg | | 0.00015 U | 0.00015 U | 0.00014 U | 0.00014 U | 0.00014 U | 0.00015 U |
| Aroclor-1248 (PCB-1248) | mg/kg | | 0.27 | 0.000089 U | 0.031 | 0.026 | 0.000080 U | 0.000089 U |
| Aroclor-1254 (PCB-1254) | mg/kg | | 0.24 | 0.00013 U | 0.025 | 0.00013 U | 0.011 | 0.00013 U |
| Aroclor-1260 (PCB-1260) | mg/kg | | 0.00013 U | 0.00013 U | 0.00013 U | 0.012 | 0.00012 U | 0.00013 U |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-1** | **ELC-SB-1** | **ELC-SB-2** | **ELC-SB-2** | **ELC-SB-3** | **ELC-SB-3** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-1_1.5-2-062514** | **ELC-SB-1_4.5-5-062514** | **ELC-SB-2_1.5-2-062514** | **ELC-SB-2_5-5.5-062514** | **ELC-SB-3_1.5-2-062514** | **ELC-SB-3_10-10.5_062514** |
| **Sample Date:** | | | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| **Petroleum Products** | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | - | - | - |
| **General Chemistry** | | | | | | | | |
| Percent moisture | % | | 6.6 | 13 | 5.9 | 6.3 | 1.7 | 12 |
| pH | s.u. | | - | - | - | - | - | - |

Notes:

(1) PA Land Recycling Program Technical Guidance Manual - Section IV.A.4, Table 5, USEPA-PA Defaults Nonresidential Volatilization to Indoor Air Screen
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
- Not analyzed

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-5** | **ELC-SB-5** | **ELC-SB-6** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-4_1.5-2_062614** | **DUP-002_062614** | **ELC-SB-4_7-7.5_062614** | **ELC-SB-5_1.5-2_062414** | **ELC-SB-5_10-10.5_062414** | **ELC-SB-6_1.5-2_062514** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(7-7.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** |
| | | | | **(Duplicate)** | | | | |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 170 | 0.00042 U | 0.00037 U | 0.00038 U | R | 0.00071 UJ | R |
| 1,1,2,2-Tetrachloroethane | mg/kg | 2 | 0.00062 U | 0.00054 U | 0.00057 U | R | 0.0010 UJ | R |
| 1,1,2-Trichloroethane | mg/kg | 2.4 | 0.00072 U | 0.00063 U | 0.00066 U | R | 0.0012 UJ | R |
| 1,1-Dichloroethane | mg/kg | 2.7 | 0.00050 U | 0.00043 U | 0.00045 U | R | 0.00084 UJ | R |
| 1,1-Dichloroethene | mg/kg | 7.6 | 0.00074 U | 0.00064 U | 0.00067 U | R | 0.0012 UJ | R |
| 1,2,4-Trichlorobenzene | mg/kg | NOC | 0.00076 U | 0.00066 U | 0.00070 U | R | 0.0013 UJ | R |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 3.2 | 0.00065 U | 0.00056 U | 0.00059 U | R | 0.0011 UJ | R |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 0.29 | 0.00075 U | 0.00065 U | 0.00068 U | R | 0.0013 UJ | R |
| 1,2-Dichlorobenzene | mg/kg | 150 | 0.00069 U | 0.00060 U | 0.00063 U | R | 0.0012 UJ | R |
| 1,2-Dichloroethane | mg/kg | 0.83 | 0.00053 U | 0.00046 U | 0.00048 U | R | 0.00089 UJ | R |
| 1,2-Dichloroethene (total) | mg/kg | | 0.0011 U | 0.00096 U | 0.0010 U | R | 0.0019 UJ | R |
| 1,2-Dichloropropane | mg/kg | 0.88 | 0.00047 U | 0.00041 U | 0.00043 U | R | 0.00079 UJ | R |
| 1,3-Dichlorobenzene | mg/kg | NA | 0.00057 U | 0.00049 U | 0.00052 U | R | 0.00096 UJ | R |
| 1,4-Dichlorobenzene | mg/kg | 13 | 0.00055 U | 0.00048 U | 0.00050 U | R | 0.00093 UJ | R |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 14000 | 0.00076 U | 0.00066 U | 0.00070 U | R | 0.0013 UJ | R |
| 2-Hexanone | mg/kg | | 0.00060 U | 0.00052 U | 0.00055 U | R | 0.0010 UJ | R |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 120 | 0.00057 U | 0.00049 U | 0.00052 U | R | 0.00095 UJ | R |
| Acetone | mg/kg | 110000 | 0.0043 U | 0.0038 U | 0.0062 U | R | 0.0073 UJ | R |
| Benzene | mg/kg | 0.63 | 0.00059 U | 0.00051 U | 0.00053 U | R | 0.00098 UJ | R |
| Bromodichloromethane | mg/kg | 0.85 | 0.00049 U | 0.00042 U | 0.00044 U | R | 0.00082 UJ | R |
| Bromoform | mg/kg | 160 | 0.00038 U | 0.00033 U | 0.00035 U | R | 0.00064 UJ | R |
| Bromomethane (Methyl bromide) | mg/kg | 1.3 | 0.00064 U | 0.00056 U | 0.00058 U | R | 0.0011 UJ | R |
| Carbon disulfide | mg/kg | 66 | 0.00044 U | 0.00039 U | 0.00040 U | R | 0.0012 J | R |
| Carbon tetrachloride | mg/kg | 0.12 | 0.00039 U | 0.00034 U | 0.00035 U | R | 0.00065 UJ | R |
| Chlorobenzene | mg/kg | 13 | 0.00066 U | 0.00057 U | 0.00060 U | R | 0.0011 UJ | R |
| Chloroethane | mg/kg | 1.8 | 0.0013 U | 0.0012 U | 0.0012 U | R | 0.0023 UJ | R |
| Chloroform (Trichloromethane) | mg/kg | 0.074 | 0.00051 U | 0.00044 U | 0.00046 U | R | 0.00085 UJ | R |
| Chloromethane (Methyl chloride) | mg/kg | 0.64 | 0.00074 U | 0.00064 U | 0.00067 U | R | 0.0012 UJ | R |
| cis-1,2-Dichloroethene | mg/kg | 7.6 | 0.00061 U | 0.00053 U | 0.00056 U | R | 0.0010 UJ | R |
| cis-1,3-Dichloropropene | mg/kg | | 0.00059 U | 0.00051 U | 0.00054 U | R | 0.00099 UJ | R |
| Cyclohexane | mg/kg | | 0.00032 U | 0.00028 U | 0.00029 U | R | 0.00054 UJ | R |
| Dibromochloromethane | mg/kg | 2.2 | 0.00062 U | 0.00053 U | 0.00056 U | R | 0.0010 UJ | R |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 2.6 | 0.00058 U | 0.00050 U | 0.00053 U | R | 0.00097 UJ | R |
| Ethylbenzene | mg/kg | 9.5 | 0.00056 U | 0.00048 U | 0.00051 U | R | 0.00094 UJ | R |
| Isopropyl benzene | mg/kg | 360 | 0.00059 U | 0.00051 U | 0.00054 U | R | 0.00099 UJ | R |
| m&p-Xylenes | mg/kg | | 0.0013 U | 0.0011 U | 0.0012 U | R | 0.0021 UJ | R |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-5** | **ELC-SB-5** | **ELC-SB-6** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-4_1.5-2_062614** | **DUP-002_062614** | **ELC-SB-4_7-7.5_062614** | **ELC-SB-5_1.5-2_062414** | **ELC-SB-5_10-10.5_062414** | **ELC-SB-6_1.5-2_062514** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(7-7.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** |
| | | | | **(Duplicate)** | | | | |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| Methyl acetate | mg/kg | 19000 | 0.00078 U | 0.00068 U | 0.00071 U | R | 0.0013 UJ | R |
| Methyl cyclohexane | mg/kg | | 0.00063 U | 0.00055 U | 0.00057 U | R | 0.0011 UJ | R |
| Methyl tert butyl ether (MTBE) | mg/kg | 86 | 0.00065 U | 0.00056 U | 0.00059 U | R | 0.0011 UJ | R |
| Methylene chloride | mg/kg | 14 | 0.0032 U | 0.0030 U | 0.0030 U | 0.0020 J | 0.0040 J | 0.0032 J |
| o-Xylene | mg/kg | | 0.00068 U | 0.00059 U | 0.00062 U | R | 0.0011 UJ | R |
| Styrene | mg/kg | 720 | 0.00061 U | 0.00053 U | 0.00056 U | R | 0.0010 UJ | R |
| Tetrachloroethene | mg/kg | 10 | 0.00059 U | 0.00051 U | 0.00054 U | R | 0.00099 UJ | R |
| Toluene | mg/kg | 110 | 0.00063 U | 0.00055 U | 0.00058 U | R | 0.0011 UJ | R |
| trans-1,2-Dichloroethene | mg/kg | 6.4 | 0.00052 U | 0.00045 U | 0.00047 U | R | 0.00087 UJ | R |
| trans-1,3-Dichloropropene | mg/kg | | 0.00052 U | 0.00045 U | 0.00047 U | R | 0.00087 UJ | R |
| Trichloroethene | mg/kg | 2.2 | 0.00057 U | 0.00050 U | 0.00052 U | R | 0.00096 UJ | R |
| Trichlorofluoromethane (CFC-11) | mg/kg | 13 | 0.00080 U | 0.00069 U | 0.00073 U | R | 0.0013 UJ | R |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 670 | 0.00093 U | 0.00080 U | 0.00084 U | R | 0.0016 UJ | R |
| Vinyl chloride | mg/kg | 0.061 | 0.00041 U | 0.00035 U | 0.00037 U | R | 0.00068 UJ | R |
| Xylenes (total) | mg/kg | 77 | 0.0019 U | 0.0017 U | 0.0018 U | R | 0.0033 UJ | R |
| **Semi-volatile Organic Compounds** | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 28 | 0.00081 U | 0.00079 U | 0.00083 U | R | 0.0061 U | R |
| 2,4,5-Trichlorophenol | mg/kg | | 0.0040 U | 0.0039 U | 0.0041 U | R | 0.030 U | R |
| 2,4,6-Trichlorophenol | mg/kg | | 0.0056 U | 0.0055 U | 0.0058 U | R | 0.043 U | R |
| 2,4-Dichlorophenol | mg/kg | | 0.00076 U | 0.00074 U | 0.00077 U | R | 0.0057 U | R |
| 2,4-Dimethylphenol | mg/kg | | 0.0059 U | 0.0057 U | 0.0060 U | R | 0.044 U | R |
| 2,4-Dinitrophenol | mg/kg | | 0.045 U | 0.044 U | 0.046 U | R | 0.34 U | R |
| 2,4-Dinitrotoluene | mg/kg | | 0.0030 U | 0.0030 U | 0.0031 U | R | 0.023 U | R |
| 2,6-Dinitrotoluene | mg/kg | | 0.0039 U | 0.0038 U | 0.0040 U | R | 0.029 U | R |
| 2-Chloronaphthalene | mg/kg | NOC | 0.00079 U | 0.00077 U | 0.00080 U | R | 0.0059 U | R |
| 2-Chlorophenol | mg/kg | 270 | 0.0031 U | 0.0030 U | 0.0032 U | R | 0.023 U | R |
| 2-Methylnaphthalene | mg/kg | NOC | 0.0013 J | 0.0017 J | 0.00090 J | R | 0.033 J | 0.0019 J |
| 2-Methylphenol | mg/kg | NOC | 0.0026 U | 0.0026 U | 0.0027 U | R | 0.020 U | R |
| 2-Nitroaniline | mg/kg | | 0.017 U | 0.016 U | 0.017 U | R | 0.13 U | R |
| 2-Nitrophenol | mg/kg | NOC | 0.0042 U | 0.0041 U | 0.0042 U | R | 0.031 U | R |
| 3,3'-Dichlorobenzidine | mg/kg | | 0.0040 U | 0.0039 U | 0.0041 U | R | 0.030 U | R |
| 3-Nitroaniline | mg/kg | | 0.016 U | 0.015 U | 0.016 U | R | 0.12 U | R |
| 4,6-Dinitro-2-methylphenol | mg/kg | | 0.015 U | 0.015 U | 0.015 U | R | 0.11 U | R |
| 4-Bromophenyl phenyl ether | mg/kg | | 0.0033 U | 0.0032 U | 0.0034 U | R | 0.025 U | R |
| 4-Chloro-3-methylphenol | mg/kg | | 0.0035 U | 0.0034 U | 0.0035 U | R | 0.026 U | R |
| 4-Chloroaniline | mg/kg | | 0.0030 U | 0.0029 U | 0.0031 U | R | 0.023 U | R |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-5** | **ELC-SB-5** | **ELC-SB-6** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-4_1.5-2_062614** | **DUP-002_062614** | **ELC-SB-4_7-7.5_062614** | **ELC-SB-5_1.5-2_062414** | **ELC-SB-5_10-10.5_062414** | **ELC-SB-6_1.5-2_062514** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(7-7.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** |
| | | | | **(Duplicate)** | | | | |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| 4-Chlorophenyl phenyl ether | mg/kg | | 0.0042 U | 0.0041 U | 0.0043 U | R | 0.032 U | R |
| 4-Methylphenol | mg/kg | | 0.0037 U | 0.0036 U | 0.0038 U | R | 0.033 J | R |
| 4-Nitroaniline | mg/kg | | 0.015 U | 0.015 U | 0.016 U | R | 0.12 U | R |
| 4-Nitrophenol | mg/kg | | 0.014 U | 0.013 U | 0.014 U | R | 0.10 U | R |
| Acenaphthene | mg/kg | NOC | 0.00072 U | 0.00071 U | 0.0012 J | R | 0.0088 J | 0.0020 J |
| Acenaphthylene | mg/kg | NOC | 0.0033 J | 0.0024 J | 0.0039 J | R | 0.038 J | R |
| Acetophenone | mg/kg | NOC | 0.012 J | 0.0096 J | 0.013 J | R | 0.023 U | R |
| Anthracene | mg/kg | NOC | 0.0024 J | 0.0020 J | 0.0026 J | R | 0.050 J | 0.0011 J |
| Atrazine | mg/kg | | 0.0037 U | 0.0036 U | 0.0038 U | R | 0.028 U | R |
| Benzaldehyde | mg/kg | | R | R | R | R | 0.21 J | R |
| Benzo(a)anthracene | mg/kg | | 0.012 | 0.011 | 0.012 | R | 0.10 | 0.017 J |
| Benzo(a)pyrene | mg/kg | | 0.016 | 0.015 | 0.015 | 0.0022 J | 0.11 | 0.021 J |
| Benzo(b)fluoranthene | mg/kg | | 0.021 | 0.021 | 0.016 | 0.0034 J | 0.14 | 0.030 J |
| Benzo(g,h,i)perylene | mg/kg | | 0.012 | 0.010 | 0.011 | R | 0.098 | 0.020 J |
| Benzo(k)fluoranthene | mg/kg | | 0.0081 | 0.0067 J | 0.012 | R | 0.054 J | 0.015 J |
| Biphenyl (1,1-Biphenyl) | mg/kg | NOC | 0.0034 U | 0.0033 U | 0.0034 U | R | 0.025 U | R |
| bis(2-Chloroethoxy)methane | mg/kg | | 0.0025 U | 0.0024 U | 0.0025 U | R | 0.019 U | R |
| bis(2-Chloroethyl)ether | mg/kg | 7.1 | 0.0010 U | 0.00099 U | 0.0010 U | R | 0.0076 U | R |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | | 0.0087 J | 0.0059 U | 0.0062 U | 0.024 J | 0.058 J | R |
| Butyl benzylphthalate (BBP) | mg/kg | | 0.0085 J | 0.0058 J | 0.0053 U | 0.0088 J | 0.039 U | R |
| Caprolactam | mg/kg | | 0.028 U | 0.028 U | 0.029 U | R | 0.21 U | R |
| Carbazole | mg/kg | | 0.0011 J | 0.00068 U | 0.00071 U | R | 0.011 J | R |
| Chrysene | mg/kg | | 0.018 | 0.016 | 0.019 | R | 0.16 | 0.039 J |
| Dibenz(a,h)anthracene | mg/kg | | 0.0027 J | 0.00082 U | 0.00086 U | R | 0.025 J | 0.0060 J |
| Dibenzofuran | mg/kg | | 0.0037 U | 0.0036 U | 0.0038 U | R | 0.028 U | R |
| Diethyl phthalate | mg/kg | | 0.0041 U | 0.0040 U | 0.0042 U | R | 0.031 U | R |
| Dimethyl phthalate | mg/kg | | 0.0041 U | 0.0040 U | 0.0042 U | R | 0.031 U | R |
| Di-n-butylphthalate (DBP) | mg/kg | | 0.0047 U | 0.0046 U | 0.0048 U | 0.0054 J | 0.036 U | R |
| Di-n-octyl phthalate (DnOP) | mg/kg | | 0.0040 U | 0.0039 U | 0.0041 U | R | 0.030 U | R |
| Fluoranthene | mg/kg | | 0.023 | 0.021 | 0.025 | 0.0038 J | 0.22 | 0.012 J |
| Fluorene | mg/kg | NOC | 0.00099 U | 0.00097 U | 0.0015 J | R | 0.025 J | R |
| Hexachlorobenzene | mg/kg | | 0.00080 U | 0.00078 U | 0.00082 U | 0.095 J | 0.091 | R |
| Hexachlorobutadiene | mg/kg | | 0.00084 U | 0.00082 U | 0.00086 U | R | 0.0064 U | R |
| Hexachlorocyclopentadiene | mg/kg | | 0.0041 U | 0.0040 U | 0.0042 U | R | 0.031 U | R |
| Hexachloroethane | mg/kg | | 0.0027 U | 0.0026 U | 0.0028 U | R | 0.020 U | R |
| Indeno(1,2,3-cd)pyrene | mg/kg | | 0.0090 | 0.0089 | 0.0091 | R | 0.087 | 0.016 J |
| Isophorone | mg/kg | | 0.0028 U | 0.0028 U | 0.0029 U | R | 0.021 U | R |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-5** | **ELC-SB-5** | **ELC-SB-6** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-4_1.5-2_062614** | **DUP-002_062614** | **ELC-SB-4_7-7.5_062614** | **ELC-SB-5_1.5-2_062414** | **ELC-SB-5_10-10.5_062414** | **ELC-SB-6_1.5-2_062514** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(7-7.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** |
| | | | | **(Duplicate)** | | | | |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| Naphthalene | mg/kg | NOC | 0.00065 U | 0.00063 U | 0.00066 U | R | 0.065 | R |
| Nitrobenzene | mg/kg | 190 | 0.0031 U | 0.0031 U | 0.0032 U | R | 0.024 U | R |
| N-Nitrosodi-n-propylamine | mg/kg | | 0.00088 U | 0.00086 U | 0.00090 U | R | 0.0067 U | R |
| N-Nitrosodiphenylamine | mg/kg | | 0.0035 U | 0.0034 U | 0.0036 U | R | 0.026 U | R |
| Pentachlorophenol | mg/kg | | 0.0034 U | 0.0033 U | 0.0034 U | R | 0.025 U | R |
| Phenanthrene | mg/kg | NOC | 0.014 | 0.011 | 0.017 | 0.0031 J | 0.14 | 0.0092 J |
| Phenol | mg/kg | NOC | 0.00089 U | 0.00087 U | 0.00091 U | R | 0.0067 U | R |
| Pyrene | mg/kg | | 0.030 | 0.027 | 0.030 | 0.0024 J | 0.18 | 0.016 J |
| **Metals** | | | | | | | | |
| Antimony | mg/kg | | 0.20 | 0.17 J | 0.23 | 0.29 J | 1.2 J | 0.025 UJ |
| Arsenic | mg/kg | | 11 | 8.3 | 13 | 2.5 | 6.5 | 2.3 |
| Beryllium | mg/kg | | 0.54 | 0.54 | 0.52 | 2.5 | 1.9 | 0.61 J |
| Cadmium | mg/kg | | 0.13 | 0.12 | 0.14 | 0.056 J | 8.1 | 0.067 U |
| Chromium | mg/kg | | 58 J | 14 J | 12 | 1400 | 120 | 2400 |
| Copper | mg/kg | | 29 | 31 | 46 | 34 J | 180 J | 13 J |
| Lead | mg/kg | | 30 | 22 | 24 | 8.0 | 240 | 4.5 |
| Mercury | mg/kg | | 0.072 | 0.030 J | 0.077 | 0.012 U | 0.77 | 0.011 U |
| Nickel | mg/kg | | 12 | 13 | 12 | 13 | 56 | 20 J |
| Selenium | mg/kg | | 0.43 J | 0.34 J | 0.38 J | 1.1 J | 2.2 J | 0.48 U |
| Silver | mg/kg | | 0.18 | 0.019 J | 0.011 J | 0.021 U | 1.5 | 0.037 U |
| Thallium | mg/kg | | 0.094 J | 0.098 J | 0.092 J | 0.058 J | 0.29 J | 0.019 U |
| Zinc | mg/kg | | 63 | 45 | 49 | 56 J | 1900 J | 25 |
| **PCBs** | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | | 0.00014 U | 0.00014 U | 0.00014 U | 0.00013 U | 0.00021 U | 0.00013 U |
| Aroclor-1221 (PCB-1221) | mg/kg | NA | 0.00018 U | 0.00017 U | 0.00018 U | 0.00017 U | 0.00027 U | 0.00017 U |
| Aroclor-1232 (PCB-1232) | mg/kg | | 0.00016 U | 0.00016 U | 0.00017 U | 0.00015 U | 0.00024 U | 0.00015 U |
| Aroclor-1242 (PCB-1242) | mg/kg | | 0.00015 U | 0.00015 U | 0.00016 U | 0.00015 U | 0.00023 U | 0.00014 U |
| Aroclor-1248 (PCB-1248) | mg/kg | | 0.000088 U | 0.000086 U | 0.000092 U | 0.000085 U | 0.00014 U | 0.0013 |
| Aroclor-1254 (PCB-1254) | mg/kg | | 0.00013 U | 0.00013 U | 0.00014 U | 0.0016 | 0.11 | 0.00012 U |
| Aroclor-1260 (PCB-1260) | mg/kg | | 0.00013 U | 0.0017 | 0.0018 | 0.00013 U | 0.00020 U | 0.0025 |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-4** | **ELC-SB-5** | **ELC-SB-5** | **ELC-SB-6** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-4_1.5-2_062614** | **DUP-002_062614** | **ELC-SB-4_7-7.5_062614** | **ELC-SB-5_1.5-2_062414** | **ELC-SB-5_10-10.5_062414** | **ELC-SB-6_1.5-2_062514** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(1.5-2) ft BGS** | **(7-7.5) ft BGS** | **(1.5-2) ft BGS** | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** |
| | | | | **(Duplicate)** | | | | |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| **Petroleum Products** | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | - | - | - |
| **General Chemistry** | | | | | | | | |
| Percent moisture | % | | 11 | 9.9 | 14 | 8.2 | 42 | 4.4 |
| pH | s.u. | | - | - | - | - | - | - |

Notes:

(1) PA Land Recycling Program Technical Guidance Manual - Section IV.A.4, Table 5, USEPA Defaults Nonresidential Volatilization to Indoor Air Screen
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
- Not analyzed

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-8** | **ELC-SB-9** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_10-10.5_062514** | **ELC-SB-7_1.5-2_062414** | **ELC-SB-7_6.5-7_062414** | **ELC-SB-8_1.5-2-062514** | **ELC-SB-8_3-3.5-062514** | **ELC-SB-9_0.5-1_062614** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** | **(6.5-7) ft BGS** | **(1.5-2) ft BGS** | **(3-3.5) ft BGS** | **(0.5-1) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 170 | 0.00046 U | 0.00040 U | 0.00037 U | 0.00039 U | 0.00035 U | 0.00037 U |
| 1,1,2,2-Tetrachloroethane | mg/kg | 2 | 0.00068 U | 0.00059 U | 0.00055 U | 0.00058 U | 0.00052 U | 0.00055 U |
| 1,1,2-Trichloroethane | mg/kg | 2.4 | 0.00079 U | 0.00069 U | 0.00064 U | 0.00067 U | 0.00061 U | 0.00063 U |
| 1,1-Dichloroethane | mg/kg | 2.7 | 0.00054 U | 0.00048 U | 0.00044 U | 0.00047 U | 0.00042 U | 0.00044 U |
| 1,1-Dichloroethene | mg/kg | 7.6 | 0.00080 U | 0.00070 U | 0.00065 U | 0.00069 U | 0.00062 U | 0.00065 U |
| 1,2,4-Trichlorobenzene | mg/kg | NOC | 0.00083 U | 0.00073 U | 0.00068 U | 0.00071 U | 0.00064 U | 0.00067 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 3.2 | 0.00071 U | 0.00062 U | 0.00057 U | 0.00061 U | 0.00055 U | 0.00057 U |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 0.29 | 0.00082 U | 0.00071 U | 0.00066 U | 0.00070 U | 0.00063 U | 0.00066 U |
| 1,2-Dichlorobenzene | mg/kg | 150 | 0.00075 U | 0.00066 U | 0.00061 U | 0.00065 U | 0.00058 U | 0.00061 U |
| 1,2-Dichloroethane | mg/kg | 0.83 | 0.00058 U | 0.00051 U | 0.00047 U | 0.00050 U | 0.00045 U | 0.00047 U |
| 1,2-Dichloroethene (total) | mg/kg | | 0.0012 U | 0.0011 U | 0.00098 U | 0.0010 U | 0.013 | 0.00098 U |
| 1,2-Dichloropropane | mg/kg | 0.88 | 0.00051 U | 0.00045 U | 0.00042 U | 0.00044 U | 0.00040 U | 0.00041 U |
| 1,3-Dichlorobenzene | mg/kg | NA | 0.00062 U | 0.00054 U | 0.00050 U | 0.00053 U | 0.00048 U | 0.00050 U |
| 1,4-Dichlorobenzene | mg/kg | 13 | 0.00060 U | 0.00053 U | 0.00049 U | 0.00052 U | 0.00046 U | 0.00049 U |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 14000 | 0.00083 U | 0.00073 U | 0.00067 U | 0.00071 U | 0.00064 U | 0.00067 U |
| 2-Hexanone | mg/kg | | 0.00065 U | 0.00057 U | 0.00053 U | 0.00056 U | 0.00050 U | 0.00053 U |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 120 | 0.00062 U | 0.00054 U | 0.00050 U | 0.00053 U | 0.00048 U | 0.00050 U |
| Acetone | mg/kg | 110000 | 0.0047 U | 0.0049 J | 0.0038 U | 0.0040 U | 0.0036 U | 0.0038 U |
| Benzene | mg/kg | 0.63 | 0.00064 U | 0.00056 U | 0.00052 U | 0.00055 U | 0.00049 U | 0.00051 U |
| Bromodichloromethane | mg/kg | 0.85 | 0.00053 U | 0.00046 U | 0.00043 U | 0.00045 U | 0.00041 U | 0.00043 U |
| Bromoform | mg/kg | 160 | 0.00042 U | 0.00037 U | 0.00034 U | 0.00036 U | 0.00032 U | 0.00034 U |
| Bromomethane (Methyl bromide) | mg/kg | 1.3 | 0.00070 U | 0.00061 U | 0.00057 U | 0.00060 U | 0.00054 U | 0.00056 U |
| Carbon disulfide | mg/kg | 66 | 0.00048 U | 0.00042 U | 0.00039 U | 0.00041 U | 0.00065 J | 0.00039 U |
| Carbon tetrachloride | mg/kg | 0.12 | 0.00042 U | 0.00037 U | 0.00034 U | 0.00036 U | 0.00033 U | 0.00034 U |
| Chlorobenzene | mg/kg | 13 | 0.00072 U | 0.00063 U | 0.00058 U | 0.00061 U | 0.00055 U | 0.00058 U |
| Chloroethane | mg/kg | 1.8 | 0.0015 U | 0.0013 U | 0.0012 U | 0.0013 U | 0.0011 U | 0.0012 U |
| Chloroform (Trichloromethane) | mg/kg | 0.074 | 0.00055 U | 0.00048 U | 0.00045 U | 0.00047 U | 0.00043 U | 0.00045 U |
| Chloromethane (Methyl chloride) | mg/kg | 0.64 | 0.00081 U | 0.00071 U | 0.00065 U | 0.00069 U | 0.00062 U | 0.00065 U |
| cis-1,2-Dichloroethene | mg/kg | 7.6 | 0.00067 U | 0.00058 U | 0.00054 U | 0.00057 U | 0.013 | 0.00054 U |
| cis-1,3-Dichloropropene | mg/kg | | 0.00064 U | 0.00056 U | 0.00052 U | 0.00055 U | 0.00049 U | 0.00052 U |
| Cyclohexane | mg/kg | | 0.00035 U | 0.00031 U | 0.00028 U | 0.00030 U | 0.00027 U | 0.00028 U |
| Dibromochloromethane | mg/kg | 2.2 | 0.00067 U | 0.00059 U | 0.00054 U | 0.00057 U | 0.00052 U | 0.00054 U |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 2.6 | 0.00063 U | 0.00055 U | 0.00051 U | 0.00054 U | 0.00049 U | 0.00051 U |
| Ethylbenzene | mg/kg | 9.5 | 0.00061 U | 0.00053 U | 0.00049 U | 0.00052 U | 0.00047 U | 0.00049 U |
| Isopropyl benzene | mg/kg | 360 | 0.00064 U | 0.00056 U | 0.00052 U | 0.00055 U | 0.00050 U | 0.00052 U |
| m&p-Xylenes | mg/kg | | 0.0014 U | 0.0012 U | 0.0011 U | 0.0012 U | 0.0011 U | 0.0011 U |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-8** | **ELC-SB-9** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_10-10.5_062514** | **ELC-SB-7_1.5-2_062414** | **ELC-SB-7_6.5-7_062414** | **ELC-SB-8_1.5-2-062514** | **ELC-SB-8_3-3.5-062514** | **ELC-SB-9_0.5-1_062614** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** | **(6.5-7) ft BGS** | **(1.5-2) ft BGS** | **(3-3.5) ft BGS** | **(0.5-1) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| Methyl acetate | mg/kg | 19000 | 0.00085 U | 0.00075 U | 0.00069 U | 0.00073 U | 0.00066 U | 0.00069 U |
| Methyl cyclohexane | mg/kg | | 0.00069 U | 0.00060 U | 0.00056 U | 0.00059 U | 0.00053 U | 0.00055 U |
| Methyl tert butyl ether (MTBE) | mg/kg | 86 | 0.00071 U | 0.00062 U | 0.00057 U | 0.00061 U | 0.00055 U | 0.00057 U |
| Methylene chloride | mg/kg | 14 | 0.0017 U | 0.0019 J | 0.0016 J | 0.0022 U | 0.0029 U | 0.0039 J |
| o-Xylene | mg/kg | | 0.00074 U | 0.00065 U | 0.00060 U | 0.00063 U | 0.00057 U | 0.00059 U |
| Styrene | mg/kg | 720 | 0.00067 U | 0.00058 U | 0.00054 U | 0.00057 U | 0.00051 U | 0.00054 U |
| Tetrachloroethene | mg/kg | 10 | 0.00064 U | 0.00056 U | 0.00052 U | 0.00055 U | 0.018 | 0.00052 U |
| Toluene | mg/kg | 110 | 0.00069 U | 0.00060 U | 0.00056 U | 0.00059 U | 0.00053 U | 0.00056 U |
| trans-1,2-Dichloroethene | mg/kg | 6.4 | 0.00056 U | 0.00049 U | 0.00046 U | 0.00048 U | 0.00043 U | 0.00045 U |
| trans-1,3-Dichloropropene | mg/kg | | 0.00057 U | 0.00049 U | 0.00046 U | 0.00048 U | 0.00044 U | 0.00046 U |
| Trichloroethene | mg/kg | 2.2 | 0.00062 U | 0.00054 U | 0.00050 U | 0.00053 U | 0.0019 J | 0.00050 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 13 | 0.00087 U | 0.00076 U | 0.00070 U | 0.00074 U | 0.00067 U | 0.00070 U |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 670 | 0.0010 U | 0.00088 U | 0.00082 U | 0.00086 U | 0.00078 U | 0.00081 U |
| Vinyl chloride | mg/kg | 0.061 | 0.00044 U | 0.00039 U | 0.00036 U | 0.00038 U | 0.00034 U | 0.00036 U |
| Xylenes (total) | mg/kg | 77 | 0.0021 U | 0.0019 U | 0.0017 U | 0.0018 U | 0.0016 U | 0.0017 U |
| **Semi-volatile Organic Compounds** | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 28 | 0.00083 U | 0.0038 U | 0.00081 U | 0.0041 U | 0.0079 U | 0.0038 U |
| 2,4,5-Trichlorophenol | mg/kg | | 0.0041 U | 0.019 U | 0.0040 U | 0.020 U | 0.039 U | 0.019 U |
| 2,4,6-Trichlorophenol | mg/kg | | 0.0057 U | 0.026 U | 0.0056 U | 0.029 U | 0.055 U | 0.027 U |
| 2,4-Dichlorophenol | mg/kg | | 0.00077 U | 0.0035 U | 0.00075 U | 0.0038 U | 0.0074 U | 0.0036 U |
| 2,4-Dimethylphenol | mg/kg | | 0.0060 U | 0.027 U | 0.0059 U | 0.030 U | 0.057 U | 0.028 U |
| 2,4-Dinitrophenol | mg/kg | | 0.046 U | 0.21 U | 0.045 U | 0.23 U | 0.44 U | R |
| 2,4-Dinitrotoluene | mg/kg | | 0.0031 U | 0.014 U | 0.0030 U | 0.015 U | 0.030 U | 0.014 U |
| 2,6-Dinitrotoluene | mg/kg | | 0.0040 U | 0.018 U | 0.0039 U | 0.020 U | 0.038 U | 0.018 U |
| 2-Chloronaphthalene | mg/kg | NOC | 0.00080 U | 0.0037 U | 0.00078 U | 0.0040 U | 0.0077 U | 0.0037 U |
| 2-Chlorophenol | mg/kg | 270 | 0.0031 U | 0.014 U | 0.0031 U | 0.016 U | 0.030 U | 0.014 U |
| 2-Methylnaphthalene | mg/kg | NOC | 0.00069 U | 0.014 J | 0.00068 U | 0.018 J | 0.027 J | 0.0032 U |
| 2-Methylphenol | mg/kg | NOC | 0.0027 U | 0.012 U | 0.0026 U | 0.013 U | 0.026 U | 0.012 U |
| 2-Nitroaniline | mg/kg | | 0.017 U | 0.079 U | 0.017 U | 0.086 U | 0.16 U | 0.079 U |
| 2-Nitrophenol | mg/kg | NOC | 0.0042 U | 0.019 U | 0.0041 U | 0.021 U | 0.040 U | 0.020 U |
| 3,3'-Dichlorobenzidine | mg/kg | | 0.0040 U | 0.019 U | 0.0040 U | 0.020 U | 0.039 U | 0.019 UJ |
| 3-Nitroaniline | mg/kg | | 0.016 U | 0.072 U | 0.015 U | 0.079 U | 0.15 U | 0.073 U |
| 4,6-Dinitro-2-methylphenol | mg/kg | | 0.015 U | 0.070 U | 0.015 U | 0.077 U | 0.15 U | 0.071 U |
| 4-Bromophenyl phenyl ether | mg/kg | | 0.0033 U | 0.015 U | 0.0033 U | 0.017 U | 0.032 U | 0.015 U |
| 4-Chloro-3-methylphenol | mg/kg | | 0.0035 U | 0.016 U | 0.0035 U | 0.018 U | 0.034 U | 0.016 U |
| 4-Chloroaniline | mg/kg | | 0.0031 U | 0.014 U | 0.0030 U | 0.015 U | 0.029 U | 0.014 U |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-8** | **ELC-SB-9** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_10-10.5_062514** | **ELC-SB-7_1.5-2_062414** | **ELC-SB-7_6.5-7_062414** | **ELC-SB-8_1.5-2-062514** | **ELC-SB-8_3-3.5-062514** | **ELC-SB-9_0.5-1_062614** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** | **(6.5-7) ft BGS** | **(1.5-2) ft BGS** | **(3-3.5) ft BGS** | **(0.5-1) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| 4-Chlorophenyl phenyl ether | mg/kg | | 0.0043 U | 0.019 U | 0.0042 U | 0.021 U | 0.041 U | 0.020 U |
| 4-Methylphenol | mg/kg | | 0.0037 U | 0.017 U | 0.0037 U | 0.019 U | 0.036 U | 0.017 U |
| 4-Nitroaniline | mg/kg | | 0.016 U | 0.071 U | 0.015 U | 0.078 U | 0.15 U | 0.072 U |
| 4-Nitrophenol | mg/kg | | 0.014 U | 0.064 U | 0.014 U | 0.070 U | 0.13 U | 0.065 U |
| Acenaphthene | mg/kg | NOC | 0.00074 U | 0.0065 J | 0.00072 U | 0.0057 J | 0.055 J | 0.0034 U |
| Acenaphthylene | mg/kg | NOC | 0.00088 U | 0.095 | 0.00086 U | 0.011 J | 0.050 J | 0.0041 U |
| Acetophenone | mg/kg | NOC | 0.0035 J | 0.014 U | 0.0031 U | 0.016 U | 0.030 U | 0.015 U |
| Anthracene | mg/kg | NOC | 0.00075 U | 0.054 | 0.00074 U | 0.022 J | 0.078 | 0.0036 J |
| Atrazine | mg/kg | | 0.0037 U | 0.017 U | 0.0037 U | 0.019 U | 0.036 U | 0.017 U |
| Benzaldehyde | mg/kg | | R | R | 0.028 J | R | R | R |
| Benzo(a)anthracene | mg/kg | | 0.00096 U | 0.23 | 0.00094 U | 0.069 | 0.34 | 0.014 J |
| Benzo(a)pyrene | mg/kg | | 0.00077 U | 0.24 | 0.00075 U | 0.084 | 0.39 | 0.018 J |
| Benzo(b)fluoranthene | mg/kg | | 0.0012 U | 0.28 | 0.0012 U | 0.13 | 0.49 | 0.031 J |
| Benzo(g,h,i)perylene | mg/kg | | 0.00076 U | 0.21 | 0.00075 U | 0.061 | 0.39 | 0.017 J |
| Benzo(k)fluoranthene | mg/kg | | 0.0015 U | 0.11 | 0.0015 U | 0.042 | 0.15 | 0.010 J |
| Biphenyl (1,1-Biphenyl) | mg/kg | NOC | 0.0034 U | 0.016 U | 0.0034 U | 0.017 U | 0.033 U | 0.016 U |
| bis(2-Chloroethoxy)methane | mg/kg | | 0.0025 U | 0.012 U | 0.0025 U | 0.013 U | 0.024 U | 0.012 U |
| bis(2-Chloroethyl)ether | mg/kg | 7.1 | 0.0010 U | 0.0047 U | 0.0010 U | 0.0051 U | 0.0098 U | 0.0048 U |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | | 0.0062 U | 0.029 J | 0.018 J | 0.031 U | 0.059 U | 0.029 U |
| Butyl benzylphthalate (BBP) | mg/kg | | 0.0052 U | 0.024 U | 0.0081 J | 0.026 U | 0.050 U | 0.024 U |
| Caprolactam | mg/kg | | 0.029 U | 0.13 U | 0.028 U | 0.14 U | 0.28 U | R |
| Carbazole | mg/kg | | 0.00071 U | 0.020 J | 0.00069 U | 0.0035 U | 0.027 J | 0.0033 U |
| Chrysene | mg/kg | | 0.00091 U | 0.24 | 0.00090 U | 0.097 | 0.45 | 0.016 J |
| Dibenz(a,h)anthracene | mg/kg | | 0.00085 U | 0.056 | 0.00084 U | 0.022 J | 0.070 J | 0.0039 U |
| Dibenzofuran | mg/kg | | 0.0038 U | 0.024 J | 0.0037 U | 0.019 U | 0.036 U | 0.017 U |
| Diethyl phthalate | mg/kg | | 0.0042 U | 0.019 U | 0.0041 U | 0.021 U | 0.040 U | 0.019 U |
| Dimethyl phthalate | mg/kg | | 0.0042 U | 0.019 U | 0.0041 U | 0.021 U | 0.040 U | 0.019 U |
| Di-n-butylphthalate (DBP) | mg/kg | | 0.0048 U | 0.022 U | 0.0067 J | 0.024 U | 0.046 U | 0.022 U |
| Di-n-octyl phthalate (DnOP) | mg/kg | | 0.0040 U | 0.018 U | 0.0040 U | 0.020 U | 0.039 U | 0.019 U |
| Fluoranthene | mg/kg | | 0.00082 U | 0.41 | 0.0017 J | 0.088 | 0.55 | 0.018 J |
| Fluorene | mg/kg | NOC | 0.0010 U | 0.019 J | 0.00099 U | 0.0050 U | 0.045 J | 0.0047 U |
| Hexachlorobenzene | mg/kg | | 0.00082 U | 0.0037 U | 0.046 | 0.0041 U | 0.0078 U | 0.0038 U |
| Hexachlorobutadiene | mg/kg | | 0.00086 U | 0.0039 U | 0.00084 U | 0.0043 U | 0.0082 U | 0.0040 U |
| Hexachlorocyclopentadiene | mg/kg | | 0.0041 U | 0.019 U | 0.0041 U | 0.021 U | 0.040 U | 0.019 U |
| Hexachloroethane | mg/kg | | 0.0028 U | 0.013 U | 0.0027 U | 0.014 U | 0.026 U | 0.013 U |
| Indeno(1,2,3-cd)pyrene | mg/kg | | 0.00079 U | 0.19 | 0.00077 U | 0.056 | 0.26 | 0.015 J |
| Isophorone | mg/kg | | 0.0029 U | 0.013 U | 0.0028 U | 0.014 U | 0.028 U | 0.013 U |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-8** | **ELC-SB-9** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_10-10.5_062514** | **ELC-SB-7_1.5-2_062414** | **ELC-SB-7_6.5-7_062414** | **ELC-SB-8_1.5-2-062514** | **ELC-SB-8_3-3.5-062514** | **ELC-SB-9_0.5-1_062614** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** | **(6.5-7) ft BGS** | **(1.5-2) ft BGS** | **(3-3.5) ft BGS** | **(0.5-1) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| Naphthalene | mg/kg | NOC | 0.00066 U | 0.055 | 0.00065 U | 0.025 J | 0.054 J | 0.0031 U |
| Nitrobenzene | mg/kg | 190 | 0.0032 U | 0.015 U | 0.0031 U | 0.016 U | 0.031 U | 0.015 U |
| N-Nitrosodi-n-propylamine | mg/kg | | 0.00090 U | 0.0041 U | 0.00088 U | 0.0045 U | 0.0086 U | 0.0042 U |
| N-Nitrosodiphenylamine | mg/kg | | 0.0035 U | 0.016 U | 0.0035 U | 0.018 U | 0.034 U | 0.016 U |
| Pentachlorophenol | mg/kg | | 0.0034 U | 0.016 U | 0.0034 U | 0.017 U | 0.033 U | 0.016 U |
| Phenanthrene | mg/kg | NOC | 0.0012 U | 0.19 | 0.0012 U | 0.061 | 0.30 | 0.0089 J |
| Phenol | mg/kg | NOC | 0.00090 U | 0.0041 U | 0.0063 J | 0.0045 U | 0.0087 U | 0.0042 U |
| Pyrene | mg/kg | | 0.00077 U | 0.25 | 0.0011 J | 0.097 | 0.56 | 0.020 J |
| **Metals** | | | | | | | | |
| Antimony | mg/kg | | 0.13 J | 0.18 J | 0.12 J | 0.30 J | 20 J | 0.12 J |
| Arsenic | mg/kg | | 4.7 | 5.8 | 5.6 | 3.9 | 6.3 | 5.3 |
| Beryllium | mg/kg | | 0.31 | 0.62 | 0.33 | 0.54 | 2.2 | 0.39 |
| Cadmium | mg/kg | | 0.095 J | 0.17 | 0.040 J | 0.30 | 0.55 J | 0.10 |
| Chromium | mg/kg | | 8.6 | 87 | 8.6 | 350 | 580 | 42 |
| Copper | mg/kg | | 10 J | 14 J | 9.3 J | 9.6 J | 3200 J | 13 |
| Lead | mg/kg | | 7.3 | 17 | 7.8 | 41 | 500 | 14 |
| Mercury | mg/kg | | 0.012 U | 0.011 U | 0.012 U | 0.029 J | 0.014 J | 0.012 J |
| Nickel | mg/kg | | 14 J | 13 | 14 | 8.7 J | 36 J | 13 |
| Selenium | mg/kg | | 0.15 J | 0.65 J | 0.18 J | 0.25 J | 1.9 J | 0.21 J |
| Silver | mg/kg | | 0.0041 U | 0.018 J | 0.0065 J | 0.026 J | 0.98 | 0.0037 U |
| Thallium | mg/kg | | 0.046 J | 0.055 | 0.041 J | 0.085 J | 0.052 J | 0.053 J |
| Zinc | mg/kg | | 31 | 54 J | 33 J | 90 | 160 | 39 |
| **PCBs** | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | | 0.00014 U | 0.0026 U | 0.00014 U | 0.00014 U | 0.0014 U | 0.00066 U |
| Aroclor-1221 (PCB-1221) | mg/kg | NA | 0.00018 U | 0.0033 U | 0.00018 U | 0.00018 U | 0.0017 U | 0.00085 U |
| Aroclor-1232 (PCB-1232) | mg/kg | | 0.00016 U | 0.0030 U | 0.00016 U | 0.00016 U | 0.0016 U | 0.00076 U |
| Aroclor-1242 (PCB-1242) | mg/kg | | 0.00015 U | 0.0029 U | 0.00015 U | 0.00016 U | 0.0015 U | 0.00073 U |
| Aroclor-1248 (PCB-1248) | mg/kg | | 0.00039 J | 0.0017 U | 0.000088 U | 0.016 | 0.00086 U | 0.00042 U |
| Aroclor-1254 (PCB-1254) | mg/kg | | 0.00014 U | 1.2 | 0.0019 | 0.0080 | 0.34 | 0.074 |
| Aroclor-1260 (PCB-1260) | mg/kg | | 0.00027 J | 1.2 | 0.00013 U | 0.00014 U | 0.0013 U | 0.00063 U |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-6** | **ELC-SB-7** | **ELC-SB-7** | **ELC-SB-8** | **ELC-SB-8** | **ELC-SB-9** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-6_10-10.5_062514** | **ELC-SB-7_1.5-2_062414** | **ELC-SB-7_6.5-7_062414** | **ELC-SB-8_1.5-2-062514** | **ELC-SB-8_3-3.5-062514** | **ELC-SB-9_0.5-1_062614** |
| **Sample Date:** | | | **6/25/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(10-10.5) ft BGS** | **(1.5-2) ft BGS** | **(6.5-7) ft BGS** | **(1.5-2) ft BGS** | **(3-3.5) ft BGS** | **(0.5-1) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| **Petroleum Products** | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | - | - | - |
| **General Chemistry** | | | | | | | | |
| Percent moisture | % | | 13 | 5.5 | 12 | 13 | 9.1 | 6.4 |
| pH | s.u. | | - | - | - | - | - | - |

Notes:

(1) PA Land Recycling Program Technical Guidance Manual - Section IV.A.4, Table 5, USEPA Defaults Nonresidential Volatilization to Indoor Air Screen
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
- Not analyzed

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-10** | **ELC-SB-11** | **ELC-SB-11** | **ELC-SB-12** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-9_5-5.5_062614** | **ELC-SB-10_1.5-2_062414** | **ELC-SB-10_6-6.5_062414** | **ELC-SB-11_1.5-2-062514** | **ELC-SB-11_5-5.5-062514** | **ELC-SB-12_1.5-2_062614** |
| **Sample Date:** | | | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(6-6.5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 170 | 0.00035 U | 0.00039 U | 0.00036 UJ | 0.00037 U | 0.00040 U | 0.00038 U |
| 1,1,2,2-Tetrachloroethane | mg/kg | 2 | 0.00052 U | 0.00057 U | 0.00054 UJ | 0.00055 U | 0.00059 U | 0.00056 U |
| 1,1,2-Trichloroethane | mg/kg | 2.4 | 0.00060 U | 0.00066 U | 0.00062 UJ | 0.00064 U | 0.00069 U | 0.00065 U |
| 1,1-Dichloroethane | mg/kg | 2.7 | 0.00042 U | 0.00046 U | 0.00043 UJ | 0.00044 U | 0.00048 U | 0.00045 U |
| 1,1-Dichloroethene | mg/kg | 7.6 | 0.00062 U | 0.00067 U | 0.00063 UJ | 0.00065 U | 0.00070 U | 0.00066 U |
| 1,2,4-Trichlorobenzene | mg/kg | NOC | 0.00064 U | 0.00070 U | 0.00066 UJ | 0.00068 U | 0.00073 U | 0.00069 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 3.2 | 0.00054 U | 0.00059 U | 0.00056 UJ | 0.00057 U | 0.00062 U | 0.00058 U |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 0.29 | 0.00063 U | 0.00068 U | 0.00064 UJ | 0.00066 U | 0.00071 U | 0.00067 U |
| 1,2-Dichlorobenzene | mg/kg | 150 | 0.00058 U | 0.00063 U | 0.00060 UJ | 0.00061 U | 0.00066 U | 0.00062 U |
| 1,2-Dichloroethane | mg/kg | 0.83 | 0.00045 U | 0.00049 U | 0.00046 UJ | 0.00047 U | 0.00051 U | 0.00048 U |
| 1,2-Dichloroethene (total) | mg/kg | | 0.00093 U | 0.0010 U | 0.00096 UJ | 0.00098 U | 0.0011 U | 0.0010 U |
| 1,2-Dichloropropane | mg/kg | 0.88 | 0.00040 U | 0.00043 U | 0.00041 UJ | 0.00042 U | 0.00045 U | 0.00042 U |
| 1,3-Dichlorobenzene | mg/kg | NA | 0.00048 U | 0.00052 U | 0.00049 UJ | 0.00050 U | 0.00054 U | 0.00051 U |
| 1,4-Dichlorobenzene | mg/kg | 13 | 0.00046 U | 0.00050 U | 0.00048 UJ | 0.00049 U | 0.00053 U | 0.00050 U |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 14000 | 0.00064 U | 0.00070 U | 0.00066 UJ | 0.00068 U | 0.00073 U | 0.00069 U |
| 2-Hexanone | mg/kg | | 0.00050 U | 0.00055 U | 0.00052 UJ | 0.00053 U | 0.00057 U | 0.00054 U |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 120 | 0.00047 U | 0.00052 U | 0.00049 UJ | 0.00050 U | 0.00054 U | 0.00051 U |
| Acetone | mg/kg | 110000 | 0.0036 U | 0.0040 U | 0.0037 UJ | 0.0038 U | 0.0047 U | 0.0039 U |
| Benzene | mg/kg | 0.63 | 0.00049 U | 0.00054 U | 0.00050 UJ | 0.00052 U | 0.00056 U | 0.00053 U |
| Bromodichloromethane | mg/kg | 0.85 | 0.00041 U | 0.00044 U | 0.00042 UJ | 0.00043 U | 0.00046 U | 0.00044 U |
| Bromoform | mg/kg | 160 | 0.00032 U | 0.00035 U | 0.00033 UJ | 0.00034 U | 0.00037 U | 0.00035 U |
| Bromomethane (Methyl bromide) | mg/kg | 1.3 | 0.00054 U | 0.00059 U | 0.00055 UJ | 0.00057 U | 0.00061 U | 0.00058 U |
| Carbon disulfide | mg/kg | 66 | 0.00070 J | 0.00041 U | 0.00038 J | 0.00039 U | 0.00042 U | 0.00040 U |
| Carbon tetrachloride | mg/kg | 0.12 | 0.00032 U | 0.00035 U | 0.00033 UJ | 0.00034 U | 0.00037 U | 0.00035 U |
| Chlorobenzene | mg/kg | 13 | 0.00055 U | 0.00060 U | 0.00057 UJ | 0.00058 U | 0.00063 U | 0.00059 U |
| Chloroethane | mg/kg | 1.8 | 0.0011 U | 0.0012 U | 0.0012 UJ | 0.0012 U | 0.0013 U | 0.0012 U |
| Chloroform (Trichloromethane) | mg/kg | 0.074 | 0.00043 U | 0.00046 U | 0.00044 UJ | 0.00045 U | 0.00048 U | 0.00046 U |
| Chloromethane (Methyl chloride) | mg/kg | 0.64 | 0.00062 U | 0.00068 U | 0.00064 UJ | 0.00065 U | 0.00070 U | 0.00067 U |
| cis-1,2-Dichloroethene | mg/kg | 7.6 | 0.00051 U | 0.00056 U | 0.00052 UJ | 0.00054 U | 0.00058 U | 0.00055 U |
| cis-1,3-Dichloropropene | mg/kg | | 0.00049 U | 0.00054 U | 0.00051 UJ | 0.00052 U | 0.00056 U | 0.00053 U |
| Cyclohexane | mg/kg | | 0.00093 J | 0.00029 U | 0.00028 UJ | 0.00028 U | 0.00031 U | 0.00029 U |
| Dibromochloromethane | mg/kg | 2.2 | 0.00052 U | 0.00056 U | 0.00053 UJ | 0.00054 U | 0.00059 U | 0.00055 U |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 2.6 | 0.00048 U | 0.00053 U | 0.00050 UJ | 0.00051 U | 0.00055 U | 0.00052 U |
| Ethylbenzene | mg/kg | 9.5 | 0.0026 J | 0.00051 U | 0.00048 UJ | 0.00049 U | 0.00053 U | 0.00050 U |
| Isopropyl benzene | mg/kg | 360 | 0.0029 J | 0.00054 U | 0.00051 UJ | 0.00052 U | 0.00056 U | 0.00053 U |
| m&p-Xylenes | mg/kg | | 0.0059 J | 0.0012 U | 0.0011 UJ | 0.0011 U | 0.0012 U | 0.0011 U |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-10** | **ELC-SB-11** | **ELC-SB-11** | **ELC-SB-12** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-9_5-5.5_062614** | **ELC-SB-10_1.5-2_062414** | **ELC-SB-10_6-6.5_062414** | **ELC-SB-11_1.5-2-062514** | **ELC-SB-11_5-5.5-062514** | **ELC-SB-12_1.5-2_062614** |
| **Sample Date:** | | | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(6-6.5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| Methyl acetate | mg/kg | 19000 | 0.00066 U | 0.00071 U | 0.00067 UJ | 0.00069 U | 0.00075 U | 0.00070 U |
| Methyl cyclohexane | mg/kg | | 0.0080 | 0.00057 U | 0.00054 UJ | 0.00056 U | 0.00060 U | 0.00057 U |
| Methyl tert butyl ether (MTBE) | mg/kg | 86 | 0.00054 U | 0.00059 U | 0.00056 UJ | 0.00057 U | 0.00062 U | 0.00058 U |
| Methylene chloride | mg/kg | 14 | 0.0035 J | 0.0017 J | 0.0018 UJ | 0.0020 U | 0.0020 U | 0.0017 U |
| o-Xylene | mg/kg | | 0.0082 | 0.00062 U | 0.00058 UJ | 0.00060 U | 0.00064 U | 0.00061 U |
| Styrene | mg/kg | 720 | 0.00051 U | 0.00056 U | 0.00053 UJ | 0.00054 U | 0.00058 U | 0.00055 U |
| Tetrachloroethene | mg/kg | 10 | 0.00050 U | 0.00054 U | 0.00051 UJ | 0.00052 U | 0.00056 U | 0.00053 U |
| Toluene | mg/kg | 110 | 0.00053 U | 0.00058 U | 0.00054 UJ | 0.00056 U | 0.00060 U | 0.00057 U |
| trans-1,2-Dichloroethene | mg/kg | 6.4 | 0.00043 U | 0.00047 U | 0.00044 UJ | 0.00046 U | 0.00049 U | 0.00047 U |
| trans-1,3-Dichloropropene | mg/kg | | 0.00043 U | 0.00047 U | 0.00045 UJ | 0.00046 U | 0.00049 U | 0.00047 U |
| Trichloroethene | mg/kg | 2.2 | 0.00048 U | 0.00052 U | 0.00049 UJ | 0.00050 U | 0.00054 U | 0.00051 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 13 | 0.00067 U | 0.00073 U | 0.00069 UJ | 0.00070 U | 0.00076 U | 0.00072 U |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 670 | 0.00078 U | 0.00085 U | 0.00080 UJ | 0.00082 U | 0.00088 U | 0.00083 U |
| Vinyl chloride | mg/kg | 0.061 | 0.00034 U | 0.00037 U | 0.00035 UJ | 0.00036 U | 0.00039 U | 0.00037 U |
| Xylenes (total) | mg/kg | 77 | 0.014 | 0.0018 U | 0.0017 UJ | 0.0017 U | 0.0019 U | 0.0018 U |
| **Semi-volatile Organic Compounds** | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 28 | 0.0040 U | R | 0.00078 UJ | 0.00075 UJ | 0.00086 U | 0.0037 U |
| 2,4,5-Trichlorophenol | mg/kg | | 0.020 U | R | 0.0039 UJ | 0.0037 UJ | 0.0042 U | 0.018 U |
| 2,4,6-Trichlorophenol | mg/kg | | 0.028 U | R | 0.0054 UJ | 0.0052 UJ | 0.0060 U | 0.026 U |
| 2,4-Dichlorophenol | mg/kg | | 0.0037 U | R | 0.00073 UJ | 0.00070 UJ | 0.00080 U | 0.0034 U |
| 2,4-Dimethylphenol | mg/kg | | 0.029 U | R | 0.0057 UJ | 0.0055 UJ | 0.0062 U | 0.027 U |
| 2,4-Dinitrophenol | mg/kg | | 0.22 U | R | 0.043 UJ | 0.042 UJ | 0.047 U | 0.20 U |
| 2,4-Dinitrotoluene | mg/kg | | 0.015 U | R | 0.0029 UJ | 0.0028 UJ | 0.0032 U | 0.014 U |
| 2,6-Dinitrotoluene | mg/kg | | 0.019 U | R | 0.0037 UJ | 0.0036 UJ | 0.0041 U | 0.018 U |
| 2-Chloronaphthalene | mg/kg | NOC | 0.0039 U | R | 0.00075 UJ | 0.00073 UJ | 0.00083 U | 0.0036 U |
| 2-Chlorophenol | mg/kg | 270 | 0.015 U | R | 0.0030 UJ | 0.0029 UJ | 0.0032 U | 0.014 U |
| 2-Methylnaphthalene | mg/kg | NOC | 5.4 | 0.0021 J | 0.0025 J | 0.0012 J | 0.00071 U | 0.013 J |
| 2-Methylphenol | mg/kg | NOC | 0.013 U | R | 0.0025 UJ | 0.0024 UJ | 0.0028 U | 0.012 U |
| 2-Nitroaniline | mg/kg | | 0.083 U | R | 0.016 UJ | 0.016 UJ | 0.018 U | 0.076 U |
| 2-Nitrophenol | mg/kg | NOC | 0.021 U | R | 0.0040 UJ | 0.0038 UJ | 0.0044 U | 0.019 U |
| 3,3'-Dichlorobenzidine | mg/kg | | 0.020 U | R | 0.0038 UJ | 0.0037 UJ | 0.0042 U | 0.018 U |
| 3-Nitroaniline | mg/kg | | 0.077 U | R | 0.015 UJ | 0.014 UJ | 0.016 U | 0.070 U |
| 4,6-Dinitro-2-methylphenol | mg/kg | | 0.075 U | R | 0.015 UJ | 0.014 UJ | 0.016 U | 0.068 U |
| 4-Bromophenyl phenyl ether | mg/kg | | 0.016 U | R | 0.0031 UJ | 0.0030 UJ | 0.0035 U | 0.015 U |
| 4-Chloro-3-methylphenol | mg/kg | | 0.017 U | R | 0.0033 UJ | 0.0032 UJ | 0.0037 U | 0.016 U |
| 4-Chloroaniline | mg/kg | | 0.015 U | R | 0.0029 UJ | 0.0028 UJ | 0.0032 U | 0.014 U |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-10** | **ELC-SB-11** | **ELC-SB-11** | **ELC-SB-12** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-9_5-5.5_062614** | **ELC-SB-10_1.5-2_062414** | **ELC-SB-10_6-6.5_062414** | **ELC-SB-11_1.5-2-062514** | **ELC-SB-11_5-5.5-062514** | **ELC-SB-12_1.5-2_062614** |
| **Sample Date:** | | | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(6-6.5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| 4-Chlorophenyl phenyl ether | mg/kg | | 0.021 U | R | 0.0040 UJ | 0.0039 UJ | 0.0044 U | 0.019 U |
| 4-Methylphenol | mg/kg | | 0.018 U | R | 0.0035 UJ | 0.0034 UJ | 0.0039 U | 0.017 U |
| 4-Nitroaniline | mg/kg | | 0.075 U | R | 0.015 UJ | 0.014 UJ | 0.016 U | 0.069 U |
| 4-Nitrophenol | mg/kg | | 0.068 U | R | 0.013 UJ | 0.013 UJ | 0.014 U | 0.062 U |
| Acenaphthene | mg/kg | NOC | 0.75 | R | 0.0073 J | 0.00067 UJ | 0.00076 U | 0.0033 U |
| Acenaphthylene | mg/kg | NOC | 0.0043 U | R | 0.0011 J | 0.0021 J | 0.00091 U | 0.012 J |
| Acetophenone | mg/kg | NOC | 1.0 | 0.0029 J | 0.0079 J | 0.0077 J | 0.0033 U | 0.023 J |
| Anthracene | mg/kg | NOC | 0.46 | 0.00072 J | 0.012 J | 0.0024 J | 0.00078 U | 0.013 J |
| Atrazine | mg/kg | | 0.018 U | R | 0.0035 UJ | 0.011 J | 0.0039 U | 0.017 U |
| Benzaldehyde | mg/kg | | R | R | 0.0054 UJ | 0.029 J | R | R |
| Benzo(a)anthracene | mg/kg | | 0.058 | 0.0065 J | 0.055 J | 0.011 J | 0.0028 J | 0.081 |
| Benzo(a)pyrene | mg/kg | | 0.056 | 0.0076 J | 0.095 J | 0.011 J | 0.00080 U | 0.085 |
| Benzo(b)fluoranthene | mg/kg | | 0.081 | 0.013 J | 0.097 J | 0.014 J | 0.0030 J | 0.11 |
| Benzo(g,h,i)perylene | mg/kg | | 0.068 | 0.012 J | 0.10 J | 0.0094 J | 0.00079 U | 0.060 |
| Benzo(k)fluoranthene | mg/kg | | 0.042 | 0.0051 J | 0.039 J | 0.0068 J | 0.0016 U | 0.048 |
| Biphenyl (1,1-Biphenyl) | mg/kg | NOC | 0.59 | R | 0.0032 UJ | 0.0031 UJ | 0.0035 U | 0.015 U |
| bis(2-Chloroethoxy)methane | mg/kg | | 0.012 U | R | 0.0024 UJ | 0.0023 UJ | 0.0026 U | 0.011 U |
| bis(2-Chloroethyl)ether | mg/kg | 7.1 | 0.0050 U | R | 0.00097 UJ | 0.00094 UJ | 0.0011 U | 0.0046 U |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | | 0.10 J | 0.020 J | 0.0058 UJ | 0.016 J | 0.0066 J | 0.028 U |
| Butyl benzylphthalate (BBP) | mg/kg | | 0.025 U | 0.012 J | 0.0049 UJ | 0.026 J | 0.0065 J | 0.023 U |
| Caprolactam | mg/kg | | 0.14 U | R | 0.027 UJ | 0.026 UJ | 0.030 U | 0.13 U |
| Carbazole | mg/kg | | 0.0034 U | R | 0.0059 J | 0.00064 UJ | 0.00073 U | 0.0031 U |
| Chrysene | mg/kg | | 0.074 | 0.012 J | 0.060 J | 0.014 J | 0.0025 J | 0.077 |
| Dibenz(a,h)anthracene | mg/kg | | 0.0041 U | R | 0.021 J | 0.0025 J | 0.00088 U | 0.0038 U |
| Dibenzofuran | mg/kg | | 0.018 U | R | 0.0036 UJ | 0.0034 UJ | 0.0039 U | 0.017 U |
| Diethyl phthalate | mg/kg | | 0.020 U | R | 0.0039 UJ | 0.0038 UJ | 0.0043 U | 0.019 U |
| Dimethyl phthalate | mg/kg | | 0.020 U | R | 0.0039 UJ | 0.0038 UJ | 0.0043 U | 0.019 U |
| Di-n-butylphthalate (DBP) | mg/kg | | 0.023 U | 0.0056 J | 0.0045 UJ | 0.0050 J | 0.0050 U | 0.021 U |
| Di-n-octyl phthalate (DnOP) | mg/kg | | 0.020 U | R | 0.0038 UJ | 0.0037 UJ | 0.0042 U | 0.018 U |
| Fluoranthene | mg/kg | | 0.16 | 0.013 J | 0.091 J | 0.019 J | 0.0032 J | 0.080 |
| Fluorene | mg/kg | NOC | 0.95 | R | 0.0039 J | 0.00092 UJ | 0.0010 U | 0.0045 U |
| Hexachlorobenzene | mg/kg | | 0.0040 U | R | 0.00077 UJ | 0.00074 UJ | 0.00085 U | 0.0036 U |
| Hexachlorobutadiene | mg/kg | | 0.0042 U | R | 0.00081 UJ | 0.00078 UJ | 0.00089 U | 0.0038 U |
| Hexachlorocyclopentadiene | mg/kg | | 0.020 U | R | 0.0039 UJ | 0.0038 UJ | 0.0043 U | 0.018 U |
| Hexachloroethane | mg/kg | | 0.013 U | R | 0.0026 UJ | 0.0025 UJ | 0.0029 U | 0.012 U |
| Indeno(1,2,3-cd)pyrene | mg/kg | | 0.040 | 0.0078 J | 0.083 J | 0.0081 J | 0.00082 U | 0.045 |
| Isophorone | mg/kg | | 0.014 U | R | 0.0027 UJ | 0.0026 UJ | 0.0030 U | 0.013 U |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-10** | **ELC-SB-11** | **ELC-SB-11** | **ELC-SB-12** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-9_5-5.5_062614** | **ELC-SB-10_1.5-2_062414** | **ELC-SB-10_6-6.5_062414** | **ELC-SB-11_1.5-2-062514** | **ELC-SB-11_5-5.5-062514** | **ELC-SB-12_1.5-2_062614** |
| **Sample Date:** | | | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(6-6.5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| Naphthalene | mg/kg | NOC | 0.42 | 0.0020 J | 0.0033 J | 0.0028 J | 0.00069 U | 0.0067 J |
| Nitrobenzene | mg/kg | 190 | 0.015 U | R | 0.0030 UJ | 0.0029 UJ | 0.0033 U | 0.014 U |
| N-Nitrosodi-n-propylamine | mg/kg | | 0.0044 U | R | 0.00085 UJ | 0.00082 UJ | 0.00093 U | 0.0040 U |
| N-Nitrosodiphenylamine | mg/kg | | 0.017 U | R | 0.0033 UJ | 0.0032 UJ | 0.0037 U | 0.016 U |
| Pentachlorophenol | mg/kg | | 0.017 U | R | 0.0032 UJ | 0.0031 UJ | 0.0036 U | 0.015 U |
| Phenanthrene | mg/kg | NOC | 1.7 | 0.0074 J | 0.042 J | 0.0098 J | 0.0019 J | 0.018 J |
| Phenol | mg/kg | NOC | 0.0044 U | R | 0.00085 UJ | 0.00082 UJ | 0.00094 U | 0.0040 U |
| Pyrene | mg/kg | | 0.22 | 0.010 J | 0.064 J | 0.00071 UJ | 0.0031 J | 0.084 |
| **Metals** | | | | | | | | |
| Antimony | mg/kg | | 8.3 | 0.17 J | 0.15 J | 0.28 J | 0.25 J | 0.027 J |
| Arsenic | mg/kg | | 11 | 2.7 | 2.1 | 3.3 | 5.0 | 5.0 |
| Beryllium | mg/kg | | 0.39 | 0.71 | 0.82 | 0.49 J | 0.43 | 0.18 |
| Cadmium | mg/kg | | 3.4 | 0.11 J | 0.12 J | 0.56 J | 0.040 J | 0.038 J |
| Chromium | mg/kg | | 34 | 2400 | 1600 | 1700 | 22 | 7.7 |
| Copper | mg/kg | | 110 | 33 J | 26 J | 69 J | 9.4 J | 2.1 |
| Lead | mg/kg | | 170 | 23 | 23 | 20 | 9.3 | 2.9 |
| Mercury | mg/kg | | 0.16 | 0.010 U | 0.011 U | 0.011 U | 0.012 U | 0.011 U |
| Nickel | mg/kg | | 34 | 29 | 24 | 24 J | 15 J | 1.6 |
| Selenium | mg/kg | | 0.45 J | 0.37 J | 0.48 J | 0.74 J | 0.32 J | 0.13 J |
| Silver | mg/kg | | 0.30 | 0.020 U | 0.021 U | 0.040 U | 0.0042 U | 0.0038 U |
| Thallium | mg/kg | | 0.076 J | 0.015 J | 0.012 J | 0.020 U | 0.081 J | 0.017 J |
| Zinc | mg/kg | | 310 | 58 J | 64 J | 190 | 43 | 7.1 |
| **PCBs** | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | | 0.00069 U | 0.00013 U | 0.00013 U | 0.00013 U | 0.00015 U | 0.00063 U |
| Aroclor-1221 (PCB-1221) | mg/kg | NA | 0.00089 U | 0.00017 U | 0.00017 U | 0.00017 U | 0.00019 U | 0.00081 U |
| Aroclor-1232 (PCB-1232) | mg/kg | | 0.00080 U | 0.00015 U | 0.00015 U | 0.00015 U | 0.00017 U | 0.00072 U |
| Aroclor-1242 (PCB-1242) | mg/kg | | 0.00076 U | 0.00014 U | 0.00015 U | 0.00014 U | 0.00016 U | 0.00069 U |
| Aroclor-1248 (PCB-1248) | mg/kg | | 0.00044 U | 0.030 | 0.0061 | 0.000082 U | 0.000095 U | 0.00040 U |
| Aroclor-1254 (PCB-1254) | mg/kg | | 0.10 J | 0.00012 U | 0.00013 U | 0.012 | 0.0021 | 0.00060 U |
| Aroclor-1260 (PCB-1260) | mg/kg | | 0.071 J | 0.00012 U | 0.00013 U | 0.00012 U | 0.00014 U | 0.00060 U |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-9** | **ELC-SB-10** | **ELC-SB-10** | **ELC-SB-11** | **ELC-SB-11** | **ELC-SB-12** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **ELC-SB-9_5-5.5_062614** | **ELC-SB-10_1.5-2_062414** | **ELC-SB-10_6-6.5_062414** | **ELC-SB-11_1.5-2-062514** | **ELC-SB-11_5-5.5-062514** | **ELC-SB-12_1.5-2_062614** |
| **Sample Date:** | | | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/25/2014** | **6/25/2014** | **6/26/2014** |
| **Sample Depth:** | | | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(6-6.5) ft BGS** | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | |
| **Petroleum Products** | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | - | - | - |
| **General Chemistry** | | | | | | | | |
| Percent moisture | % | | 10 | 3.9 | 8.3 | 5.0 | 17 | 2.1 |
| pH | s.u. | | - | - | - | - | - | - |

Notes:

(1) PA Land Recycling Program Technical Guidance Manual - Section IV.A.4, Table 5, USEPA Defaults Nonresidential Volatilization to Indoor Air Screen
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
- Not analyzed

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-13** | **ELC-SB-14** | **ELC-SB-14** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **DUP-001_062614** | **ELC-SB-12_5-5.5_062614** | **ELC-SB-13-1.5-2_062414** | **ELC-SB-13-4.5-5_062414** | **ELC-SB-14_1.5-2_062414** | **ELC-SB-14_4.5-5_062414** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | **(Duplicate)** | | | | | |
| **Volatile Organic Compounds** | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 170 | 0.00038 U | 0.00040 U | R | 0.00046 UJ | 0.00050 UJ | 0.00048 U |
| 1,1,2,2-Tetrachloroethane | mg/kg | 2 | 0.00056 U | 0.00059 U | R | 0.00068 UJ | 0.00073 UJ | 0.00071 U |
| 1,1,2-Trichloroethane | mg/kg | 2.4 | 0.00065 U | 0.00069 U | R | 0.00078 UJ | 0.00085 UJ | 0.00082 U |
| 1,1-Dichloroethane | mg/kg | 2.7 | 0.00045 U | 0.00048 U | R | 0.00054 UJ | 0.00059 UJ | 0.00057 U |
| 1,1-Dichloroethene | mg/kg | 7.6 | 0.00066 U | 0.00070 U | R | 0.00080 UJ | 0.00087 UJ | 0.00084 U |
| 1,2,4-Trichlorobenzene | mg/kg | NOC | 0.00069 U | 0.00073 U | R | 0.00083 UJ | 0.00090 UJ | 0.00087 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 3.2 | 0.00058 U | 0.00062 U | R | 0.00071 UJ | 0.00076 UJ | 0.00074 U |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 0.29 | 0.00067 U | 0.00071 U | R | 0.00081 UJ | 0.00088 UJ | 0.00085 U |
| 1,2-Dichlorobenzene | mg/kg | 150 | 0.00062 U | 0.00066 U | R | 0.00075 UJ | 0.00081 UJ | 0.00079 U |
| 1,2-Dichloroethane | mg/kg | 0.83 | 0.00048 U | 0.00051 U | R | 0.00058 UJ | 0.00063 UJ | 0.00061 U |
| 1,2-Dichloroethene (total) | mg/kg | | 0.0010 U | 0.0011 U | R | 0.0012 UJ | 0.0013 UJ | 0.0013 U |
| 1,2-Dichloropropane | mg/kg | 0.88 | 0.00042 U | 0.00045 U | R | 0.00051 UJ | 0.00055 UJ | 0.00054 U |
| 1,3-Dichlorobenzene | mg/kg | NA | 0.00051 U | 0.00054 U | R | 0.00062 UJ | 0.00067 UJ | 0.00065 U |
| 1,4-Dichlorobenzene | mg/kg | 13 | 0.00050 U | 0.00053 U | R | 0.00060 UJ | 0.00065 UJ | 0.00063 U |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 14000 | 0.00069 U | 0.00073 U | R | 0.00083 UJ | 0.00090 UJ | 0.00087 U |
| 2-Hexanone | mg/kg | | 0.00054 U | 0.00057 U | R | 0.00065 UJ | 0.00071 UJ | 0.00068 U |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 120 | 0.00051 U | 0.00054 U | R | 0.00061 UJ | 0.00067 UJ | 0.00064 U |
| Acetone | mg/kg | 110000 | 0.0039 U | 0.0041 U | R | 0.0047 UJ | 0.0051 UJ | 0.0049 U |
| Benzene | mg/kg | 0.63 | 0.00052 U | 0.00056 U | R | 0.00064 UJ | 0.00069 UJ | 0.00067 U |
| Bromodichloromethane | mg/kg | 0.85 | 0.00044 U | 0.00046 U | R | 0.00053 UJ | 0.00057 UJ | 0.00055 U |
| Bromoform | mg/kg | 160 | 0.00034 U | 0.00037 U | R | 0.00042 UJ | 0.00045 UJ | 0.00044 U |
| Bromomethane (Methyl bromide) | mg/kg | 1.3 | 0.00057 U | 0.00061 U | R | 0.00070 UJ | 0.00075 UJ | 0.00073 U |
| Carbon disulfide | mg/kg | 66 | 0.00040 U | 0.00042 U | R | 0.00060 J | 0.00084 J | 0.00051 U |
| Carbon tetrachloride | mg/kg | 0.12 | 0.00035 U | 0.00037 U | R | 0.00042 UJ | 0.00046 UJ | 0.00044 U |
| Chlorobenzene | mg/kg | 13 | 0.00059 U | 0.00063 U | R | 0.00071 UJ | 0.00077 UJ | 0.00075 U |
| Chloroethane | mg/kg | 1.8 | 0.0012 U | 0.0013 U | R | 0.0015 UJ | 0.0016 UJ | 0.0015 U |
| Chloroform (Trichloromethane) | mg/kg | 0.074 | 0.00045 U | 0.00048 U | R | 0.00055 UJ | 0.00060 UJ | 0.00058 U |
| Chloromethane (Methyl chloride) | mg/kg | 0.64 | 0.00066 U | 0.00070 U | R | 0.00080 UJ | 0.00087 UJ | 0.00084 U |
| cis-1,2-Dichloroethene | mg/kg | 7.6 | 0.00055 U | 0.00058 U | R | 0.00066 UJ | 0.00072 UJ | 0.00069 U |
| cis-1,3-Dichloropropene | mg/kg | | 0.00053 U | 0.00056 U | R | 0.00064 UJ | 0.00069 UJ | 0.00067 U |
| Cyclohexane | mg/kg | | 0.00029 U | 0.00031 U | R | 0.00035 UJ | 0.00038 UJ | 0.00037 U |
| Dibromochloromethane | mg/kg | 2.2 | 0.00055 U | 0.00059 U | R | 0.00067 UJ | 0.00072 UJ | 0.00070 U |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 2.6 | 0.00052 U | 0.00055 U | R | 0.00063 UJ | 0.00068 UJ | 0.00066 U |
| Ethylbenzene | mg/kg | 9.5 | 0.00050 U | 0.00053 U | R | 0.00061 UJ | 0.00066 UJ | 0.00063 U |
| Isopropyl benzene | mg/kg | 360 | 0.00053 U | 0.00056 U | R | 0.00064 UJ | 0.00069 UJ | 0.00067 U |
| m&p-Xylenes | mg/kg | | 0.0011 U | 0.0012 U | R | 0.0014 UJ | 0.0015 UJ | 0.0015 U |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-13** | **ELC-SB-14** | **ELC-SB-14** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **DUP-001_062614** | **ELC-SB-12_5-5.5_062614** | **ELC-SB-13-1.5-2_062414** | **ELC-SB-13-4.5-5_062414** | **ELC-SB-14_1.5-2_062414** | **ELC-SB-14_4.5-5_062414** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | **(Duplicate)** | | | | | |
| Methyl acetate | mg/kg | 19000 | 0.00070 U | 0.00074 U | R | 0.00085 UJ | 0.00092 UJ | 0.00089 U |
| Methyl cyclohexane | mg/kg | | 0.00056 U | 0.00060 U | R | 0.00068 UJ | 0.00074 UJ | 0.00072 U |
| Methyl tert butyl ether (MTBE) | mg/kg | 86 | 0.00058 U | 0.00062 U | R | 0.00070 UJ | 0.00076 UJ | 0.00074 U |
| Methylene chloride | mg/kg | 14 | 0.0029 U | 0.0028 U | 0.0015 UJ | 0.0020 UJ | 0.0022 UJ | 0.0023 UJ |
| o-Xylene | mg/kg | | 0.00061 U | 0.00064 U | R | 0.00073 UJ | 0.00080 UJ | 0.00077 U |
| Styrene | mg/kg | 720 | 0.00055 U | 0.00058 U | R | 0.00066 UJ | 0.00072 UJ | 0.00070 U |
| Tetrachloroethene | mg/kg | 10 | 0.00053 U | 0.00056 U | R | 0.00064 UJ | 0.00069 UJ | 0.00067 U |
| Toluene | mg/kg | 110 | 0.00057 U | 0.00060 U | R | 0.00069 UJ | 0.00075 UJ | 0.00072 U |
| trans-1,2-Dichloroethene | mg/kg | 6.4 | 0.00046 U | 0.00049 U | R | 0.00056 UJ | 0.00061 UJ | 0.00059 U |
| trans-1,3-Dichloropropene | mg/kg | | 0.00046 U | 0.00049 U | R | 0.00056 UJ | 0.00061 UJ | 0.00059 U |
| Trichloroethene | mg/kg | 2.2 | 0.00051 U | 0.00054 U | R | 0.00062 UJ | 0.00067 UJ | 0.00065 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 13 | 0.00071 U | 0.00076 U | R | 0.00087 UJ | 0.00094 UJ | 0.00091 U |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 670 | 0.00083 U | 0.00088 U | R | 0.0010 UJ | 0.0011 UJ | 0.0011 U |
| Vinyl chloride | mg/kg | 0.061 | 0.00037 U | 0.00039 U | R | 0.00044 UJ | 0.00048 UJ | 0.00046 U |
| Xylenes (total) | mg/kg | 77 | 0.0017 U | 0.0019 U | R | 0.0021 UJ | 0.0023 UJ | 0.0022 U |
| **Semi-volatile Organic Compounds** | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 28 | 0.00074 U | 0.00085 U | R | 0.00083 U | 0.00076 U | 0.00080 U |
| 2,4,5-Trichlorophenol | mg/kg | | 0.0036 U | 0.0042 U | R | 0.0041 U | 0.0038 U | 0.0040 U |
| 2,4,6-Trichlorophenol | mg/kg | | 0.0051 U | 0.0059 U | R | 0.0058 U | 0.0053 U | 0.0056 U |
| 2,4-Dichlorophenol | mg/kg | | 0.00068 U | 0.00079 U | R | 0.00077 U | 0.00071 U | 0.00075 U |
| 2,4-Dimethylphenol | mg/kg | | 0.0053 U | 0.0062 U | R | 0.0060 U | 0.0055 U | 0.0058 U |
| 2,4-Dinitrophenol | mg/kg | | 0.041 U | 0.047 U | R | 0.046 U | 0.042 U | 0.044 U |
| 2,4-Dinitrotoluene | mg/kg | | 0.0028 U | 0.0032 U | R | 0.0031 U | 0.0028 U | 0.0030 U |
| 2,6-Dinitrotoluene | mg/kg | | 0.0035 U | 0.0041 U | R | 0.0040 U | 0.0036 U | 0.0038 U |
| 2-Chloronaphthalene | mg/kg | NOC | 0.00071 U | 0.00082 U | R | 0.00080 U | 0.00074 U | 0.00078 U |
| 2-Chlorophenol | mg/kg | 270 | 0.0028 U | 0.0032 U | R | 0.0031 U | 0.0029 U | 0.0030 U |
| 2-Methylnaphthalene | mg/kg | NOC | 0.016 | 0.00071 U | 0.00094 J | 0.0027 J | 0.0013 J | 0.00067 U |
| 2-Methylphenol | mg/kg | NOC | 0.0024 U | 0.0028 U | R | 0.0027 U | 0.0025 U | 0.0026 U |
| 2-Nitroaniline | mg/kg | | 0.015 U | 0.018 U | R | 0.017 U | 0.016 U | 0.017 U |
| 2-Nitrophenol | mg/kg | NOC | 0.0038 U | 0.0043 U | R | 0.0042 U | 0.0039 U | 0.0041 U |
| 3,3'-Dichlorobenzidine | mg/kg | | 0.0036 U | 0.0042 U | R | 0.0041 U | 0.0037 U | 0.0039 U |
| 3-Nitroaniline | mg/kg | | 0.014 U | 0.016 U | R | 0.016 U | 0.015 U | 0.015 U |
| 4,6-Dinitro-2-methylphenol | mg/kg | | 0.014 U | 0.016 U | R | 0.015 U | 0.014 U | 0.015 U |
| 4-Bromophenyl phenyl ether | mg/kg | | 0.0030 U | 0.0034 U | R | 0.0033 U | 0.0031 U | 0.0032 U |
| 4-Chloro-3-methylphenol | mg/kg | | 0.0031 U | 0.0036 U | R | 0.0035 U | 0.0032 U | 0.0034 U |
| 4-Chloroaniline | mg/kg | | 0.0027 U | 0.0032 U | R | 0.0031 U | 0.0028 U | 0.0030 U |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-13** | **ELC-SB-14** | **ELC-SB-14** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **DUP-001_062614** | **ELC-SB-12_5-5.5_062614** | **ELC-SB-13-1.5-2_062414** | **ELC-SB-13-4.5-5_062414** | **ELC-SB-14_1.5-2_062414** | **ELC-SB-14_4.5-5_062414** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | **(Duplicate)** | | | | | |
| 4-Chlorophenyl phenyl ether | mg/kg | | 0.0038 U | 0.0044 U | R | 0.0043 U | 0.0039 U | 0.0041 U |
| 4-Methylphenol | mg/kg | | 0.0033 U | 0.0039 U | R | 0.0038 U | 0.0035 U | 0.0036 U |
| 4-Nitroaniline | mg/kg | | 0.014 U | 0.016 U | R | 0.016 U | 0.014 U | 0.015 U |
| 4-Nitrophenol | mg/kg | | 0.012 U | 0.014 U | R | 0.014 U | 0.013 U | 0.014 U |
| Acenaphthene | mg/kg | NOC | 0.00066 U | 0.00076 U | R | 0.00074 U | 0.00068 J | 0.0015 J |
| Acenaphthylene | mg/kg | NOC | 0.0058 J | 0.00090 U | R | 0.00088 U | 0.00081 U | 0.00085 U |
| Acetophenone | mg/kg | NOC | 0.023 J | 0.017 J | R | 0.0032 U | 0.0029 U | 0.0031 U |
| Anthracene | mg/kg | NOC | 0.0062 J | 0.00077 U | 0.00088 J | 0.0017 J | 0.0010 J | 0.0013 J |
| Atrazine | mg/kg | | 0.0033 U | 0.0038 U | R | 0.0037 U | 0.0034 U | 0.0036 U |
| Benzaldehyde | mg/kg | | 0.0085 J | R | R | 0.029 J | R | R |
| Benzo(a)anthracene | mg/kg | | 0.036 | 0.00099 U | 0.0049 J | 0.0042 J | 0.0053 J | 0.0071 J |
| Benzo(a)pyrene | mg/kg | | 0.041 | 0.00079 U | 0.0043 J | 0.0043 J | 0.0056 J | 0.012 |
| Benzo(b)fluoranthene | mg/kg | | 0.052 | 0.0012 U | 0.0083 J | 0.0054 J | 0.0075 | 0.014 |
| Benzo(g,h,i)perylene | mg/kg | | 0.030 | 0.00078 U | 0.0065 J | 0.0043 J | 0.0083 | 0.017 |
| Benzo(k)fluoranthene | mg/kg | | 0.023 | 0.0016 U | 0.0030 J | 0.0035 J | 0.0056 J | 0.0068 J |
| Biphenyl (1,1-Biphenyl) | mg/kg | NOC | 0.0030 U | 0.0035 U | R | 0.0034 U | 0.0031 U | 0.0033 U |
| bis(2-Chloroethoxy)methane | mg/kg | | 0.0022 U | 0.0026 U | R | 0.0025 U | 0.0023 U | 0.0024 U |
| bis(2-Chloroethyl)ether | mg/kg | 7.1 | 0.00092 U | 0.0011 U | R | 0.0010 U | 0.00095 U | 0.0010 U |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | | 0.0055 U | 0.0069 J | 0.017 J | 0.017 J | 0.011 J | 2.3 |
| Butyl benzylphthalate (BBP) | mg/kg | | 0.0059 J | 0.0076 J | 0.012 J | 0.010 J | 0.0090 J | 0.0070 J |
| Caprolactam | mg/kg | | 0.026 U | 0.030 U | R | 0.029 U | 0.027 U | 0.028 U |
| Carbazole | mg/kg | | 0.0015 J | 0.00073 U | R | 0.00071 U | 0.0012 J | 0.00069 U |
| Chrysene | mg/kg | | 0.039 | 0.00094 U | 0.0079 J | 0.0068 J | 0.0065 J | 0.0098 |
| Dibenz(a,h)anthracene | mg/kg | | 0.011 | 0.00088 U | R | 0.00086 U | 0.00079 U | 0.0050 J |
| Dibenzofuran | mg/kg | | 0.0057 J | 0.0039 U | R | 0.0038 U | 0.0035 U | 0.0037 U |
| Diethyl phthalate | mg/kg | | 0.0037 U | 0.0043 U | R | 0.0042 U | 0.0039 U | 0.0041 U |
| Dimethyl phthalate | mg/kg | | 0.0037 U | 0.0043 U | R | 0.0042 U | 0.0038 U | 0.0041 U |
| Di-n-butylphthalate (DBP) | mg/kg | | 0.0043 U | 0.0049 U | 0.0049 J | 0.0063 J | 0.0053 J | 0.0055 J |
| Di-n-octyl phthalate (DnOP) | mg/kg | | 0.0036 U | 0.0042 U | R | 0.0041 U | 0.0037 U | 0.0039 U |
| Fluoranthene | mg/kg | | 0.038 | 0.00084 U | 0.0097 J | 0.0099 | 0.0069 J | 0.0090 |
| Fluorene | mg/kg | NOC | 0.0022 J | 0.0010 U | R | 0.0010 U | 0.00093 U | 0.00098 U |
| Hexachlorobenzene | mg/kg | | 0.00073 U | 0.00084 U | R | 0.00082 U | 0.00075 U | 0.00079 U |
| Hexachlorobutadiene | mg/kg | | 0.00076 U | 0.00088 U | R | 0.00086 U | 0.00079 U | 0.00083 U |
| Hexachlorocyclopentadiene | mg/kg | | 0.0037 U | 0.0043 U | R | 0.0041 U | 0.0038 U | 0.0040 U |
| Hexachloroethane | mg/kg | | 0.0025 U | 0.0028 U | R | 0.0028 U | 0.0025 U | 0.0027 U |
| Indeno(1,2,3-cd)pyrene | mg/kg | | 0.027 | 0.00081 U | 0.0051 J | 0.0038 J | 0.0062 J | 0.014 |
| Isophorone | mg/kg | | 0.0026 U | 0.0030 U | R | 0.0029 U | 0.0027 U | 0.0028 U |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-13** | **ELC-SB-14** | **ELC-SB-14** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **DUP-001_062614** | **ELC-SB-12_5-5.5_062614** | **ELC-SB-13-1.5-2_062414** | **ELC-SB-13-4.5-5_062414** | **ELC-SB-14_1.5-2_062414** | **ELC-SB-14_4.5-5_062414** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | **(Duplicate)** | | | | | |
| Naphthalene | mg/kg | NOC | 0.0092 | 0.00068 U | R | 0.0029 J | 0.0016 J | 0.00064 U |
| Nitrobenzene | mg/kg | 190 | 0.0028 U | 0.0033 U | R | 0.0032 U | 0.0029 U | 0.0031 U |
| N-Nitrosodi-n-propylamine | mg/kg | | 0.00080 U | 0.00093 U | R | 0.00090 U | 0.00083 U | 0.00087 U |
| N-Nitrosodiphenylamine | mg/kg | | 0.0032 U | 0.0037 U | R | 0.0036 U | 0.0033 U | 0.0034 U |
| Pentachlorophenol | mg/kg | | 0.0031 U | 0.0035 U | R | 0.0034 U | 0.0032 U | 0.0033 U |
| Phenanthrene | mg/kg | NOC | 0.020 | 0.0013 U | 0.0073 J | 0.0072 J | 0.014 | 0.0035 J |
| Phenol | mg/kg | NOC | 0.00081 U | 0.00093 U | R | 0.00091 U | 0.00083 U | 0.00088 U |
| Pyrene | mg/kg | | 0.040 | 0.00080 U | 0.0087 J | 0.0059 J | 0.0075 | 0.0078 |
| **Metals** | | | | | | | | |
| Antimony | mg/kg | | 0.014 J | 0.12 J | 0.17 J | 0.21 J | 0.21 J | 0.23 J |
| Arsenic | mg/kg | | 5.5 | 5.9 | 2.2 | 3.8 | 2.8 | 2.9 |
| Beryllium | mg/kg | | 0.13 | 0.49 | 3.5 | 0.61 | 3.8 | 0.43 |
| Cadmium | mg/kg | | 0.078 J | 0.045 J | 0.092 J | 1.1 | 0.16 J | 0.093 |
| Chromium | mg/kg | | 9.8 | 12 | 1200 | 1000 | 1900 | 170 |
| Copper | mg/kg | | 1.9 | 9.3 | 17 J | 31 J | 84 J | 17 J |
| Lead | mg/kg | | 3.5 | 9.9 | 9.8 | 29 | 43 | 17 |
| Mercury | mg/kg | | 0.011 U | 0.015 J | 0.011 U | 0.021 J | 0.011 U | 0.014 J |
| Nickel | mg/kg | | 1.7 | 14 | 7.1 | 11 | 41 | 12 |
| Selenium | mg/kg | | 0.083 J | 0.34 J | 3.2 J | 0.76 J | 1.3 J | 0.32 J |
| Silver | mg/kg | | 0.0037 U | 0.0045 U | 0.018 U | 0.11 J | 0.020 U | 0.020 J |
| Thallium | mg/kg | | 0.019 J | 0.093 J | 0.035 J | 0.060 J | 0.012 J | 0.035 J |
| Zinc | mg/kg | | 9.1 | 39 | 57 J | 240 J | 580 J | 50 J |
| **PCBs** | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | | 0.00013 U | 0.00015 U | 0.00013 U | 0.00014 U | 0.00013 U | 0.00069 U |
| Aroclor-1221 (PCB-1221) | mg/kg | NA | 0.00016 U | 0.00019 U | 0.00017 U | 0.00018 U | 0.00017 U | 0.00089 U |
| Aroclor-1232 (PCB-1232) | mg/kg | | 0.00015 U | 0.00017 U | 0.00015 U | 0.00017 U | 0.00015 U | 0.00079 U |
| Aroclor-1242 (PCB-1242) | mg/kg | | 0.00014 U | 0.00016 U | 0.00014 U | 0.00016 U | 0.00014 U | 0.00076 U |
| Aroclor-1248 (PCB-1248) | mg/kg | | 0.000081 U | 0.000093 U | 0.000082 U | 0.000091 U | 0.000083 U | 0.00044 U |
| Aroclor-1254 (PCB-1254) | mg/kg | | 0.0029 | 0.00014 U | 0.00084 J | 0.0091 | 0.00013 U | 0.25 |
| Aroclor-1260 (PCB-1260) | mg/kg | | 0.00012 U | 0.00014 U | 0.00012 U | 0.00014 U | 0.0012 | 0.16 |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **ELC-SB-12** | **ELC-SB-12** | **ELC-SB-13** | **ELC-SB-13** | **ELC-SB-14** | **ELC-SB-14** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **DUP-001_062614** | **ELC-SB-12_5-5.5_062614** | **ELC-SB-13-1.5-2_062414** | **ELC-SB-13-4.5-5_062414** | **ELC-SB-14_1.5-2_062414** | **ELC-SB-14_4.5-5_062414** |
| **Sample Date:** | | | **6/26/2014** | **6/26/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** | **6/24/2014** |
| **Sample Depth:** | | | **(1.5-2) ft BGS** | **(5-5.5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** | **(1.5-2) ft BGS** | **(4.5-5) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | **(Duplicate)** | | | | | |
| **Petroleum Products** | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | - | - | - | - | - | - |
| **General Chemistry** | | | | | | | | |
| Percent moisture | % | | 2.2 | 16 | 5.0 | 14 | 6.1 | 10 |
| pH | s.u. | | - | - | - | - | - | - |

Notes:

(1) PA Land Recycling Program Technical Guidance Manual - Section IV.A.4, Table 5, USEPA Defaults Nonresidential Volatilization to Indoor Air Screen
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
- Not analyzed

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **L1P3-MW-4** | **L1P3-MW-5** | **L1P3-MW-5** | **L1P3-MW-6** | **L1P3-SED-1** | **L1P3-SED-2** | **L1P3-SED-3** | **L1P3-TP-1** | **L1P3-TP-10** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **MW-4 10-11'** | **MW-5 7.5-12'** | **MW-5 12-14'** | **MW-6 15-17'** | **SED-1** | **SED-2** | **SED-3** | **TP-1 7'-7-6"** | **TP-10 3-3'9"** |
| **Sample Date:** | | | **9/15/1998** | **9/15/1998** | **9/15/1998** | **9/16/1998** | **9/23/1998** | **9/23/1998** | **9/23/1998** | **9/22/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(10-11) ft BGS** | **(7.5-12) ft BGS** | **(12-14) ft BGS** | **(15-17) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(7-7.5) ft BGS** | **(3-3.75) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 170 | - | - | - | - | - | - | - | - | - |
| 1,1,2,2-Tetrachloroethane | mg/kg | 2 | - | - | - | - | - | - | - | - | - |
| 1,1,2-Trichloroethane | mg/kg | 2.4 | - | - | - | - | - | - | - | - | - |
| 1,1-Dichloroethane | mg/kg | 2.7 | - | - | - | - | - | - | - | - | - |
| 1,1-Dichloroethene | mg/kg | 7.6 | - | - | - | - | - | - | - | - | - |
| 1,2,4-Trichlorobenzene | mg/kg | NOC | - | - | - | - | - | - | - | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 3.2 | - | - | - | - | - | - | - | - | - |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 0.29 | - | - | - | - | - | - | - | - | - |
| 1,2-Dichlorobenzene | mg/kg | 150 | - | - | - | - | - | - | - | - | - |
| 1,2-Dichloroethane | mg/kg | 0.83 | - | - | - | - | - | - | - | - | - |
| 1,2-Dichloroethene (total) | mg/kg | | - | - | - | - | - | - | - | - | - |
| 1,2-Dichloropropane | mg/kg | 0.88 | - | - | - | - | - | - | - | - | - |
| 1,3-Dichlorobenzene | mg/kg | NA | - | - | - | - | - | - | - | - | - |
| 1,4-Dichlorobenzene | mg/kg | 13 | - | - | - | - | - | - | - | - | - |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 14000 | - | - | - | - | - | - | - | - | - |
| 2-Hexanone | mg/kg | | - | - | - | - | - | - | - | - | - |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 120 | - | - | - | - | - | - | - | - | - |
| Acetone | mg/kg | 110000 | - | - | - | - | - | - | - | - | - |
| Benzene | mg/kg | 0.63 | - | - | - | - | - | - | - | - | - |
| Bromodichloromethane | mg/kg | 0.85 | - | - | - | - | - | - | - | - | - |
| Bromoform | mg/kg | 160 | - | - | - | - | - | - | - | - | - |
| Bromomethane (Methyl bromide) | mg/kg | 1.3 | - | - | - | - | - | - | - | - | - |
| Carbon disulfide | mg/kg | 66 | - | - | - | - | - | - | - | - | - |
| Carbon tetrachloride | mg/kg | 0.12 | - | - | - | - | - | - | - | - | - |
| Chlorobenzene | mg/kg | 13 | - | - | - | - | - | - | - | - | - |
| Chloroethane | mg/kg | 1.8 | - | - | - | - | - | - | - | - | - |
| Chloroform (Trichloromethane) | mg/kg | 0.074 | - | - | - | - | - | - | - | - | - |
| Chloromethane (Methyl chloride) | mg/kg | 0.64 | - | - | - | - | - | - | - | - | - |
| cis-1,2-Dichloroethene | mg/kg | 7.6 | - | - | - | - | - | - | - | - | - |
| cis-1,3-Dichloropropene | mg/kg | | - | - | - | - | - | - | - | - | - |
| Cyclohexane | mg/kg | | - | - | - | - | - | - | - | - | - |
| Dibromochloromethane | mg/kg | 2.2 | - | - | - | - | - | - | - | - | - |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 2.6 | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | mg/kg | 9.5 | 0.005 U | 0.23 J | 0.0031 J | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Isopropyl benzene | mg/kg | 360 | - | - | - | - | - | - | - | - | - |
| m&p-Xylenes | mg/kg | | - | - | - | - | - | - | - | - | - |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **L1P3-MW-4** | **L1P3-MW-5** | **L1P3-MW-5** | **L1P3-MW-6** | **L1P3-SED-1** | **L1P3-SED-2** | **L1P3-SED-3** | **L1P3-TP-1** | **L1P3-TP-10** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **MW-4 10-11'** | **MW-5 7.5-12'** | **MW-5 12-14'** | **MW-6 15-17'** | **SED-1** | **SED-2** | **SED-3** | **TP-1 7'-7-6"** | **TP-10 3-3'9"** |
| **Sample Date:** | | | **9/15/1998** | **9/15/1998** | **9/15/1998** | **9/16/1998** | **9/23/1998** | **9/23/1998** | **9/23/1998** | **9/22/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(10-11) ft BGS** | **(7.5-12) ft BGS** | **(12-14) ft BGS** | **(15-17) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(7-7.5) ft BGS** | **(3-3.75) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | | | | |
| Methyl acetate | mg/kg | 19000 | - | - | - | - | - | - | - | - | - |
| Methyl cyclohexane | mg/kg | | - | - | - | - | - | - | - | - | - |
| Methyl tert butyl ether (MTBE) | mg/kg | 86 | - | - | - | - | - | - | - | - | - |
| Methylene chloride | mg/kg | 14 | 0.0035 JB | 0.92 | 0.0031 JB | 0.0036 JB | 0.0023 JB | 0.0013 JB | 0.0006 JB | 0.0013 JB | 0.0018 JB |
| o-Xylene | mg/kg | | - | - | - | - | - | - | - | - | - |
| Styrene | mg/kg | 720 | - | - | - | - | - | - | - | - | - |
| Tetrachloroethene | mg/kg | 10 | - | - | - | - | - | - | - | - | - |
| Toluene | mg/kg | 110 | 0.0013 JB | 0.13 J | 0.0027 J | 0.005 U | 0.00056 J | 0.005 U | 0.0006 J | 0.00091 J | 0.00056 JB |
| trans-1,2-Dichloroethene | mg/kg | 6.4 | - | - | - | - | - | - | - | - | - |
| trans-1,3-Dichloropropene | mg/kg | | - | - | - | - | - | - | - | - | - |
| Trichloroethene | mg/kg | 2.2 | 0.00079 JB | 0.00079 J | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 13 | - | - | - | - | - | - | - | - | - |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 670 | - | - | - | - | - | - | - | - | - |
| Vinyl chloride | mg/kg | 0.061 | - | - | - | - | - | - | - | - | - |
| Xylenes (total) | mg/kg | 77 | - | - | - | - | - | - | - | - | - |
| **Semi-volatile Organic Compounds** | | | | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 28 | - | - | - | - | - | - | - | - | - |
| 2,4,5-Trichlorophenol | mg/kg | | - | - | - | - | - | - | - | - | - |
| 2,4,6-Trichlorophenol | mg/kg | | - | - | - | - | - | - | - | - | - |
| 2,4-Dichlorophenol | mg/kg | | - | - | - | - | - | - | - | - | - |
| 2,4-Dimethylphenol | mg/kg | | - | - | - | - | - | - | - | - | - |
| 2,4-Dinitrophenol | mg/kg | | - | - | - | - | - | - | - | - | - |
| 2,4-Dinitrotoluene | mg/kg | | - | - | - | - | - | - | - | - | - |
| 2,6-Dinitrotoluene | mg/kg | | - | - | - | - | - | - | - | - | - |
| 2-Chloronaphthalene | mg/kg | NOC | - | - | - | - | - | - | - | - | - |
| 2-Chlorophenol | mg/kg | 270 | - | - | - | - | - | - | - | - | - |
| 2-Methylnaphthalene | mg/kg | NOC | - | - | - | - | - | - | - | - | - |
| 2-Methylphenol | mg/kg | NOC | - | - | - | - | - | - | - | - | - |
| 2-Nitroaniline | mg/kg | | - | - | - | - | - | - | - | - | - |
| 2-Nitrophenol | mg/kg | NOC | - | - | - | - | - | - | - | - | - |
| 3,3'-Dichlorobenzidine | mg/kg | | - | - | - | - | - | - | - | - | - |
| 3-Nitroaniline | mg/kg | | - | - | - | - | - | - | - | - | - |
| 4,6-Dinitro-2-methylphenol | mg/kg | | - | - | - | - | - | - | - | - | - |
| 4-Bromophenyl phenyl ether | mg/kg | | - | - | - | - | - | - | - | - | - |
| 4-Chloro-3-methylphenol | mg/kg | | - | - | - | - | - | - | - | - | - |
| 4-Chloroaniline | mg/kg | | - | - | - | - | - | - | - | - | - |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **L1P3-MW-4** | **L1P3-MW-5** | **L1P3-MW-5** | **L1P3-MW-6** | **L1P3-SED-1** | **L1P3-SED-2** | **L1P3-SED-3** | **L1P3-TP-1** | **L1P3-TP-10** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **MW-4 10-11'** | **MW-5 7.5-12'** | **MW-5 12-14'** | **MW-6 15-17'** | **SED-1** | **SED-2** | **SED-3** | **TP-1 7'-7-6"** | **TP-10 3-3'9"** |
| **Sample Date:** | | | **9/15/1998** | **9/15/1998** | **9/15/1998** | **9/16/1998** | **9/23/1998** | **9/23/1998** | **9/23/1998** | **9/22/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(10-11) ft BGS** | **(7.5-12) ft BGS** | **(12-14) ft BGS** | **(15-17) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(7-7.5) ft BGS** | **(3-3.75) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | | | | |
| 4-Chlorophenyl phenyl ether | mg/kg | | - | - | - | - | - | - | - | - | - |
| 4-Methylphenol | mg/kg | | - | - | - | - | - | - | - | - | - |
| 4-Nitroaniline | mg/kg | | - | - | - | - | - | - | - | - | - |
| 4-Nitrophenol | mg/kg | | - | - | - | - | - | - | - | - | - |
| Acenaphthene | mg/kg | NOC | 0.33 U | 200 | 2.9 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Acenaphthylene | mg/kg | NOC | 0.33 U | 29 | 0.71 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Acetophenone | mg/kg | NOC | - | - | - | - | - | - | - | - | - |
| Anthracene | mg/kg | NOC | 0.33 U | 200 | 3.4 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Atrazine | mg/kg | | - | - | - | - | - | - | - | - | - |
| Benzaldehyde | mg/kg | | - | - | - | - | - | - | - | - | - |
| Benzo(a)anthracene | mg/kg | | 0.33 U | 89 | 1.7 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(a)pyrene | mg/kg | | 0.33 U | 37 | 1.1 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(b)fluoranthene | mg/kg | | 0.33 U | 32 | 1.2 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(g,h,i)perylene | mg/kg | | 0.33 U | 15 | 0.54 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(k)fluoranthene | mg/kg | | 0.33 U | 38 | 1.2 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Biphenyl (1,1-Biphenyl) | mg/kg | NOC | - | - | - | - | - | - | - | - | - |
| bis(2-Chloroethoxy)methane | mg/kg | | - | - | - | - | - | - | - | - | - |
| bis(2-Chloroethyl)ether | mg/kg | 7.1 | - | - | - | - | - | - | - | - | - |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | | 0.42 | 3.2 J | 0.48 | 0.35 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Butyl benzylphthalate (BBP) | mg/kg | | - | - | - | - | - | - | - | - | - |
| Caprolactam | mg/kg | | - | - | - | - | - | - | - | - | - |
| Carbazole | mg/kg | | - | - | - | - | - | - | - | - | - |
| Chrysene | mg/kg | | 0.33 U | 81 | 1.9 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Dibenz(a,h)anthracene | mg/kg | | 0.33 U | 8.2 | 0.24 J | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Dibenzofuran | mg/kg | | - | - | - | - | - | - | - | - | - |
| Diethyl phthalate | mg/kg | | - | - | - | - | - | - | - | - | - |
| Dimethyl phthalate | mg/kg | | - | - | - | - | - | - | - | - | - |
| Di-n-butylphthalate (DBP) | mg/kg | | - | - | - | - | - | - | - | - | - |
| Di-n-octyl phthalate (DnOP) | mg/kg | | - | - | - | - | - | - | - | - | - |
| Fluoranthene | mg/kg | | 0.33 U | 440 | 7.9 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Fluorene | mg/kg | NOC | 0.33 U | 280 | 4.5 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Hexachlorobenzene | mg/kg | | - | - | - | - | - | - | - | - | - |
| Hexachlorobutadiene | mg/kg | | - | - | - | - | - | - | - | - | - |
| Hexachlorocyclopentadiene | mg/kg | | - | - | - | - | - | - | - | - | - |
| Hexachloroethane | mg/kg | | - | - | - | - | - | - | - | - | - |
| Indeno(1,2,3-cd)pyrene | mg/kg | | 0.33 U | 16 | 0.56 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Isophorone | mg/kg | | - | - | - | - | - | - | - | - | - |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **L1P3-MW-4** | **L1P3-MW-5** | **L1P3-MW-5** | **L1P3-MW-6** | **L1P3-SED-1** | **L1P3-SED-2** | **L1P3-SED-3** | **L1P3-TP-1** | **L1P3-TP-10** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **MW-4 10-11'** | **MW-5 7.5-12'** | **MW-5 12-14'** | **MW-6 15-17'** | **SED-1** | **SED-2** | **SED-3** | **TP-1 7'-7-6"** | **TP-10 3-3'9"** |
| **Sample Date:** | | | **9/15/1998** | **9/15/1998** | **9/15/1998** | **9/16/1998** | **9/23/1998** | **9/23/1998** | **9/23/1998** | **9/22/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(10-11) ft BGS** | **(7.5-12) ft BGS** | **(12-14) ft BGS** | **(15-17) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(7-7.5) ft BGS** | **(3-3.75) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | | | | |
| Naphthalene | mg/kg | NOC | 0.33 U | 280 | 4 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Nitrobenzene | mg/kg | 190 | - | - | - | - | - | - | - | - | - |
| N-Nitrosodi-n-propylamine | mg/kg | | - | - | - | - | - | - | - | - | - |
| N-Nitrosodiphenylamine | mg/kg | | - | - | - | - | - | - | - | - | - |
| Pentachlorophenol | mg/kg | | - | - | - | - | - | - | - | - | - |
| Phenanthrene | mg/kg | NOC | 0.33 U | 830 | 13 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Phenol | mg/kg | NOC | - | - | - | - | - | - | - | - | - |
| Pyrene | mg/kg | | 0.33 U | 270 | 5.4 | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| **Metals** | | | | | | | | | | | |
| Antimony | mg/kg | | 0.64 | 0.64 | 0.54 | 0.89 | 0.5 U | 0.78 | 0.76 | 2.5 | 0.5 U |
| Arsenic | mg/kg | | 3.5 | 0.2 U | 1.1 | 2.3 | 0.91 | 1.6 | 2.3 | 0.2 U | 11 |
| Beryllium | mg/kg | | 0.25 | 0.2 U | 0.26 | 0.26 | 0.2 U | 0.2 U | 0.35 | 0.2 U | 0.44 |
| Cadmium | mg/kg | | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.45 | 0.99 | 0.2 U | 0.2 U |
| Chromium | mg/kg | | 7.6 | 560 | 160 | 16 | 44 | 20 | 49 | 860 | 9.7 |
| Copper | mg/kg | | 9.2 | 7.2 | 24 | 8.2 | 19 | 64 | 93 | 18 | 25 |
| Lead | mg/kg | | 10 | 73 | 45 | 8 | 43 | 61 | 110 | 59 | 20 |
| Mercury | mg/kg | | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.20 | 0.1 U | 0.1 U | 0.1 U |
| Nickel | mg/kg | | 10 | 110 | 31 | 8.6 | 5.6 | 4.9 | 11 | 8.4 | 11 |
| Selenium | mg/kg | | 0.2 U | 0.2 U | 0.39 | 0.2 U | 0.2 U | 0.9 | 2.2 | 0.2 U | 0.2 U |
| Silver | mg/kg | | 0.2 U | 0.3 | 0.2 U | 0.2 U | 0.2 U | 3.6 | 4.8 | 0.88 | 0.2 U |
| Thallium | mg/kg | | - | - | - | - | - | - | - | - | - |
| Zinc | mg/kg | | 32 | 19 | 270 | 34 | 120 | 170 | 330 | 54 | 50 |
| **PCBs** | | | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | | - | - | - | - | - | - | - | - | - |
| Aroclor-1221 (PCB-1221) | mg/kg | NA | - | - | - | - | - | - | - | - | - |
| Aroclor-1232 (PCB-1232) | mg/kg | | - | - | - | - | - | - | - | - | - |
| Aroclor-1242 (PCB-1242) | mg/kg | | - | - | - | - | - | - | - | - | - |
| Aroclor-1248 (PCB-1248) | mg/kg | | - | - | - | - | - | - | - | - | - |
| Aroclor-1254 (PCB-1254) | mg/kg | | - | - | - | - | - | - | - | - | - |
| Aroclor-1260 (PCB-1260) | mg/kg | | - | - | - | - | - | - | - | - | - |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **L1P3-MW-4** | **L1P3-MW-5** | **L1P3-MW-5** | **L1P3-MW-6** | **L1P3-SED-1** | **L1P3-SED-2** | **L1P3-SED-3** | **L1P3-TP-1** | **L1P3-TP-10** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **MW-4 10-11'** | **MW-5 7.5-12'** | **MW-5 12-14'** | **MW-6 15-17'** | **SED-1** | **SED-2** | **SED-3** | **TP-1 7'-7-6"** | **TP-10 3-3'9"** |
| **Sample Date:** | | | **9/15/1998** | **9/15/1998** | **9/15/1998** | **9/16/1998** | **9/23/1998** | **9/23/1998** | **9/23/1998** | **9/22/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(10-11) ft BGS** | **(7.5-12) ft BGS** | **(12-14) ft BGS** | **(15-17) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(0-2) ft BGS** | **(7-7.5) ft BGS** | **(3-3.75) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | | | | |
| **Petroleum Products** | | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | 49 | - | 61 | 38 J | 280 | 110 | 310 | 590 | 55 |
| **General Chemistry** | | | | | | | | | | | |
| Percent moisture | % | | - | - | - | - | - | - | - | - | - |
| pH | s.u. | | 8.48 | 9.98 | 9.36 | 8.44 | 7.19 | 7.06 | 6.88 | 11.24 | 8.39 |

Notes:

(1) PA Land Recycling Program Technical Guidance Manual - Section IV.A.4, Table 5, USEPA Defaults Nonresidential Volatilization to Indoor Air Screen
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
- Not analyzed

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **L1P3-TP-2** | **L1P3-TP-3** | **L1P3-TP-4** | **L1P3-TP-5** | **L1P3-TP-6** | **L1P3-TP-7** | **L1P3-TP-8** | **L1P3-TP-9** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **TP-2 6-9'** | **TP-3 5-6'** | **TP-4 5-6'6"** | **TP-5 5-6'** | **TP-6 3-4'** | **TP-7 9-10'** | **TP-8 9-10'** | **TP-9 5-6'** |
| **Sample Date:** | | | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(6-9) ft BGS** | **(5-6) ft BGS** | **(5-6.5) ft BGS** | **(5-6) ft BGS** | **(3-4) ft BGS** | **(9-10) ft BGS** | **(9-10) ft BGS** | **(5-6) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | | | |
| **Volatile Organic Compounds** | | | | | | | | | | |
| 1,1,1-Trichloroethane | mg/kg | 170 | - | - | - | - | - | - | - | - |
| 1,1,2,2-Tetrachloroethane | mg/kg | 2 | - | - | - | - | - | - | - | - |
| 1,1,2-Trichloroethane | mg/kg | 2.4 | - | - | - | - | - | - | - | - |
| 1,1-Dichloroethane | mg/kg | 2.7 | - | - | - | - | - | - | - | - |
| 1,1-Dichloroethene | mg/kg | 7.6 | - | - | - | - | - | - | - | - |
| 1,2,4-Trichlorobenzene | mg/kg | NOC | - | - | - | - | - | - | - | - |
| 1,2-Dibromo-3-chloropropane (DBCP) | mg/kg | 3.2 | - | - | - | - | - | - | - | - |
| 1,2-Dibromoethane (Ethylene dibromide) | mg/kg | 0.29 | - | - | - | - | - | - | - | - |
| 1,2-Dichlorobenzene | mg/kg | 150 | - | - | - | - | - | - | - | - |
| 1,2-Dichloroethane | mg/kg | 0.83 | - | - | - | - | - | - | - | - |
| 1,2-Dichloroethene (total) | mg/kg | | - | - | - | - | - | - | - | - |
| 1,2-Dichloropropane | mg/kg | 0.88 | - | - | - | - | - | - | - | - |
| 1,3-Dichlorobenzene | mg/kg | NA | - | - | - | - | - | - | - | - |
| 1,4-Dichlorobenzene | mg/kg | 13 | - | - | - | - | - | - | - | - |
| 2-Butanone (Methyl ethyl ketone) (MEK) | mg/kg | 14000 | - | - | - | - | - | - | - | - |
| 2-Hexanone | mg/kg | | - | - | - | - | - | - | - | - |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK) | mg/kg | 120 | - | - | - | - | - | - | - | - |
| Acetone | mg/kg | 110000 | - | - | - | - | - | - | - | - |
| Benzene | mg/kg | 0.63 | - | - | - | - | - | - | - | - |
| Bromodichloromethane | mg/kg | 0.85 | - | - | - | - | - | - | - | - |
| Bromoform | mg/kg | 160 | - | - | - | - | - | - | - | - |
| Bromomethane (Methyl bromide) | mg/kg | 1.3 | - | - | - | - | - | - | - | - |
| Carbon disulfide | mg/kg | 66 | - | - | - | - | - | - | - | - |
| Carbon tetrachloride | mg/kg | 0.12 | - | - | - | - | - | - | - | - |
| Chlorobenzene | mg/kg | 13 | - | - | - | - | - | - | - | - |
| Chloroethane | mg/kg | 1.8 | - | - | - | - | - | - | - | - |
| Chloroform (Trichloromethane) | mg/kg | 0.074 | - | - | - | - | - | - | - | - |
| Chloromethane (Methyl chloride) | mg/kg | 0.64 | - | - | - | - | - | - | - | - |
| cis-1,2-Dichloroethene | mg/kg | 7.6 | - | - | - | - | - | - | - | - |
| cis-1,3-Dichloropropene | mg/kg | | - | - | - | - | - | - | - | - |
| Cyclohexane | mg/kg | | - | - | - | - | - | - | - | - |
| Dibromochloromethane | mg/kg | 2.2 | - | - | - | - | - | - | - | - |
| Dichlorodifluoromethane (CFC-12) | mg/kg | 2.6 | - | - | - | - | - | - | - | - |
| Ethylbenzene | mg/kg | 9.5 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Isopropyl benzene | mg/kg | 360 | - | - | - | - | - | - | - | - |
| m&p-Xylenes | mg/kg | | - | - | - | - | - | - | - | - |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **L1P3-TP-2** | **L1P3-TP-3** | **L1P3-TP-4** | **L1P3-TP-5** | **L1P3-TP-6** | **L1P3-TP-7** | **L1P3-TP-8** | **L1P3-TP-9** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **TP-2 6-9'** | **TP-3 5-6'** | **TP-4 5-6'6"** | **TP-5 5-6'** | **TP-6 3-4'** | **TP-7 9-10'** | **TP-8 9-10'** | **TP-9 5-6'** |
| **Sample Date:** | | | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(6-9) ft BGS** | **(5-6) ft BGS** | **(5-6.5) ft BGS** | **(5-6) ft BGS** | **(3-4) ft BGS** | **(9-10) ft BGS** | **(9-10) ft BGS** | **(5-6) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | | | |
| Methyl acetate | mg/kg | 19000 | - | - | - | - | - | - | - | - |
| Methyl cyclohexane | mg/kg | | - | - | - | - | - | - | - | - |
| Methyl tert butyl ether (MTBE) | mg/kg | 86 | - | - | - | - | - | - | - | - |
| Methylene chloride | mg/kg | 14 | 0.0019 JB | 0.0012 JB | 0.0014 JB | 0.0015 JB | 0.0011 JB | 0.0017 JB | 0.0011 JB | 0.0013 JB |
| o-Xylene | mg/kg | | - | - | - | - | - | - | - | - |
| Styrene | mg/kg | 720 | - | - | - | - | - | - | - | - |
| Tetrachloroethene | mg/kg | 10 | - | - | - | - | - | - | - | - |
| Toluene | mg/kg | 110 | 0.00075 JB | 0.00055 JB | 0.00062 JB | 0.0006 JB | 0.00059 JB | 0.00051 JB | 0.00051 JB | 0.00052 JB |
| trans-1,2-Dichloroethene | mg/kg | 6.4 | - | - | - | - | - | - | - | - |
| trans-1,3-Dichloropropene | mg/kg | | - | - | - | - | - | - | - | - |
| Trichloroethene | mg/kg | 2.2 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Trichlorofluoromethane (CFC-11) | mg/kg | 13 | - | - | - | - | - | - | - | - |
| Trifluorotrichloroethane (Freon 113) | mg/kg | 670 | - | - | - | - | - | - | - | - |
| Vinyl chloride | mg/kg | 0.061 | - | - | - | - | - | - | - | - |
| Xylenes (total) | mg/kg | 77 | - | - | - | - | - | - | - | - |
| **Semi-volatile Organic Compounds** | | | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether) | mg/kg | 28 | - | - | - | - | - | - | - | - |
| 2,4,5-Trichlorophenol | mg/kg | | - | - | - | - | - | - | - | - |
| 2,4,6-Trichlorophenol | mg/kg | | - | - | - | - | - | - | - | - |
| 2,4-Dichlorophenol | mg/kg | | - | - | - | - | - | - | - | - |
| 2,4-Dimethylphenol | mg/kg | | - | - | - | - | - | - | - | - |
| 2,4-Dinitrophenol | mg/kg | | - | - | - | - | - | - | - | - |
| 2,4-Dinitrotoluene | mg/kg | | - | - | - | - | - | - | - | - |
| 2,6-Dinitrotoluene | mg/kg | | - | - | - | - | - | - | - | - |
| 2-Chloronaphthalene | mg/kg | NOC | - | - | - | - | - | - | - | - |
| 2-Chlorophenol | mg/kg | 270 | - | - | - | - | - | - | - | - |
| 2-Methylnaphthalene | mg/kg | NOC | - | - | - | - | - | - | - | - |
| 2-Methylphenol | mg/kg | NOC | - | - | - | - | - | - | - | - |
| 2-Nitroaniline | mg/kg | | - | - | - | - | - | - | - | - |
| 2-Nitrophenol | mg/kg | NOC | - | - | - | - | - | - | - | - |
| 3,3'-Dichlorobenzidine | mg/kg | | - | - | - | - | - | - | - | - |
| 3-Nitroaniline | mg/kg | | - | - | - | - | - | - | - | - |
| 4,6-Dinitro-2-methylphenol | mg/kg | | - | - | - | - | - | - | - | - |
| 4-Bromophenyl phenyl ether | mg/kg | | - | - | - | - | - | - | - | - |
| 4-Chloro-3-methylphenol | mg/kg | | - | - | - | - | - | - | - | - |
| 4-Chloroaniline | mg/kg | | - | - | - | - | - | - | - | - |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **L1P3-TP-2** | **L1P3-TP-3** | **L1P3-TP-4** | **L1P3-TP-5** | **L1P3-TP-6** | **L1P3-TP-7** | **L1P3-TP-8** | **L1P3-TP-9** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **TP-2 6-9'** | **TP-3 5-6'** | **TP-4 5-6'6"** | **TP-5 5-6'** | **TP-6 3-4'** | **TP-7 9-10'** | **TP-8 9-10'** | **TP-9 5-6'** |
| **Sample Date:** | | | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(6-9) ft BGS** | **(5-6) ft BGS** | **(5-6.5) ft BGS** | **(5-6) ft BGS** | **(3-4) ft BGS** | **(9-10) ft BGS** | **(9-10) ft BGS** | **(5-6) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | | | |
| 4-Chlorophenyl phenyl ether | mg/kg | | - | - | - | - | - | - | - | - |
| 4-Methylphenol | mg/kg | | - | - | - | - | - | - | - | - |
| 4-Nitroaniline | mg/kg | | - | - | - | - | - | - | - | - |
| 4-Nitrophenol | mg/kg | | - | - | - | - | - | - | - | - |
| Acenaphthene | mg/kg | NOC | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Acenaphthylene | mg/kg | NOC | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Acetophenone | mg/kg | NOC | - | - | - | - | - | - | - | - |
| Anthracene | mg/kg | NOC | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Atrazine | mg/kg | | - | - | - | - | - | - | - | - |
| Benzaldehyde | mg/kg | | - | - | - | - | - | - | - | - |
| Benzo(a)anthracene | mg/kg | | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(a)pyrene | mg/kg | | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(b)fluoranthene | mg/kg | | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(g,h,i)perylene | mg/kg | | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Benzo(k)fluoranthene | mg/kg | | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Biphenyl (1,1-Biphenyl) | mg/kg | NOC | - | - | - | - | - | - | - | - |
| bis(2-Chloroethoxy)methane | mg/kg | | - | - | - | - | - | - | - | - |
| bis(2-Chloroethyl)ether | mg/kg | 7.1 | - | - | - | - | - | - | - | - |
| bis(2-Ethylhexyl)phthalate (DEHP) | mg/kg | | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Butyl benzylphthalate (BBP) | mg/kg | | - | - | - | - | - | - | - | - |
| Caprolactam | mg/kg | | - | - | - | - | - | - | - | - |
| Carbazole | mg/kg | | - | - | - | - | - | - | - | - |
| Chrysene | mg/kg | | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Dibenz(a,h)anthracene | mg/kg | | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Dibenzofuran | mg/kg | | - | - | - | - | - | - | - | - |
| Diethyl phthalate | mg/kg | | - | - | - | - | - | - | - | - |
| Dimethyl phthalate | mg/kg | | - | - | - | - | - | - | - | - |
| Di-n-butylphthalate (DBP) | mg/kg | | - | - | - | - | - | - | - | - |
| Di-n-octyl phthalate (DnOP) | mg/kg | | - | - | - | - | - | - | - | - |
| Fluoranthene | mg/kg | | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Fluorene | mg/kg | NOC | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Hexachlorobenzene | mg/kg | | - | - | - | - | - | - | - | - |
| Hexachlorobutadiene | mg/kg | | - | - | - | - | - | - | - | - |
| Hexachlorocyclopentadiene | mg/kg | | - | - | - | - | - | - | - | - |
| Hexachloroethane | mg/kg | | - | - | - | - | - | - | - | - |
| Indeno(1,2,3-cd)pyrene | mg/kg | | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Isophorone | mg/kg | | - | - | - | - | - | - | - | - |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **L1P3-TP-2** | **L1P3-TP-3** | **L1P3-TP-4** | **L1P3-TP-5** | **L1P3-TP-6** | **L1P3-TP-7** | **L1P3-TP-8** | **L1P3-TP-9** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **TP-2 6-9'** | **TP-3 5-6'** | **TP-4 5-6'6"** | **TP-5 5-6'** | **TP-6 3-4'** | **TP-7 9-10'** | **TP-8 9-10'** | **TP-9 5-6'** |
| **Sample Date:** | | | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(6-9) ft BGS** | **(5-6) ft BGS** | **(5-6.5) ft BGS** | **(5-6) ft BGS** | **(3-4) ft BGS** | **(9-10) ft BGS** | **(9-10) ft BGS** | **(5-6) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | | | |
| Naphthalene | mg/kg | NOC | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Nitrobenzene | mg/kg | 190 | - | - | - | - | - | - | - | - |
| N-Nitrosodi-n-propylamine | mg/kg | | - | - | - | - | - | - | - | - |
| N-Nitrosodiphenylamine | mg/kg | | - | - | - | - | - | - | - | - |
| Pentachlorophenol | mg/kg | | - | - | - | - | - | - | - | - |
| Phenanthrene | mg/kg | NOC | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| Phenol | mg/kg | NOC | - | - | - | - | - | - | - | - |
| Pyrene | mg/kg | | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U | 0.33 U |
| **Metals** | | | | | | | | | | |
| Antimony | mg/kg | | 0.5 U | 0.88 | 0.96 | 0.5 U | 1.2 | 0.75 | 0.52 | 1.2 |
| Arsenic | mg/kg | | 1.1 | 3.5 | 6.7 | 7.2 | 4.8 | 4.2 | 3.6 | 0.5 |
| Beryllium | mg/kg | | 0.2 U | 0.29 | 0.46 | 0.48 | 0.29 | 0.25 | 0.26 | 0.46 |
| Cadmium | mg/kg | | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Chromium | mg/kg | | 550 | 7.6 | 22 | 6.1 | 20 | 8.1 | 6.8 | 51 |
| Copper | mg/kg | | 15 | 9.6 | 9.2 | 8 | 11 | 8.8 | 7.8 | 12 |
| Lead | mg/kg | | 15 | 8.8 | 15 | 15 | 20 | 8.3 | 8.1 | 17 |
| Mercury | mg/kg | | 0.1 U | 0.1 U | 0.1 U | 0.11 | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Nickel | mg/kg | | 6.8 | 12 | 11 | 11 | 14 | 11 | 12 | 11 |
| Selenium | mg/kg | | 0.2 U | 0.98 | 0.2 U | 0.67 | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Silver | mg/kg | | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Thallium | mg/kg | | - | - | - | - | - | - | - | - |
| Zinc | mg/kg | | 55 | 52 | 50 | 41 | 63 | 47 | 45 | 51 |
| **PCBs** | | | | | | | | | | |
| Aroclor-1016 (PCB-1016) | mg/kg | | - | - | - | - | - | - | - | - |
| Aroclor-1221 (PCB-1221) | mg/kg | NA | - | - | - | - | - | - | - | - |
| Aroclor-1232 (PCB-1232) | mg/kg | | - | - | - | - | - | - | - | - |
| Aroclor-1242 (PCB-1242) | mg/kg | | - | - | - | - | - | - | - | - |
| Aroclor-1248 (PCB-1248) | mg/kg | | - | - | - | - | - | - | - | - |
| Aroclor-1254 (PCB-1254) | mg/kg | | - | - | - | - | - | - | - | - |
| Aroclor-1260 (PCB-1260) | mg/kg | | - | - | - | - | - | - | - | - |

**Table 4.4**

**Screened Analytical Results**
**All Soil Samples Vs Non-Residential Volatilization to Indoor Air Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, PA**

| **Sample Location:** | | | **L1P3-TP-2** | **L1P3-TP-3** | **L1P3-TP-4** | **L1P3-TP-5** | **L1P3-TP-6** | **L1P3-TP-7** | **L1P3-TP-8** | **L1P3-TP-9** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | **TP-2 6-9'** | **TP-3 5-6'** | **TP-4 5-6'6"** | **TP-5 5-6'** | **TP-6 3-4'** | **TP-7 9-10'** | **TP-8 9-10'** | **TP-9 5-6'** |
| **Sample Date:** | | | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** | **9/21/1998** |
| **Sample Depth:** | | | **(6-9) ft BGS** | **(5-6) ft BGS** | **(5-6.5) ft BGS** | **(5-6) ft BGS** | **(3-4) ft BGS** | **(9-10) ft BGS** | **(9-10) ft BGS** | **(5-6) ft BGS** |
| **Parameters** | **Units** | **USEPA/PA Nonresidential Volatilization to Indoor Air Screen (1)** | | | | | | | | |
| **Petroleum Products** | | | | | | | | | | |
| Total Petroleum Hydrocarbons | mg/kg | | 32 J | 32 J | 49 | 32 JB | 49 | 49 | 44 | 32 J |
| **General Chemistry** | | | | | | | | | | |
| Percent moisture | % | | - | - | - | - | - | - | - | - |
| pH | s.u. | | 9.06 | 6.11 | 7.2 | 7.13 | 7.73 | 8.43 | 7.57 | 7.66 |

Notes:

(1) PA Land Recycling Program Technical Guidance Manual - Section IV.A.4, Table 5, USEPA Defaults Nonresidential Volatilization to Indoor Air Screen
mg/kg milligrams per kilogram
J Estimated concentration.
R Rejected.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
- Not analyzed

**Table 4.5**

**Screened Analytical Results**
**Surface Water Samples Vs Surface Water Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, Pennsylvania**

| **Sample Location:** | | | | | **ELC-SW-1** | **ELC-SW-2** | **ELC-SW-3** | **ELC-SW-3** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | | | **ELC-SW-1_062614** | **ELC-SW-2_062614** | **ELC-SW-3_062614** | **DUP-003_062614** |
| **Sample Date:** | | | | | **6/26/2014** | **6/26/2014** | **6/26/2014** | **6/26/2014** |
| | | **Fish and Aquatic Life Criteria** | | | | | | **(Duplicate)** |
| **Parameters** | **Units** | **Continuous** | **Maximum** | **Human Health** | | | | |
| | | **a** | **b** | **c** | | | | |
| **Volatile Organic Compounds** | | | | | | | | |
| 1,1,1-Trichloroethane | µg/L | 610 | 3000 | N/A | 0.29 U | 0.29 U | 0.29 U | 0.29 U |
| 1,1,2,2-Tetrachloroethane | µg/L | 210 | 1000 | 0.17 | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| 1,1,2-Trichloroethane | µg/L | 680 | 3400 | 0.59 | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| 1,1-Dichloroethane | µg/L | | | N/A | 0.12 U | 0.12 U | 0.12 U | 0.12 U |
| 1,1-Dichloroethene | µg/L | 1500 | 7500 | 33 | 0.3 U | 0.3 U | 0.3 U | 0.3 U |
| 1,2,4-Trichlorobenzene | µg/L | 26 | 130 | 35 | 0.27 U | 0.27 U | 0.27 U | 0.27 U |
| 1,2-Dibromo-3-chloropropane (DBCP) | µg/L | | | | 0.14 U | 0.14 U | 0.14 U | 0.14 U |
| 1,2-Dibromoethane (Ethylene dibromide) | µg/L | | | | 0.18 U | 0.18 U | 0.18 U | 0.18 U |
| 1,2-Dichlorobenzene | µg/L | 160 | 820 | 420 | 0.15 U | 0.15 U | 0.15 U | 0.15 U |
| 1,2-Dichloroethane | µg/L | 3100 | 15000 | 0.38 | 0.21 U | 0.21 U | 0.21 U | 0.21 U |
| 1,2-Dichloroethene (total) | µg/L | | | | 0.51 U | 0.51 U | 0.51 U | 0.51 U |
| 1,2-Dichloropropane | µg/L | 2200 | 11000 | N/A | 0.095 U | 0.095 U | 0.095 U | 0.095 U |
| 1,3-Dichlorobenzene | µg/L | 69 | 350 | 420 | 0.11 U | 0.11 U | 0.11 U | 0.11 U |
| 1,4-Dichlorobenzene | µg/L | 150 | 730 | 420 | 0.21 U | 0.21 U | 0.21 U | 0.21 U |
| 2-Butanone (Methyl ethyl ketone) (MEK) | µg/L | 32000 | 230000 | 21000 | 0.55 U | 0.55 U | 0.55 U | 0.55 U |
| 2-Hexanone | µg/L | 4300 | 21000 | N/A | 0.16 U | 0.16 U | 0.16 U | 0.16 U |
| 4-Methyl-2-pentanone- | µg/L | 5000 | 26000 | N/A | 0.53 U | 0.53 U | 0.53 U | 0.53 U |
| (Methyl isobutyl ketone) (MIBK) | | | | | | | | |
| Acetone | µg/L | 86000 | 450000 | 3500 | 2.5 U | 2.5 U | 2.5 U | 2.5 U |
| Benzene | µg/L | 130 | 640 | 1.2 | 0.11 U | 0.11 U | 0.11 U | 0.11 U |
| Bromodichloromethane | µg/L | | | 0.55 | 0.13 U | 0.13 U | 0.13 U | 0.13 U |
| Bromoform | µg/L | 370 | 1800 | 4.3 | 0.19 U | 0.19 U | 0.19 U | 0.19 U |
| Bromomethane (Methyl bromide) | µg/L | 110 | 550 | 47 | 0.31 U | 0.31 U | 0.31 U | 0.31 U |
| Carbon disulfide | µg/L | | | | 0.21 U | 0.21 U | 0.21 U | 0.21 U |
| Carbon tetrachloride | µg/L | 560 | 2800 | 0.23 | 0.14 U | 0.14 U | 0.14 U | 0.14 U |
| Chlorobenzene | µg/L | 240 | 1200 | 130 | 0.14 U | 0.14 U | 0.14 U | 0.14 U |
| Chloroethane | µg/L | | | N/A | 0.21 U | 0.21 U | 0.21 U | 0.21 U |
| Chloroform (Trichloromethane) | µg/L | 390 | 1900 | 5.7 | 0.17 U | 0.17 U | 0.17 U | 0.17 U |
| Chloromethane (Methyl chloride) | µg/L | 5500 | 28000 | N/A | 0.28 U | 0.28 U | 0.28 U | 0.28 U |
| cis-1,2-Dichloroethene | µg/L | | | 12 | 0.24 U | 0.24 U | 0.24 U | 0.24 U |
| cis-1,3-Dichloropropene | µg/L | | | | 0.19 U | 0.19 U | 0.19 U | 0.19 U |
| Cyclohexane | µg/L | | | | 0.25 U | 0.25 U | 0.25 U | 0.25 U |
| Dibromochloromethane | µg/L | | | 0.4 | 0.14 U | 0.14 U | 0.14 U | 0.14 U |
| Dichlorodifluoromethane (CFC-12) | µg/L | | | | 0.19 U | 0.19 U | 0.19 U | 0.19 U |
| Ethylbenzene | µg/L | 580 | 2900 | 530 | 0.23 U | 0.23 U | 0.23 U | 0.23 U |
| Isopropyl benzene | µg/L | | | | 0.16 U | 0.16 U | 0.16 U | 0.16 U |
| m&p-Xylenes | µg/L | | | | 0.41 U | 0.41 U | 0.41 U | 0.41 U |
| Methyl acetate | µg/L | | | | 0.14 U | 0.14 U | 0.14 U | 0.14 U |
| Methyl cyclohexane | µg/L | | | | 0.26 U | 0.26 U | 0.26 U | 0.26 U |
| Methyl tert butyl ether (MTBE) | µg/L | | | | 0.18 U | 0.18 U | 0.18 U | 0.18 U |
| Methylene chloride | µg/L | 2400 | 12000 | 4.6 | 0.13 U | 0.13 U | 0.13 U | 0.13 U |
| o-Xylene | µg/L | | | | 0.11 U | 0.11 U | 0.11 U | 0.11 U |
| Styrene | µg/L | | | | 0.097 U | 0.097 U | 0.097 U | 0.097 U |
| Tetrachloroethene | µg/L | 140 | 700 | 0.69 | 0.15 U | 0.15 U | 0.15 U | 0.15 U |
| Toluene | µg/L | 330 | 1700 | 1300 | 0.15 U | 0.15 U | 0.15 U | 0.15 U |
| trans-1,2-Dichloroethene | µg/L | 1400 | 6800 | 140 | 0.17 U | 0.17 U | 0.17 U | 0.17 U |
| trans-1,3-Dichloropropene | µg/L | | | | 0.15 U | 0.15 U | 0.15 U | 0.15 U |
| Trichloroethene | µg/L | 450 | 2300 | 2.5 | 0.14 U | 0.14 U | 0.14 U | 0.14 U |
| Trichlorofluoromethane (CFC-11) | µg/L | | | | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Trifluorotrichloroethane (Freon 113) | µg/L | | | | 0.32 U | 0.32 U | 0.32 U | 0.32 U |
| Vinyl chloride | µg/L | | | 0.025 | 0.23 U | 0.23 U | 0.23 U | 0.23 U |
| Xylenes (total) | µg/L | 210 | 1100 | 70000 | 0.49 U | 0.49 U | 0.49 U | 0.49 U |

**Table 4.5**

**Screened Analytical Results**
**Surface Water Samples Vs Surface Water Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, Pennsylvania**

| **Sample Location:** | | | | | **ELC-SW-1** | **ELC-SW-2** | **ELC-SW-3** | **ELC-SW-3** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | | | **ELC-SW-1_062614** | **ELC-SW-2_062614** | **ELC-SW-3_062614** | **DUP-003_062614** |
| **Sample Date:** | | | | | **6/26/2014** | **6/26/2014** | **6/26/2014** | **6/26/2014** |
| | | **Fish and Aquatic Life Criteria** | | | | | | **(Duplicate)** |
| **Parameters** | **Units** | **Continuous** | **Maximum** | **Human Health** | | | | |
| | | **a** | **b** | **c** | | | | |
| **Semi-volatile Organic Compounds** | | | | | | | | |
| 2,2'-Oxybis(1-chloropropane)-(bis(2-Chloroisopropyl) ether) | µg/L | | | 1400 | 0.022 U | 0.022 U | 0.022 U | 0.023 U |
| 2,4,5-Trichlorophenol | µg/L | | | | 0.11 U | 0.11 U | 0.11 U | 0.12 U |
| 2,4,6-Trichlorophenol | µg/L | 91 | 460 | 1.4 | 0.28 U | 0.28 U | 0.28 U | 0.29 U |
| 2,4-Dichlorophenol | µg/L | 340 | 1700 | 77 | 0.062 U | 0.062 U | 0.062 U | 0.065 U |
| 2,4-Dimethylphenol | µg/L | 130 | 660 | 380 | 0.16 U | 0.16 U | 0.16 U | 0.16 U |
| 2,4-Dinitrophenol | µg/L | 130 | 660 | 69 | 2.3 U | 2.3 U | 2.3 U | 2.4 U |
| 2,4-Dinitrotoluene | µg/L | 320 | 1600 | 0.05 | 0.2 U | 0.2 U | 0.2 U | 0.21 U |
| 2,6-Dinitrotoluene | µg/L | 200 | 990 | 0.05 | 0.13 U | 0.13 U | 0.13 U | 0.13 U |
| 2-Chloronaphthalene | µg/L | | | 1000 | 0.028 U | 0.028 U | 0.028 U | 0.03 U |
| 2-Chlorophenol | µg/L | 110 | 560 | 81 | 0.21 U | 0.21 U | 0.21 U | 0.22 U |
| 2-Methylnaphthalene | µg/L | | | | 0.018 U | 0.018 U | 0.018 U | 0.018 U |
| 2-Methylphenol | µg/L | | | | 0.17 U | 0.17 U | 0.17 U | 0.18 U |
| 2-Nitroaniline | µg/L | | | | 0.62 U | 0.62 U | 0.62 U | 0.65 U |
| 2-Nitrophenol | µg/L | 1600 | 8000 | N/A | 0.1 U | 0.1 U | 0.1 U | 0.11 U |
| 3,3'-Dichlorobenzidine | µg/L | | | 0.021 | 0.14 U | 0.14 U | 0.14 U | 0.14 U |
| 3-Nitroaniline | µg/L | | | | 0.75 U | 0.75 U | 0.75 U | 0.77 U |
| 4,6-Dinitro-2-methylphenol | µg/L | 16 | 80 | 13 | 1.4 U | 1.4 U | 1.4 U | 1.5 U |
| 4-Bromophenyl phenyl ether | µg/L | 54 | 270 | N/A | 0.11 U | 0.11 U | 0.11 U | 0.11 U |
| 4-Chloro-3-methylphenol | µg/L | 30 | 160 | N/A | 0.16 U | 0.16 U | 0.16 U | 0.16 U |
| 4-Chloroaniline | µg/L | | | | 0.27 U | 0.27 U | 0.27 U | 0.28 U |
| 4-Chlorophenyl phenyl ether | µg/L | | | N/A | 0.074 U | 0.074 U | 0.074 U | 0.077 U |
| 4-Methylphenol | µg/L | | | | 0.19 U | 0.19 U | 0.19 U | 0.2 U |
| 4-Nitroaniline | µg/L | | | | 0.72 U | 0.72 U | 0.72 U | 0.74 U |
| 4-Nitrophenol | µg/L | 470 | 2300 | N/A | 0.74 U | 0.74 U | 0.74 U | 0.77 U |
| Acenaphthene | µg/L | 17 | 83 | 670 | 0.027 U | 0.027 U | 0.027 U | 0.028 U |
| Acenaphthylene | µg/L | | | N/A | 0.02 U | 0.02 U | 0.02 U | 0.021 U |
| Acetophenone | µg/L | | | | 0.1 U | 0.1 U | 0.1 U | 0.11 U |
| Anthracene | µg/L | | | 8300 | 0.018 U | 0.018 U | 0.018 U | 0.018 U |
| Atrazine | µg/L | | | | 0.21 U | 0.21 U | 0.21 U | 0.21 U |
| Benzaldehyde | µg/L | | | | 0.098 U | 0.098 U | 0.098 J | 0.1 U |
| Benzo(a)anthracene | µg/L | 0.1 | 0.5 | 0.0038 | 0.034 U | 0.034 U | 0.034 U | 0.035 U |
| Benzo(a)pyrene | µg/L | | | 0.0038 | 0.026 U | 0.026 U | 0.026 U | 0.027 U |
| Benzo(b)fluoranthene | µg/L | | | 0.0038 | 0.045 U | 0.045 U | 0.045 U | 0.047 U |
| Benzo(g,h,i)perylene | µg/L | | | N/A | 0.027 U | 0.027 U | 0.027 U | 0.028 U |
| Benzo(k)fluoranthene | µg/L | | | 0.0038 | 0.028 U | 0.028 U | 0.028 U | 0.029 U |
| Biphenyl (1,1-Biphenyl) | µg/L | | | | 0.097 U | 0.097 U | 0.097 U | 0.1 U |
| bis(2-Chloroethoxy)methane | µg/L | | | N/A | 0.12 U | 0.12 U | 0.12 U | 0.13 U |
| bis(2-Chloroethyl)ether | µg/L | 6000 | 30000 | 0.03 | 0.029 U | 0.029 U | 0.029 U | 0.03 U |
| bis(2-Ethylhexyl)phthalate (DEHP) | µg/L | 910 | 4500 | 1.2 | 4 U | 2.1 U | 0.99 U | 1.5 U |
| Butyl benzylphthalate (BBP) | µg/L | 35 | 140 | 150 | 2.7 | 0.52 U | 0.96 U | 0.54 U |
| Caprolactam | µg/L | | | | 1.4 U | 1.4 U | 1.4 U | 1.4 U |
| Carbazole | µg/L | | | | 0.025 U | 0.025 U | 0.025 U | 0.026 U |
| Chrysene | µg/L | | | 0.0038 | 0.029 U | 0.029 U | 0.029 U | 0.03 U |
| Dibenz(a,h)anthracene | µg/L | | | 0.0038 | 0.025 U | 0.025 U | 0.025 U | 0.026 U |
| Dibenzofuran | µg/L | | | | 0.089 U | 0.089 U | 0.089 U | 0.093 U |
| Diethyl phthalate | µg/L | 800 | 4000 | 17000 | 0.27 U | 0.27 U | 0.27 U | 0.29 U |
| Dimethyl phthalate | µg/L | 500 | 2500 | 270000 | 0.17 U | 0.17 U | 0.17 U | 0.18 U |
| Di-n-butylphthalate (DBP) | µg/L | 21 | 110 | 2000 | 0.22 U | 0.22 U | 0.22 U | 0.23 U |
| Di-n-octyl phthalate (DnOP) | µg/L | | | N/A | 0.19 U | 0.19 U | 0.19 U | 0.2 U |

**Table 4.5**

**Screened Analytical Results**
**Surface Water Samples Vs Surface Water Criteria**
**32-Acre Parcel**
**Keystone Industrial Port Complex, Us Steel**
**Fairless Hills, Pennsylvania**

| **Sample Location:** | | | | | **ELC-SW-1** | **ELC-SW-2** | **ELC-SW-3** | **ELC-SW-3** |
|---|---|---|---|---|---|---|---|---|
| **Sample ID:** | | | | | **ELC-SW-1_062614** | **ELC-SW-2_062614** | **ELC-SW-3_062614** | **DUP-003_062614** |
| **Sample Date:** | | | | | **6/26/2014** | **6/26/2014** | **6/26/2014** | **6/26/2014** |
| | | **Fish and Aquatic Life Criteria** | | | | | | **(Duplicate)** |
| **Parameters** | **Units** | **Continuous** | **Maximum** | **Human Health** | | | | |
| | | **a** | **b** | **c** | | | | |
| Fluoranthene | µg/L | 40 | 200 | 130 | 0.02 U | 0.047 J | 0.02 U | 0.02 U |
| Fluorene | µg/L | | | 1100 | 0.022 U | 0.022 U | 0.022 U | 0.023 U |
| Hexachlorobenzene | µg/L | | | 0.00028 | 0.056 U | 0.056 U | 0.056 U | 0.059 U |
| Hexachlorobutadiene | µg/L | 2 | 10 | 0.44 | 0.087 U | 0.087 U | 0.087 U | 0.09 U |
| Hexachlorocyclopentadiene | µg/L | 1 | 5 | 40 | 0.13 U | 0.13 U | 0.13 U | 0.13 U |
| Hexachloroethane | µg/L | 12 | 60 | 1.4 | 0.13 U | 0.13 U | 0.13 U | 0.13 U |
| Indeno(1,2,3-cd)pyrene | µg/L | | | 0.0038 | 0.04 U | 0.04 U | 0.04 U | 0.042 U |
| Isophorone | µg/L | 2100 | 10000 | 35 | 0.068 U | 0.068 U | 0.068 U | 0.071 U |
| Naphthalene | µg/L | 43 | 140 | N/A | 0.021 U | 0.021 U | 0.021 U | 0.022 U |
| Nitrobenzene | µg/L | 810 | 4000 | 17 | 0.14 U | 0.14 U | 0.14 U | 0.14 U |
| N-Nitrosodi-n-propylamine | µg/L | | | 0.005 | 0.046 U | 0.046 U | 0.046 U | 0.048 U |
| N-Nitrosodiphenylamine | µg/L | 59 | 300 | 3.3 | 0.11 U | 0.11 U | 0.11 U | 0.12 U |
| Pentachlorophenol | µg/L | 6.7 | 8.7 | 0.27 | 0.46 U | 0.46 U | 0.46 U | 0.48 U |
| Phenanthrene | µg/L | 1 | 5 | N/A | 0.038 U | 0.038 U | 0.038 U | 0.04 U |
| Phenol | µg/L | | | 10400 | 0.051 U | 0.051 U | 0.051 U | 0.053 U |
| Pyrene | µg/L | | | 830 | 0.021 U | 0.021 U | 0.021 U | 0.022 U |
| **Metals** | | | | | | | | |
| Antimony | µg/L | 220 | 1100 | 5.6 | 0.94 J | 1 J | 0.59 U | 0.59 U |
| Arsenic | µg/L | 150 | 340 | 10 | 1.5 U | 2 U | 2.2 U | 0.58 U |
| Beryllium | µg/L | | | N/A | 0.037 U | 0.089 U | 0.037 U | 0.037 U |
| Cadmium | µg/L | 0.26 | 2.3 | | 0.11 U | 0.11 U | 0.11 U | 0.11 U |
| Chromium | µg/L | | | | 3.3 U | 3.9 U | 4.8 U | 3.9 U |
| Copper | µg/L | 10.3 | 16 | | 1.2 U | 1.5 U | 3.1 U | 2.1 U |
| Lead | µg/L | 2.4 | 62 | | 1 | 1.3 | 1.9 | 0.58 J |
| Mercury | µg/L | 0.65 | 1.2 | | 0.038 U | 0.038 U | 0.038 U | 0.038 U |
| Nickel | µg/L | 62 | 559 | | 0.85 U | 0.82 U | 0.89 U | 0.48 U |
| Selenium | µg/L | 4.2 | | | 1.3 U | 1.3 U | 1.2 U | 0.87 U |
| Silver | µg/L | | 3.9 | | 0.047 J | 0.087 J | 0.12 U | 0.052 J |
| Thallium | µg/L | 13 | 65 | 0.24 | 0.015 U | 0.17 U | 0.08 U | 0.039 U |
| Zinc | µg/L | 138 | 137 | | 4.2 U | 6.5 U | 16 U | 4.6 U |
| **PCBs** | | | | | | | | |
| Aroclor-1016 (PCB-1016) | µg/L | | | | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U |
| Aroclor-1221 (PCB-1221) | µg/L | | | | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U |
| Aroclor-1232 (PCB-1232) | µg/L | | | | 0.003 U | 0.003 U | 0.003 U | 0.003 U |
| Aroclor-1242 (PCB-1242) | µg/L | | | | 0.0019 U | 0.0019 U | 0.0019 U | 0.0019 U |
| Aroclor-1248 (PCB-1248) | µg/L | | | | 0.0023 U | 0.0023 U | 0.0023 U | 0.0023 U |
| Aroclor-1254 (PCB-1254) | µg/L | | | | 0.0023 U | 0.0023 U | 0.0023 U | 0.0023 U |
| Aroclor-1260 (PCB-1260) | µg/L | | | | 0.0014 U | 0.0014 U | 0.0014 U | 0.0014 U |
| **General Chemistry** | | | | | | | | |
| Hardness | µg/L | | | | 120000 | 120000 | 130000 | 120000 |

Notes:

(1) PA Chapter 93.8c, Table 5, Water Quality Criteria for Toxic Substances, developed using a pH of 7 and a hardness of 123.33 mg/L.
µg/L Micrograms/Litre.
J Estimated concentration.
U Not detected at the associated reporting limit.
UJ Not detected; associated reporting limit is estimated.
- Not analyzed.