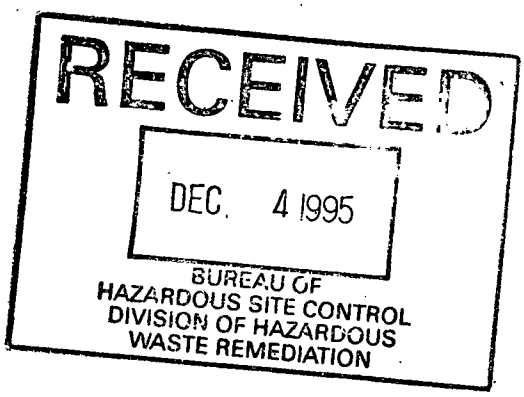
APPROVED

# ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

## HAZARD RANKING SYSTEM SCORE

Hanna Furnace
Buffalo, NY

Site No. 915029
Erie County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Portland, Maine

October 1995

NYSDEC SUPERFUND STANDBY CONTRACT
WORK ASSIGNMENT NO. D002472-14.1

# HAZARD RANKING SYSTEM SCORE

## HANNA FURNACE SITE
## BUFFALO, NEW YORK

## SITE NO. 915029

*Submitted to:*

New York State Department of Environmental Conservation
Albany, New York

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October 1995


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HANNA FURNACE SITE
DOCUMENTATION SUPPORT
HAZARD RANKING SYSTEM SCORING

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# 1.0 INTRODUCTION

This report summarizes the scoring of the Hanna Furnace Site, New York State Department of Environmental Conservation (NYSDEC) Number (No.) 915029, according to the U.S. Environmental Protection Agency (USEPA) Hazard Ranking System (HRS). The HRS was promulgated as Appendix A of the National Oil and Hazardous Substances Contingency Plan (NCP) as a final rule on December 14, 1990 (55 FR No. 241:51532-51667). ABB Environmental Services, Inc. (ABB-ES) has prepared this narrative and HRS score for the NYSDEC under Work Assignment No. D002472-14.

The HRS serves as a screening tool to evaluate the potential impact to human health and the environment by uncontrolled releases of hazardous substances. It considers observed and potential releases of hazardous substances that migrate to the environment by four pathways: groundwater, surface water, soil, and air. Scoring of each pathway is based on three factors: observed or potential for release of hazardous substance to any of the four media, characteristics of wastes disposed at the site (toxicity, mobility, persistence, and bioaccumulation), and targets (human receptor populations and sensitive environments within specific distance limits of each pathway). The HRS is designed to provide a consistent and uniform comparison of significantly diverse sites.

Sites may be added to the National Priorities List (NPL) by one of three methods:

- The Agency for Toxic Substances and Disease Registry may issue a health advisory.
- A State may recommend a site for the NPL if it designates the site as its highest priority.
- USEPA can nominate a site if the HRS score is above 28.5 (HRS scores fall between 0 and 100).

Typically, data necessary to calculate the HRS score is provided by the responsible party to the respective USEPA Region, and the Region will calculate the HRS score. The Region then submits the information to the USEPA Headquarters who evaluates the score. If it is above the cutoff point of 28.5 (out of a possible 100), Headquarters

may recommend the site to the Office of Management and Budget (OMB) for the NPL. If OMB concurs, they will publish the site as proposed for the NPL in the Federal Register. From then, the public has 30 days to comment on the proposed listing. After public comments have been addressed, the site may be placed on the NPL. If a site is placed on the NPL, environmental restoration and funding is governed by the Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act.

ABB-ES calculated the HRS score for the Hanna Furnace site at the NYSDEC's request to begin to assess the site's potential eligibility for the NPL. The HRS score was derived using the USEPA computer software program, PREscore. The HRS score calculated incorporates information obtained from the Preliminary Site Assessment (PSA) Report (ABB-ES, 1995), such as relevant data on characteristics of the site, observed releases (analytical sampling data) for contaminants, potential populations affected by these releases, environmental and food chain threats, and resources used in the surrounding area. The score is based solely on available data; ABB-ES did not research additional data or collect and analyze samples specifically to provide information for the score.

This report is submitted to the NYSDEC to document the HRS score calculated for the Hanna Furnace Site. Chapter 2.0 provides a detailed discussion of the HRS score calculated for the site and summarizes the data inputs to the PREscore program. Appendix A of this report includes the PREscore printout for this site.

# 2.0 DOCUMENTATION OF SCORE

The HRS score for the Hanna Furnace Site was calculated to be 49.12 (out of a possible site score of 100). The score was based the root-mean-square analysis of the following scores derived for each pathway considered in the HRS:

| | | |
|---|---|---|
| Groundwater Migration Pathway | 0.00 | |
| Surface Water Migration Pathway | | 98.15 |
| Soil Exposure Pathway | 0.41 | |
| Air Migration Pathway | 4.06 | |

This chapter documents information used to complete the HRS score for the site. In each of the following subsections, the score for each of the four migration pathways is presented along with the major inputs used to derive the score. These data and the Superfund Chemical Data Matrix (SCDM) are used in conjunction with the HRS Rule to assign factors for the scoring components considered under each pathway.

Data inputs, values from SCDM, and the assigned factors are provided in the PREscore output, included as Appendix A of this report. The following sections discuss data inputs to PREscore and assumptions and results of the scoring.

## 2.1 GROUNDWATER MIGRATION PATHWAY

The groundwater pathway score calculated for the Hanna Furnace Site is 0.00. This score was based on an analysis of three factors: the likelihood to release, waste characteristics, and targets.

### 2.1.1 Aquifer Definition

According to the PSA Report, groundwater is present in the fill, overburden, and bedrock at the site. For HRS scoring purposes, groundwater was considered to lie within one of two aquifers: the fill/overburden or the bedrock aquifer. While these aquifers are interconnected, neither residential nor community water supply wells rely on groundwater for drinking water. Monitoring wells were placed within only the fill/overburden aquifer during the PSA (ABB-ES, 1995).

### 2.1.2 Likelihood of Release

To calculate a likelihood of release score, aquifers present at the site were evaluated for observed or potential to release factors. The evaluation was based on data from sampling and analysis of monitoring wells at the site.

Seven monitoring wells were placed within the fill/overburden aquifer during the PSA to evaluate groundwater quality in the filter cake/flue ash disposal area and the debris landfill vicinity and in the Oil Shack Area vicinity. Samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), and inorganics. Analytical results were summarized in the PSA report on Tables 19 and 25. These data support the documentation of an observed release of chemicals to the fill/overburden aquifer. An observed release is established if a chemical is detected at a concentration that equals or exceeds the sample quantitation limit (SQL) or three times the background concentration established for that chemical. Because background conditions were not established for the Hanna Furnace Site, the chemicals detected in groundwater samples were compared to the contract required detection limit (CRQL, the established SQL for TCL analyses). Chemicals were detected at concentrations that exceeded the CRQL in both aquifers (see Appendix A).

Based on these observations, the likelihood of release score for the fill/overburden aquifer is the maximum possible score of 550, because an observed release can be established.

The likelihood of release score for the bedrock aquifer is also 550 because, although groundwater samples were not collected from this aquifer, the HRS Rule indicates that an observed release is established for any underlying aquifer that is interconnected with an overlying aquifer where an observed release is established.

### 2.1.3 Waste Characteristics

The waste characteristics value for the groundwater migration pathway for Hanna Furnace Site was calculated to be 32 by comparing the product of the hazardous waste quantity factor (100) and the toxicity and mobility factor (10,000) to Table 2-7 in the HRS Rule (USEPA, 1990). The site data used to derive these factors are presented in the following subsections.

**2.1.3.1 Hazardous Waste Quantity Factor.** The hazardous waste quantity factor is determined by evaluating the source(s) of hazardous substances at the site, pathways available for migration of these substances, and either the hazardous constituent quantity, the hazardous wastestream quantity, the volume of the source, or the area of the sources.

The sources of contamination for the Hanna Furnace Site are:

- the filter cake/flue ash disposal area,
- the debris landfill,
- drums,
- sumps, and
- contaminated soil in the Oil Shack Area.

Hazardous substances from all these sources have the potential to migrate to four pathways (groundwater, surface water, soil, and air) considering the following factors:

- an observed release has been established for the groundwater pathway and no barrier exists that would prevent leaching of contaminants from any of these sources to groundwater,

- the site is located within the 100-year floodplain and no flood containment structures are constructed at the site,

- the site is accessible to the public as no fence is constructed around the site, and

- some wastes are exposed or were never covered after use.

Waste quantity is evaluated based on a tier of four measures: hazardous constituent quantity, hazardous wastestream quantity, volume, and area. If waste quantity can be adequately determined based on hazardous constituent quantity, the next three measures are not considered. If waste quantity is determined based on wastestream quantity, the last two measures are not considered. If information is not complete concerning constituent quantity or wastestream quantity, the volume of the source is considered, and if volume is not available, the area of the source is considered (USEPA, 1990).

Because of the limited amount of information available regarding the amount of septic wastes disposed of at the site, the waste quantity value for the Hanna Furnace site was based on either volume or surface area:

| Source | Waste Quantity Tier | Amount | Comments |
|---|---|---|---|
| Filter Cake/Flue Ash Disposal Area | Surface Area | 1,306,800 square feet | Measured from Figure 2 of the PSA report |
| Debris Landfill | Surface Area | 315,000 square feet | Measured from Figure 2 of the PSA report |
| Drums | Volume | 110 gallons | Assumed to be two 55-gallon drums |
| Sumps | Volume | 10 cubic yards | Assumed that total amount of sediment in sumps was 10 cubic yards |
| Contaminated Soil | Surface Area | 150,000 square feet | Measured from Figure 7 of the PSA report |

Based on these estimates and factors on Table 2-5 and of the HRS Rule, the site was assigned as hazardous waste quantity factor of 100, out of a possible factor of 1,000,000 for the groundwater, surface water, and air pathways. For the soil pathway, these data and Table 5-2 result in a hazardous waste quantity factor of 10.

**2.1.3.2 Toxicity and Mobility Factor.** The toxicity and mobility factor for hazardous substances present at the site was estimated based on the hazardous substances detected in surface soil, drum, and sump sediment samples collected during the PSA. This factor is determined from Table 3-9 of the HRS Rule (USEPA, 1990). The toxicity and mobility factor for the Hanna Furnace Site is 10,000.

### 2.1.4 Targets

The targets score for the groundwater pathway for the Hanna Furnace Site was determined based on the distance to the nearest well used for monitoring or drinking water supply, the population served by drinking water wells within a 4-mile radius, usage of groundwater in the vicinity of the site (e.g., irrigation or recreation), and the presence of a wellhead protection area.

All of these factors are zero for the Hanna Furnace site because:

- there are no water supply wells located within the fill/overburden or bedrock aquifer within the target distance limit,
- population does not consume groundwater for drinking water nor is there a potential for future consumption,
- groundwater is not used as a resource (e.g., for watering of commercial livestock) within the target distance limit, and
- a wellhead protection area has not been designated for these aquifers in the vicinity of the Hanna Furnace Site.

### 2.1.5 Groundwater Migration Pathway Score

The score for the groundwater migration pathway is determined by multiplying the likelihood of release score (550) by the waste characteristics score (32), by the targets value (0), and then dividing by 82,500 (USEPA, 1990). This resulted in a groundwater pathway score of 0.00.

## 2.2 Surface Water Pathway

Two migration components are considered for the surface water pathway: an overland flow or flood migration component and a groundwater discharge to surface water component. Scoring for each component includes evaluation of a drinking water, food chain, and environmental threat factor. Each threat factor is based on a likelihood of release, waste characteristics, and targets factor. The HRS considers the higher of the two component scores as the pathway score for surface water.

For the Hanna Furnace Site, the overland flow or flood migration component score (98.15) was higher than the groundwater to surface water migration component score (1.13). The basis for these scores is presented in the following subsections.

### 2.2.1 Segment Definition

The first step in the calculation of the surface water pathway score is the definition of surface water bodies located in the direction of flow from the site for a target distance

of 15 miles. These surface water bodies for the Hanna Furnace Site were identified from the New York State (NYS) Atlas and Gazetteer map of the area. Surface drainage from the site would drain toward Union Ship Canal that essentially bisects the site. This canal flows for approximately 0.5 miles into the Buffalo Inner Harbor which is part of Lake Erie. The remainder of the surface water target distance limit is within Lake Erie.

### 2.2.2 Overland Flow or Flood Migration Component

The following subsections describe the overland flow or flood migration component.

**2.2.2.1 Likelihood of Release.** The likelihood of release value is the same for each of the three threat factors (drinking water, human food chain, and environmental). To calculate a likelihood of release score, the surface water pathway was evaluated for observed or potential to release factors.

Five surface water and four sediment samples were collected from Union Ship Canal and analyzed for TCL VOCS, SVOCs, pesticides/PCBs, and inorganics. Analytical results were summarized in the PSA report on Tables 26 and 27. These data support the documentation of an observed release of chemicals to surface water and sediment, as discussed for the groundwater pathway. Because background conditions were not evaluated during the PSA, the observed release is documented based on detection of chemicals in samples at concentrations greater than the CRQL (see Appendix A).

Because an observed release can be established, the likelihood of release score for the surface water pathway is the maximum value of 550. Because an observed release is established, evaluation of the potential to release factor was not addressed by PREscore (USEPA, 1990).

**2.2.2.2 Drinking Water Threat.** The drinking water threat score is calculated for the overland flood or flow migration component based on a likelihood of release value (550 as described in Subsection 2.2.2.1), a waste characteristics value, and a targets value.

The waste characteristics value is determined based on a toxicity and persistence factor (10,000) and a hazardous quantity factor (100). The toxicity and persistence factor of 10,000 is based on the toxicity and persistence of the chemicals detected in surface water and sediment samples collected in Union Ship Canal. A waste characteristics value of 32 was then assigned for the drinking water threat component of the overland flow or flood migration component.

The target value is determined based on the distance to the nearest surface water intake used as a drinking water source, the population (or potential population) exposed to surface water and sediment contamination, and the resource usage of the surface water within a 15-river-mile target distance limit. The following characteristics of the Hanna Furnace Site address these data needs:

- A surface water intake for drinking water is located approximately 3 miles from the site in Lake Erie.
- Although the entire municipalities of Lackawana and Buffalo consume water from the intake located in Lake Erie, only the population within a 4-mile radius of the Hanna Furnace site was considered (estimated to be 190,000 people).
- A resource factor of 5 was assigned to the facility because both the Union Ship Canal and Lake Erie are used for recreational purposes.

Using these data a target value for the drinking water threat was calculated to be 7.

The drinking water threat component score for the overland flow or flood migration component, subject to a maximum of 100, was obtained by multiplying the likelihood of release (550) by the waste characteristics (32) by the target value (7) and dividing the product by 82,500. This calculation resulted in a threat score of 1.49.

**2.2.2.3 Human Food Chain Threat.** The human food chain threat score is completed in the same manner as the drinking water threat score, except an additional bioaccumulation value is considered for the waste characteristics score and a different target population is considered.

The likelihood of release value is 550 for the human food chain threat (see Subsection 2.2.2.1).

The waste characteristics factor of 320 is determined from Table 2-7 of the HRS Rule based on a toxicity, persistence, and bioaccumulation factor of $5x10^8$ and a hazardous waste quantity factor of 100 (see Subsection 2.1.3.1).

The targets value for the human food chain threat is based on two factors: a food chain individual factor and a population factor. The food chain individual factor of 45 is assigned based on chemicals detected in surface water and sediment samples collected

from the Union Ship Canal, the depth and flow rate of water in the Canal, and the use of the Canal for recreational fishing.

A population factor is assigned based on the human food chain population value and two dilution-weighing factors. The human food chain population value is assigned from Table 4-18 of the HRS Rule and based on chemicals detected in surface water and sediment samples collected from the Union Ship Canal, and the total pounds of fish produced (or consumed) within each surface water segment per year. For the Hanna Furnace Site, it was assumed that the annual production of fish from the Union Ship Canal and the portion of Lake Erie that lies within the surface water pathway is between 100 and 1,000 pounds for each segment. The dilution-weighing factors are then assigned to each surface water segment from Tables 4-13 and 4-27 of the HRS Rule.

The food chain individual factor value (45) and the food chain population factor value (0.3) are added to obtain the human food chain target value of 45.30.

The human food chain threat for the overland flow or flood migration component for the Hanna Furnace Site (96.64) was obtained by multiplying the likelihood of release (550) by the waste characteristics (320) by the target value (45.30), and dividing by 82,500.

**2.2.2.4 Environmental Threat.** The environmental threat component is based on likelihood of release (550, see Subsection 2.2.2.1), waste characteristics, and targets values. The environmental threat score is determined in the same manner as both the drinking water and human food chain threat scores but is based on different toxicity and targets factors.

A waste characteristics value of 320 is based on an ecosystem toxicity, persistence, and bioaccumulation factor value of $5x10^8$ and a hazardous waste quantity value of 100 (see Subsection 2.1.3.1). The toxicity and bioaccumulation values used for the environmental threat score are different from those used in the drinking water and human food chain threat score calculations. Each hazardous substance identified in the observed release (i.e., chemicals detected in surface water and sediment samples at concentrations that exceeded the CRQL) and in the source (e.g., the drums) are assigned a respective ecosystem toxicity value, persistence value, and bioaccumulation value. The highest values are used, and factor values are obtained from Table 4-29 of the HRS Rule (USEPA, 1990).

The targets value for the environmental threat component is determined by sensitive environments present within the 15-river-mile target distance from the site (or known point of observed contamination). Sensitive environments and their respective rating

values are defined in Table 4-23 of the HRS Rule (USEPA, 1990). The PSA report provided the following information on several sensitive environments in the vicinity of the site:

- Several threatened or endangered species are present at the Tifft Farm Nature Preserve (see Table 1 of the PSA report) that could forage in the Union Ship Canal or Lake Erie.

- NYS-classified wetlands (BU-1, BU-7, and BU-15) are estimated to extend for approximately 1 mile along the target distance limit.

The environmental targets score of 0.006 was determined for the environmental target threat component based on the presence of these sensitive environments, the distance from the site, and the potential for contaminants detected in the Union Ship Canal to migrate.

The environmental threat component score for the overland flow or flood migration component of the surface water pathway for the Hanna Furnace Site was obtained by multiplying the likelihood of release factor (550) by the waste characteristics factor (320) by the targets factor (0.006), and dividing by 82,500. Therefore, the environmental threat score for the overland flow or flood migration component for the Hanna Furnace Site is 0.01.

**2.2.2.5 Overland Flow or Flood Component Score.** The watershed score for the overland flow or flood component for the surface water pathway for the Hanna Furnace Site was determined by adding the drinking water threat score (1.49), the human food chain threat score (96.64), and the environmental threat score (0.01), subject to a maximum of 100. The component score for the Hanna Furnace Site is 98.14.

### 2.2.3 Groundwater to Surface Water Migration Component

Evaluation of the migration of contamination from groundwater to surface water is the second component of the Surface Water Pathway scoring process. The higher score of the overland flow or flood component and the groundwater to surface water component is used as the surface water pathway score; for the Hanna Furnace site, the overland flow or flood migration score was higher.

Scoring of the two components is similar: a drinking water, human food chain, and environmental threat component is evaluated for the likelihood of release, waste characteristics, and targets.

**2.2.3.1 Likelihood of Release to Aquifer.** The likelihood of release factor for the groundwater to surface water migration component is the same for each of the three threat scores: drinking water, human food chain, and environmental.

As defined in Subsection 2.2.2.1.1 of the HRS Rule, an observed release for the groundwater to surface water migration component score is established if an observed release can be established for the uppermost aquifer (USEPA, 1990). As discussed in Subsection 2.1.2, chemicals were detected in groundwater samples collected from the fill/ overburden aquifer at concentrations above the CRQL, documenting an observed release at the site. Therefore, a likelihood of release value of 550 is assigned for this surface water migration component. Potential to release is therefore not evaluated.

**2.2.3.2 Drinking Water Threat.** The drinking water threat score is determined based on the likelihood of release to aquifer (550, as discussed above), waste characteristics, and target values.

The waste characteristics factor (32) for the drinking water threat component is determined based on a toxicity, mobility, and persistence factor and a waste quantity factor. The hazardous waste quantity factor is 100 (see Subsection 2.1.3.1). Separate toxicity, mobility, and persistence factors are assigned based on hazardous substances detected in groundwater samples at the site. The overall toxicity, mobility, and persistence value is 10,000 for the drinking water threat factor for the Hanna Furnace Site.

The target factor score of 5.32 is derived from the HRS Rule based on the following site characteristics:

- The distance to the nearest surface water intake used as a drinking water source: Lake Erie provides water for the municipalities of Lackawana and Buffalo. The intake is located 3.0 miles from the Union Ship Canal (ABB-ES, 1995).

- Population consuming surface water as a drinking water source. Although the entire municipalities of Lackawana and Buffalo consume water from the intake located in Lake Erie, only the population estimated to be within a 4-mile radius of the Hanna Furnace site was assigned to this factor (190,000 people).

- A resource factor or a measure of how surface water is used in the vicinity of the site, such as for drinking water.

The score for the drinking water threat component for the groundwater to surface water migration component, subject to a maximum of 100, is calculated by multiplying the likelihood of release value (550) by the waste characteristics value (32) by the targets value (5.32), and dividing by 82,500. For the Hanna Furnace Site, the drinking water threat component score for the groundwater to surface water migration component is 1.13.

**2.2.3.3 Human Food Chain Threat.** The human food chain threat score is calculated in the same manner as the drinking water threat score, but a different targets value and an additional mobility value is considered.

The likelihood of release factor is 550 (see Subsection 2.2.2.1), the same as the factor used in calculating the drinking water threat (see Subsection 2.2.2.2).

The waste characteristics value of 320 is based on a toxicity, mobility, persistence, and bioaccumulation factor of $5x10^8$ (an additional mobility factor is considered for the groundwater to surface water migration component) and a hazardous waste quantity factor (100) as discussed previously in Subsection 2.1.3.1.

The targets value for the human food chain threat, similar to the human food chain threat value for the overland flow or flood migration component, is based on two factors: a food chain individual factor and a population factor.

A food chain individual factor is assigned based on chemicals detected in surface water samples collected from the Union Ship Canal, the depth and flow rate of water in the Canal, and the use of the Canal for recreational fishing.

A human food chain population factor is assigned based on the human food chain population value and two dilution-weighing factors. The human food chain population value is assigned from Table 4-18 of the HRS Rule and is based on the total pounds of

fish produced (or consumed) within each surface water segment per year. For the Hanna Furnace Site, it was assumed that the annual production of fish from each the Union Ship Canal and the portion of Lake Erie that lies within the surface water pathway is between 100 and 1,000 pounds for each segment. The dilution-weighing factors are then assigned to each surface water segment from Tables 4-13 and 4-27 of the HRS Rule.

The total score for the human food chain threat for the groundwater to surface water migration component of the surface water pathway for the Hanna Furnace site was obtained by multiplying the likelihood of release value (550) by the waste characteristics value (320) by the targets factor (0.0006), and dividing by 82,500. This calculation resulted in a total score of 0.00.

**2.2.3.4 Environmental Threat.** The environmental threat score for the groundwater to surface water migration component is based on likelihood of release value (550, as presented in Subsection 2.2.1.1), the waste characteristics value, and the targets value.

The waste characteristics value of 320 is based on an ecosystem toxicity, mobility, persistence, and bioaccumulation factor of $5x10^8$ and a hazardous waste quantity of 100. The toxicity values used for the environmental pathway are different from those used in the drinking water and human food chain threat pathways and an additional mobility factor is considered for groundwater migration to surface water.

The target value for the environmental threat component is determined based on sensitive environments present within the 15-river-mile target distance from the site (or known point of observed contamination). Sensitive environments and their respective rating values are defined in Table 4-23 of the HRS Rule (USEPA, 1990). This targets value for the groundwater to surface water migration component is the same as for the overland flow or flood migration component because the probable point of entry of groundwater contamination to surface water is the same for both migration pathways. However, the value is subsequently multiplied by an additional dilution weight that is assigned from Table 4-27 of the HRS Rule. The resulting targets score is 0.0012.

The environmental threat score for the groundwater to surface water component of the surface water pathway for the Hanna Furnace Site is calculated by dividing the product of the likelihood of release value (550), the waste characteristics value (320), and the targets factor (0.0012) by 82,500. The environmental threat score is therefore 0.00.

**2.2.3.5 Groundwater to Surface Water Component Score.** The score for the groundwater to surface water migration component for the surface water pathway for the Hanna Furnace Site is determined by adding the drinking water threat score (1.13) to the

human food chain threat score (0.00) to the environmental threat score (0.00), subject to a maximum of 100. The resulting component score is 1.13.

## 2.3 Soil Exposure Pathway

A soil exposure pathway score of 0.41 was calculated for the Hanna Furnace site based on two threat components: the threat to resident populations and the threat to nearby populations.

### 2.3.1 Resident Population Threat Component

The resident population threat component (0) is calculated by multiplying the likelihood of exposure factor (550) by the waste characteristics factor (18) and the targets factor (0). The following subsections describe the derivation of these factors.

**2.3.1.1 Likelihood of Exposure.** A likelihood of exposure factor is assigned only if an observed release to surface soil (the top 2 feet of soil) can be established at the site. Fourteen surface soil samples were collected from the Filter Cake/Flue Ash Disposal Area, the Debris Landfill, and the Oil Shack Area at the Hanna Furnace Site during the PSA. Samples were analyzed for TCL VOCs, SVOCs, Pesticides/PCBs, and inorganics, and Extraction Procedure Toxicity metals. Analytical results were summarized in the PSA report on Tables 14 and 23. The HRS Rule stipulates that detections of chemicals above the CRQL may be used to document an observed release in the absence of data documenting background conditions. Because background conditions were not evaluated for surface soil during the PSA, data indicating detections above the CRQL were used to document an observed release. With an observed release, a likelihood of release score of 550, the maximum, was assigned to the Hanna Furnace Site.

**2.3.1.2 Waste Characteristics.** A waste characteristics value of 18 was calculated for the resident threat component of the soil exposure pathway by PREscore based upon a hazardous waste quantity factor of 10 (see Subsection 2.1.3.1) and a toxicity/mobility factor value of 10,000, as discussed in Subsections 2.1.3.

**2.3.1.3 Targets.** The targets value for the resident population threat was calculated to be 0. This value is based on the sum of five factors: resident individual, resident population, workers, resources, and terrestrial sensitive environments. All of these values are 0 for the Hanna Furnace site because within a 200-foot radius of the site:

- no residences exist,
- no persons work,
- no commercial agriculture, silviculture, or livestock production or grazing occurs, and
- terrestrial sensitive environments have not been identified.

Although the passers frequently enter the site for scavenging, fishing, and recreational vehicle use, the HRS Rule does not consider these individuals as targets. In the future, proposed development of the site for commercial/recreational uses may bring workers on-site which would change the targets value. The following subsections describe the derivation of these factors.

### 2.3.2 Nearby Population Threat Component

The nearby population threat score (33,750) is calculated by multiplying a likelihood of exposure factor (375) by the waste characteristics factor (18) by the targets factor (5).

**2.3.2.1 Likelihood of Exposure.** The likelihood of exposure factor is 3,750 based on the attractiveness and accessibility of the area and the surface area of observed soil contamination.

The site is accessible to the public (i.e., no maintained fence surrounds the source area) and evidence of use of the site for recreational purposes (e.g., tire tracks indicating the presence of dirt bikes and people fishing in the Union Canal) is apparent. Therefore, an attractiveness and accessibility factor of 50 was identified based on Table 5-6 of the HRS Rule (USEPA, 1990).

Because surface soil samples collected at the site contained chemicals at concentrations above the CRQL, an area of observed contamination can be determined. This value represents an area of contamination factor of 100 for the Hanna Furnace Site.

**2.3.2.2 Waste Characteristics.** The waste characteristics factor (18) was calculated in the same manner as that for the resident population threat component (see Subsection 2.3.1.2).

**2.3.2.3 Targets.** The targets value for the nearby population threat component considers two factors: the nearest individual and the population within a 1-mile radius of the site.

A nearest individual factor of 1 was assigned from Table 5-9 of the HRS Rule and is based on the distance to the nearest resident from the site (0.25 mile). A population factor of 4, based on Table 5-10 of the HRS Rule, was determined based on the population within a ¼-, ½-, and 1-mile radius of the site. The population within a 1-mile radius was reported as 6,000 people in Appendix A of the PSA report. It was assumed, by reviewing the NYS Atlas and Gazetteer map of the Buffalo area, that the majority of the population (3,000 people) resides within the 1/2 to 1 mile radii ring, and the minority of the population (500 people) resides within the 0 to 1/4 mile radii ring. The remainder of the population (2,500 people) was assigned to the 1/4 to 1/2 mile radii ring.

These factors are added to achieve a target factor for the nearby population threat component of 5.

### 2.3.3 Soil Exposure Pathway Score

The soil exposure pathway score for the Hanna Furnace Site was calculated to be 0.41 by the resident population threat score (0) to the nearby population threat score (33,750) and dividing by 82,500.

## 2.4 Air Migration Pathway

An air migration pathway score of 4.06 was calculated based on likelihood of release, waste characteristics, and targets factors for the air pathway for the Hanna Furnace Site. The following subsections describe the deviation of these factors.

### 2.4.1 Likelihood of Release

Sampling and analysis of air has not been performed at the Hanna Furnace Site; therefore, an observed release cannot be documented for the air pathway and instead the potential to release is evaluated.

For the air pathway, the potential to release factor considers two migration components: migration via release of gasses to the air or migration via release of particulates to the

air. The HRS considers whichever migration component receives the higher score. For the Hanna Furnace Site, the gas migration component score was higher than the particulate migration component score.

The gas potential to release (300) is based on three factors: containment, source type, and migration potential. A gas containment factor (10) was assigned because wastes disposed at the site are not completely covered and although a vegetative cover exists at the site, it is not resistant to gas migration. A gas source type factor for each source at the site (landfill, drums, and contaminated soil, see Subsection 2.1.3) was assigned from Table 6-4 of the HRS Rule (USEPA, 1990). The gas migration potential factor is based on the hazardous substances associated with each source and Tables 6-5 through 6-7 of the HRS Rule (USEPA, 1990).

The particulate potential to release (280) was based on the same three factors as the gas potential to release: containment, source type, and migration potential. The particulate containment factor (10) is the same as the gas containment factor. The particulate source type factor for each source was assigned from Table 6-4 of the HRS Rule (USEPA, 1990). The particulate migration potential factor is based on Figure 6-2 of the HRS Final Rule (USEPA, 1990).

### 2.4.2 Waste Characteristics

A waste characteristics score of 18 was calculated based on a hazardous waste quantity value (100) and a toxicity and mobility factor of 2,000. The toxicity and mobility factor for the air migration pathway is based on individual substance characteristics (i.e., volatility) and the site's location in the United States relative to the potential for particulates to migrate.

### 2.4.3 Targets

A targets score of 62 was determined based on the distance to the nearest individual, population within a 4-mile radius of the site, the use of land as a resource in the vicinity of the site, and the presence of sensitive environments.

A nearest individual factor of 7 was assigned for the Hanna Furnace Site based on the distance to the nearest individual from the boundary of the site. Appendix A of the PSA report indicates that the distance to the nearest population is 0.25 miles (ABB-ES, 1995).

Distance-weighted population values are assigned for the population within 4 miles of the site based on Table 6-17 of the HRS Rule (USEPA, 1990). Population was assigned to each radii ring based on data presented in Appendix A of the PSA report:

- Population within a 1-mile radius of the site is 6,000 (see Subsection 2.3.2.3).
- The PSA report indicates that the population within a 2-mile radius of the site is greater than 10,000. Subtracting the population (6,000) within a 1-mile radius of the site from the population (10,000) within a 2-mile radius established the population within a 1 to 2 mile radius to be 4,000.
- The PSA report indicates that the population within a 3-mile radius of the site is greater than 100,000. Subtracting the population within a 2-mile radius of the site (10,000) from the population (100,000) within a 3-mile radius establishes the population within a 2 to 3 mile radius to be 90,000.
- It was assumed that the population (90,000 people) within a 3 to 4 mile radius of the site would equal the population within a 2 to 3 mile radius of the site because each radii ring intersects an equal proportion of the City of Buffalo.

Based on these values the dilution-weighing factors in Table 6-17, and the potential for contamination, the population factor for this site is 47.

A resource factor of 5 was assigned for the Hanna Furnace Site based on the presence of the South Park Recreation Area within 0.5 miles of the site.

Sensitive environments within 4 miles of the site were identified in Subsections 2.1.3 and 2.1.4 of the PSA Report. No sensitive environments are located on the Hanna Furnace Site. Sensitive environments within a 4-mile radius of the site include:

- A Nature Preserve (the Tifft Farm Nature Preserve) located 0.5 miles from the site.
- The Nature Preserve provides habitat for the following endangered and threatened species (note that special species of concern are not included as sensitive environments under the HRS rule):

| | |
|---|---|
| Osprey | *Pandion halioetus carol.* |
| Red-Shouldered Hawk | *Buteo lineatus* |
| Northern Harrier | *Circus syaneus hudsonius* |
| Common Tern | *Sterna hirundo hirundo* |
| Blandings Turtle | *Emys blandingii* |
| Peregrine Falcon | *Falco perigrinus anatum* |
| Bald Eagle | *Halioetus leucocephalus* |

- The following endangered plant species have been identified within 3-miles of the site:

| | |
|---|---|
| woodland bluegrass | *poa sylvestris* |
| pink wintergreen | *pyrola asarifolia* |
| small skullcap | *scutellaria parvula var. leonardii* |
| harbinger-of-spring | *erigenia bulbosa* |

Each of these sensitive environments was assigned a rating value based on Table 4-23 of the HRS Rule and a distance dilution weight factor based on Table 6-15 of the HRS (USEPA, 1990).

Wetlands are considered a sensitive environment under the HRS Rule. Three NYS designated wetlands (BU-1, BU-7, and BU-15), exist at the Tifft Farm Nature Preserve, located 0.5 miles from the site. These wetlands are assigned a wetlands rating value and a distance dilution weight factor from Table 6-18 of the HRS Rule.

A sensitive environments factor of 3 was assigned based on the aforementioned sensitive environments and wetlands.

### 2.4.4 Air Migration Pathway Score

The score for the air migration pathway for the Hanna Furnace Site was obtained by multiplying the likelihood of release score (300) by the waste characteristics score (18) by the targets score (62), and dividing the product by 82,500. This results in a pathway score of 4.06.

## GLOSSARY OF ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| ABB-ES | ABB Environmental Services, Inc |
| CRQL | Contract Required Detection Limit |
| FR | Federal Register |
| HRS | Hazard Ranking System |
| NCP | National Contingency Plan |
| NPL | National Priorities List |
| No. | Number |
| NYS | New York State |
| NYSDEC | New York State Department of Environmental Conservation |
| OMB | Office of Management and Budget |
| PCB | polychlorinated biphenyls |
| PSA | Preliminary Site Assessment |
| SCDM | Superfund Chemical Data Matrix |
| SQL | Sample Quantitation Limit |
| SVOC | semi-volatile organic compound |
| TCL | Target Compound List |
| USEPA | U.S. Environmental Protection Agency |
| VOC | volatile organic compound |

ABB Environmental Services, Inc. (ABB-ES), 1995. "Draft Preliminary Assessment Report"; prepared by ABB Environmental Services, Inc., Portland, ME; submitted to New York Department of Environmental Conservation, Albany, NY; June 1995.

U.S. Environmental Protection Agency (USEPA), 1990. "Hazard Ranking System"; Final Rule; 55 FR 51532; December 14, 1990.

# PRESCORE OUTPUT

# PRESCORE OUTPUT

Hanna Furnace Site
NYSDEC Site No. 915029

This appendix contains the HRS score report, as generated by PREscore, for the Hanna Furnace Site. The PREscore program uses an integrated documentation feature. Throughout the printouts, specific data used to obtain each factor or value is documented as to where the information was obtained or how each input was derived. Chapter 2.0 included a narrative of each pathway's score.

HRS DOCUMENTATION RECORD
Hanna Furnace Site - 10/06/95

1. Site Name: Hanna Furnace Site
   (as entered in CERCLIS)

2. Site CERCLIS Number: D002103844

3. Site Reviewer: Shannon Buckley

4. Date: 4 October 1995

5. Site Location: Buffalo, Erie, New York
   (City/County,State)

6. Congressional District: 37

7. Site Coordinates: Single

   Latitude: 42°50'15. Longitude: 78°50'59.

| | Score |
|---|---|
| Ground Water Migration Pathway Score (Sgw) | 0.00 |
| Surface Water Migration Pathway Score (Ssw) | 98.15 |
| Soil Exposure Pathway Score (Ss) | 0.41 |
| Air Migration Pathway Score (Sa) | 4.06 |

| | |
|---|---|
| Site Score | 49.12 |

NOTE

EPA uses the terms "facility," "site," and "release" interchangeably. The term "facility" is broadly defined in CERCLA to include any area where hazardous substances have "come to be located" (CERCLA Section 109(9)), and the listing process is not intended to define or reflect boundaries of such facilities or releases. Site names, and references to specific parcels or properties, are provided for general identification purposes only. Knowledge regarding the extent of sites will be refined as more information is developed during the RI/FS and even during implementation of the remedy.

GROUND WATER MIGRATION PATHWAY SCORESHEET
Hanna Furnace Site - 10/06/95

| GROUND WATER MIGRATION PATHWAY Factor Categories & Factors | Maximum Value | Value Assigned |
|---|---|---|
| Likelihood of Release to an Aquifer<br>Aquifer: Fill/Overburden Aqui | | |
| 1. Observed Release | 550 | 550 |
| 2. Potential to Release | | |
| 2a. Containment | 10 | 10 |
| 2b. Net Precipitation | 10 | 10 |
| 2c. Depth to Aquifer | 5 | 5 |
| 2d. Travel Time | 35 | 35 |
| 2e. Potential to Release [lines 2a(2b+2c+2d)] | 500 | 500 |
| 3. Likelihood of Release | 550 | 550 |
| Waste Characteristics | | |
| 4. Toxicity/Mobility | * | 1.00E+04 |
| 5. Hazardous Waste Quantity | * | 100 |
| 6. Waste Characteristics | 100 | 32 |
| Targets | | |
| 7. Nearest Well | 50 | 0.00E+00 |
| 8. Population | | |
| 8a. Level I Concentrations | ** | 0.00E+00 |
| 8b. Level II Concentrations | ** | 0.00E+00 |
| 8c. Potential Contamination | ** | 0.00E+00 |
| 8d. Population (lines 8a+8b+8c) | ** | 0.00E+00 |
| 9. Resources | 5 | 0.00E+00 |
| 10. Wellhead Protection Area | 20 | 0.00E+00 |
| 11. Targets (lines 7+8d+9+10) | ** | 0.00E+00 |
| 12. Targets (including overlaying aquifers) | ** | 0.00E+00 |
| 13. Aquifer Score | 100 | 0.00 |
| GROUND WATER MIGRATION PATHWAY SCORE (Sgw) | 100 | 0.00 |

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
Hanna Furnace Site - 10/06/95

| SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT<br>Factor Categories & Factors<br>DRINKING WATER THREAT | Maximum Value | Value Assigned |
|---|---|---|
| Likelihood of Release | | |
| 1. Observed Release | 550 | 550 |
| 2. Potential to Release by Overland Flow | | |
| 2a. Containment | 10 | 10 |
| 2b. Runoff | 25 | 1 |
| 2c. Distance to Surface Water | 25 | 25 |
| 2d. Potential to Release by Overland Flow [lines 2a(2b+2c)] | 500 | 260 |
| 3. Potential to Release by Flood | | |
| 3a. Containment (Flood) | 10 | 10 |
| 3b. Flood Frequency | 50 | 25 |
| 3c. Potential to Release by Flood (lines 3a x 3b) | 500 | 250 |
| 4. Potential to Release (lines 2d+3c) | 500 | 500 |
| 5. Likelihood of Release | 550 | 550 |
| Waste Characteristics | | |
| 6. Toxicity/Persistence | * | 1.00E+04 |
| 7. Hazardous Waste Quantity | * | 100 |
| 8. Waste Characteristics | 100 | 32 |
| Targets | | |
| 9. Nearest Intake | 50 | 0.00E+00 |
| 10. Population | | |
| 10a. Level I Concentrations | ** | 0.00E+00 |
| 10b. Level II Concentrations | ** | 0.00E+00 |
| 10c. Potential Contamination | ** | 2.00E+00 |
| 10d. Population (lines 10a+10b+10c) | ** | 2.00E+00 |
| 11. Resources | 5 | 5.00E+00 |
| 12. Targets (lines 9+10d+11) | ** | 7.00E+00 |
| 13. DRINKING WATER THREAT SCORE | 100 | 1.49 |

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
Hanna Furnace Site - 10/06/95

| SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT<br>Factor Categories & Factors<br>HUMAN FOOD CHAIN THREAT | Maximum Value | Value Assigned |
|---|---|---|
| Likelihood of Release | | |
| 14. Likelihood of Release (same as line 5) | 550 | 550 |
| Waste Characteristics | | |
| 15. Toxicity/Persistence/Bioaccumulation | * | 5.00E+08 |
| 16. Hazardous Waste Quantity | * | 100 |
| 17. Waste Characteristics | 1000 | 320 |
| Targets | | |
| 18. Food Chain Individual | 50 | 4.50E+01 |
| 19. Population | | |
| 19a. Level I Concentrations | ** | 0.00E+00 |
| 19b. Level II Concentrations | ** | 3.00E-01 |
| 19c. Pot. Human Food Chain Contamination | ** | 3.00E-06 |
| 19d. Population (lines 19a+19b+19c) | ** | 3.00E-01 |
| 20. Targets (lines 18+19d) | ** | 4.53E+01 |
| 21. HUMAN FOOD CHAIN THREAT SCORE | 100 | 96.64 |

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
Hanna Furnace Site - 10/06/95

| SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT<br>Factor Categories & Factors<br>ENVIRONMENTAL THREAT | Maximum Value | Value Assigned |
|---|---|---|
| Likelihood of Release | | |
| 22. Likelihood of Release (same as line 5) | 550 | 550 |
| Waste Characteristics | | |
| 23. Ecosystem Toxicity/Persistence/Bioacc.<br>24. Hazardous Waste Quantity<br>25. Waste Characteristics | *<br>*<br>1000 | 5.00E+08<br>100<br>320 |
| Targets | | |
| 26. Sensitive Environments<br>26a. Level I Concentrations<br>26b. Level II Concentrations<br>26c. Potential Contamination<br>26d. Sensitive Environments (lines 26a+26b+26c)<br>27. Targets (line 26d) | <br>**<br>**<br>**<br>**<br>** | <br>0.00E+00<br>0.00E+00<br>6.00E-03<br>6.00E-03<br>6.00E-03 |
| 28. ENVIRONMENTAL THREAT SCORE | 60 | 0.01 |
| 29. WATERSHED SCORE | 100 | 98.15 |
| 30. SW: OVERLAND/FLOOD COMPONENT SCORE (Sof) | 100 | 98.15 |

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
Hanna Furnace Site - 10/06/95

| GROUND WATER TO SURFACE WATER MIGRATION COMPONENT<br>Factor Categories & Factors<br>DRINKING WATER THREAT | Maximum Value | Value Assigned |
|---|---|---|
| Likelihood of Release to Aquifer<br>Aquifer: Fill/Overburden Aqui | | |
| 1. Observed Release | 550 | 550 |
| 2. Potential to Release | | |
| 2a. Containment | 10 | 10 |
| 2b. Net Precipitation | 10 | 10 |
| 2c. Depth to Aquifer | 5 | 5 |
| 2d. Travel Time | 35 | 35 |
| 2e. Potential to Release [lines 2a(2b+2c+2d)] | 500 | 500 |
| 3. Likelihood of Release | 550 | 550 |
| Waste Characteristics | | |
| 4. Toxicity/Mobility/Persistence | * | 1.00E+04 |
| 5. Hazardous Waste Quantity | * | 100 |
| 6. Waste Characteristics | 100 | 32 |
| Targets | | |
| 7. Nearest Intake | 50 | 0.00E+00 |
| 8. Population | | |
| 8a. Level I Concentrations | ** | 0.00E+00 |
| 8b. Level II Concentrations | ** | 0.00E+00 |
| 8c. Potential Contamination | ** | 3.20E-01 |
| 8d. Population (lines 8a+8b+8c) | ** | 3.20E-01 |
| 9. Resources | 5 | 5.00E+00 |
| 10. Targets (lines 7+8d+9) | ** | 5.32E+00 |
| 11. DRINKING WATER THREAT SCORE | 100 | 1.13 |

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
Hanna Furnace Site - 10/06/95

| GROUND WATER TO SURFACE WATER MIGRATION COMPONENT<br>Factor Categories & Factors<br>HUMAN FOOD CHAIN THREAT | Maximum Value | Value Assigned |
|---|---|---|
| Likelihood of Release | | |
| 12. Likelihood of Release (same as line 3) | 550 | 550 |
| Waste Characteristics | | |
| 13. Toxicity/Mobility/Persistence/Bioacc. | * | 5.00E+08 |
| 14. Hazardous Waste Quantity | * | 100 |
| 15. Waste Characteristics | 1000 | 320 |
| Targets | | |
| 16. Food Chain Individual | 50 | 0.00E+00 |
| 17. Population | | |
| 17a. Level I Concentrations | ** | 0.00E+00 |
| 17b. Level II Concentrations | ** | 0.00E+00 |
| 17c. Pot. Human Food Chain Contamination | ** | 6.01E-04 |
| 17d. Population (lines 17a+17b+17c) | ** | 6.01E-04 |
| 18. Targets (lines 16+17d) | ** | 6.01E-04 |
| 19. HUMAN FOOD CHAIN THREAT SCORE | 100 | 0.00 |

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
Hanna Furnace Site - 10/06/95

| GROUND WATER TO SURFACE WATER MIGRATION COMPONENT<br>Factor Categories & Factors<br>ENVIRONMENTAL THREAT | Maximum Value | Value Assigned |
|---|---|---|
| Likelihood of Release | | |
| 20. Likelihood of Release (same as line 3) | 550 | 550 |
| Waste Characteristics | | |
| 21. Ecosystem Tox./Mobility/Persist./Bioacc.<br>22. Hazardous Waste Quantity<br>23. Waste Characteristics | *<br>*<br>1000 | 5.00E+08<br>100<br>320 |
| Targets | | |
| 24. Sensitive Environments<br>24a. Level I Concentrations<br>24b. Level II Concentrations<br>24c. Potential Contamination<br>24d. Sensitive Environments (lines 24a+24b+24c)<br>25. Targets (line 24d) | <br>**<br>**<br>**<br>**<br>** | <br>0.00E+00<br>0.00E+00<br>1.20E-03<br>1.20E-03<br>1.20E-03 |
| 26. ENVIRONMENTAL THREAT SCORE | 60 | 0.00 |
| 27. WATERSHED SCORE | 100 | 1.14 |
| 28. SW: GW to SW COMPONENT SCORE (Sgs) | 100 | 1.14 |

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

SOIL EXPOSURE PATHWAY SCORESHEET
Hanna Furnace Site - 10/06/95

| SOIL EXPOSURE PATHWAY<br>Factor Categories & Factors<br>RESIDENT POPULATION THREAT | Maximum Value | Value Assigned |
|---|---|---|
| Likelihood of Exposure | | |
| 1. Likelihood of Exposure | 550 | 550 |
| Waste Characteristics | | |
| 2. Toxicity | * | 1.00E+04 |
| 3. Hazardous Waste Quantity | * | 10 |
| 4. Waste Characteristics | 100 | 18 |
| Targets | | |
| 5. Resident Individual | 50 | 0.00E+00 |
| 6. Resident Population | | |
| 6a. Level I Concentrations | ** | 0.00E+00 |
| 6b. Level II Concentrations | ** | 0.00E+00 |
| 6c. Resident Population (lines 6a+6b) | ** | 0.00E+00 |
| 7. Workers | 15 | 0.00E+00 |
| 8. Resources | 5 | 0.00E+00 |
| 9. Terrestrial Sensitive Environments | *** | 0.00E+00 |
| 10. Targets (lines 5+6c+7+8+9) | ** | 0.00E+00 |
| 11. RESIDENT POPULATION THREAT SCORE | ** | 0.00E+00 |

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

SOIL EXPOSURE PATHWAY SCORESHEET
Hanna Furnace Site - 10/06/95

| SOIL EXPOSURE PATHWAY<br>Factor Categories & Factors<br>NEARBY POPULATION THREAT | Maximum Value | Value Assigned |
|---|---|---|
| Likelihood of Exposure | | |
| 12. Attractiveness/Accessibility | 100 | 5.00E+01 |
| 13. Area of Contamination | 100 | 1.00E+02 |
| 14. Likelihood of Exposure | 500 | 3.75E+02 |
| Waste Characteristics | | |
| 15. Toxicity | * | 1.00E+04 |
| 16. Hazardous Waste Quantity | * | 10 |
| 17. Waste Characteristics | 100 | 18 |
| Targets | | |
| 18. Nearby Individual | 1 | 1.00E+00 |
| 19. Population Within 1 Mile | ** | 4.00E+00 |
| 20. Targets (lines 18+19) | ** | 5.00E+00 |
| 21. NEARBY POPULATION THREAT SCORE | ** | 3.38E+04 |
| SOIL EXPOSURE PATHWAY SCORE (Ss) | 100 | 0.41 |

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

AIR PATHWAY SCORESHEET
Hanna Furnace Site - 10/06/95

| AIR MIGRATION PATHWAY Factor Categories & Factors | Maximum Value | Value Assigned |
|---|---|---|
| Likelihood of Release | | |
| 1. Observed Release | 550 | 0 |
| 2. Potential to Release | | |
| 2a. Gas Potential to Release | 500 | 300 |
| 2b. Particulate Potential to Release | 500 | 280 |
| 2c. Potential to Release | 500 | 300 |
| 3. Likelihood of Release | 550 | 300 |
| Waste Characteristics | | |
| 4. Toxicity/Mobility | * | 2.00E+03 |
| 5. Hazardous Waste Quantity | * | 100 |
| 6. Waste Characteristics | 100 | 18 |
| Targets | | |
| 7. Nearest Individual | 50 | 7.00E+00 |
| 8. Population | | |
| 8a. Level I Concentrations | ** | 0.00E+00 |
| 8b. Level II Concentrations | ** | 0.00E+00 |
| 8c. Potential Contamination | ** | 4.70E+01 |
| 8d. Population (lines 8a+8b+8c) | ** | 4.70E+01 |
| 9. Resources | 5 | 5.00E+00 |
| 10. Sensitive Environments | | |
| 10a. Actual Contamination | *** | 0.00E+00 |
| 10b. Potential Contamination | *** | 3.00E+00 |
| 10c. Sens. Environments(lines 10a+10b) | *** | 3.00E+00 |
| 11. Targets (lines 7+8d+9+10c) | ** | 6.20E+01 |
| AIR MIGRATION PATHWAY SCORE (Sa) | 100 | 4.06E+00 |

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.
*** No specific maximum value applies, see HRS for details.

WASTE QUANTITY

Hanna Furnace Site - 10/06/95

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Fil./Flue Ash Disp.

| | |
|---|---|
| a. Wastestream ID | |
| b. Hazardous Constituent Quantity (C) (lbs.) | 0.00 |
| c. Data Complete? | NO |
| d. Hazardous Wastestream Quantity (W) (lbs.) | 0.00 |
| e. Data Complete? | NO |
| f. Wastestream Quantity Value (W/5,000) | 0.00E+00 |

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

| | | | |
|---|---|---|---|
| a. Source ID | | Fil./Flue Ash Disp. | |
| b. Source Type | | Landfill | |
| c. Secondary Source Type | | N.A. | |
| d. Source Vol.(yd3/gal) | Source Area (ft2) | 0.00 | 1306800.00 |
| e. Source Volume/Area Value | | 3.84E+02 | |
| f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b) | | 0.00E+00 | |
| g. Data Complete? | | NO | |
| h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f) | | 0.00E+00 | |
| i. Data Complete? | | NO | |
| k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h) | | 3.84E+02 | |

| Source Hazardous Substances | Depth (feet) | Liquid | Concent. | Units |
|---|---|---|---|---|
| Aluminum | < 2 | NO | 8.6E+03 | ppm |
| Antimony | < 2 | NO | 2.6E+01 | ppm |
| Arsenic | < 2 | NO | 1.3E+01 | ppm |
| Barium | < 2 | NO | 1.1E+02 | ppm |
| Beryllium | < 2 | NO | 2.0E+00 | ppm |
| Cadmium | < 2 | NO | 1.6E+01 | ppm |
| Chromium | < 2 | NO | 2.2E+02 | ppm |
| Cobalt | < 2 | NO | 1.9E+01 | ppm |
| Copper | < 2 | NO | 2.1E+02 | ppm |
| Cyanide | < 2 | NO | 7.8E+00 | ppm |
| DDE | < 2 | NO | 3.9E-03 | ppm |
| Endosulfan (I or II) | < 2 | NO | 5.8E-03 | ppm |
| Iron | < 2 | NO | 1.7E+05 | ppm |
| Lead | < 2 | NO | 4.5E+03 | ppm |
| Magnesium | < 2 | NO | 1.1E+04 | ppm |
| Manganese | < 2 | NO | 4.8E+03 | ppm |
| Mercury | < 2 | NO | 1.0E-01 | ppm |
| Methoxychlor | < 2 | NO | 1.7E-02 | ppm |
| Nickel | < 2 | NO | 8.9E+01 | ppm |
| PCBs | < 2 | NO | 2.8E-01 | ppm |
| Selenium | < 2 | NO | 1.6E+00 | ppm |

| | | | | |
|---|---|---|---|---|
| Thallium | < 2 | NO | 6.8E+00 | ppm |
| Vanadium | < 2 | NO | 6.5E+01 | ppm |
| Zinc | < 2 | NO | 4.6E+03 | ppm |

Documentation for Source Type:

The filter cake/flue ash disposal area is a landfill.

Reference: 3

Documentation for Source Hazardous Substances:

Four surface soil samples (SS-101 through SS-104) were collected from locations at the filter cake/flue ash disposal area. Results were presented in Table 14. Average results from sample SS-101 and its duplicate were reported. Where the duplicate was non-detect, the CRQL was used in the average calculation.

Reference: 3 (pg. 4-4 and Table 14)

Documentation for Source Area:

Approximately 10 acres on the eastern border of the site and 20 acres of the northern part of the site were used for raw material storage and landfilling waste generated onsite.

Reference: 3 (pg. 2-1)

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Debris Landfill

| | |
|---|---|
| a. Wastestream ID | |
| b. Hazardous Constituent Quantity (C) (lbs.) | 0.00 |
| c. Data Complete? | NO |
| d. Hazardous Wastestream Quantity (W) (lbs.) | 0.00 |
| e. Data Complete? | NO |
| f. Wastestream Quantity Value (W/5,000) | 0.00E+00 |

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

| | | | |
|---|---|---|---|
| a. Source ID | | Debris Landfill | |
| b. Source Type | | Landfill | |
| c. Secondary Source Type | | N.A. | |
| d. Source Vol.(yd3/gal) | Source Area (ft2) | 0.00 | 315000.00 |
| e. Source Volume/Area Value | | 9.26E+01 | |
| f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b) | | 0.00E+00 | |
| g. Data Complete? | | NO | |
| h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f) | | 0.00E+00 | |
| i. Data Complete? | | NO | |
| k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h) | | 9.26E+01 | |

| Source Hazardous Substances | Depth (feet) | Liquid | Concent. | Units |
|---|---|---|---|---|
| Aluminum | < 2 | NO | 1.0E+04 | ppm |
| Antimony | < 2 | NO | 1.6E+01 | ppm |
| Arsenic | < 2 | NO | 1.5E+01 | ppm |
| Barium | < 2 | NO | 1.1E+02 | ppm |
| Benz(a)anthracene | < 2 | NO | 4.0E-01 | ppm |
| Benzo(a)pyrene | < 2 | NO | 4.2E-01 | ppm |
| Benzo(j,k)fluorene | < 2 | NO | 6.4E-01 | ppm |
| Benzo(k)fluoranthene | < 2 | NO | 3.7E-01 | ppm |
| Benzofluoranthene, 3,4- | < 2 | NO | 5.4E-01 | ppm |
| Beryllium | < 2 | NO | 1.4E+00 | ppm |
| Cadmium | < 2 | NO | 5.2E+00 | ppm |
| Chromium | < 2 | NO | 8.5E+01 | ppm |
| Chrysene | < 2 | NO | 5.0E-01 | ppm |
| Cobalt | < 2 | NO | 1.6E+01 | ppm |
| Copper | < 2 | NO | 1.8E+02 | ppm |
| Iron | < 2 | NO | 1.6E+05 | ppm |
| Lead | < 2 | NO | 5.0E+02 | ppm |
| Magnesium | < 2 | NO | 1.2E+04 | ppm |
| Manganese | < 2 | NO | 4.9E+03 | ppm |
| Mercury | < 2 | NO | 1.0E-01 | ppm |
| Methoxychlor | < 2 | NO | 1.7E-02 | ppm |

| | | | | |
|---|---|---|---|---|
| Nickel | < 2 | NO | 6.2E+01 | ppm |
| PCBs | < 2 | NO | 7.9E-02 | ppm |
| Pyrene | < 2 | NO | 6.0E-01 | ppm |
| Vanadium | < 2 | NO | 5.3E+01 | ppm |
| Zinc | < 2 | NO | 1.0E+03 | ppm |

Documentation for Source Type:

The debris landfill is a landfill.

Reference: 3

Documentation for Source Hazardous Substances:

Four surface soil samples were collected from the debris landfill (SS-105 through SS-108). These are reported on Table 14 of the PSA report. Analytical data from sample SS-105 was reported for this soil pathway.

Reference: 3 (pg. 4-4 and Table 14)

Documentation for Source Area:

Surface area of landfill was measured from Figure 2 of the PSA report.

Reference: 3 (Figure 2)

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Drums/OSA

| | |
|---|---|
| a. Wastestream ID | |
| b. Hazardous Constituent Quantity (C) (lbs.) | 0.00 |
| c. Data Complete? | NO |
| d. Hazardous Wastestream Quantity (W) (lbs.) | 0.00 |
| e. Data Complete? | NO |
| f. Wastestream Quantity Value (W/5,000) | 0.00E+00 |

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

| | | | |
|---|---|---|---|
| a. Source ID | | Drums/OSA | |
| b. Source Type | | Drums | |
| c. Secondary Source Type | | N.A. | |
| d. Source Vol.(yd3/gal) | Source Area (ft2) | 110.00 | 0.00 |
| e. Source Volume/Area Value | | 2.20E-01 | |
| f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b) | | 0.00E+00 | |
| g. Data Complete? | | NO | |
| h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f) | | 0.00E+00 | |
| i. Data Complete? | | NO | |
| k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h) | | 2.20E-01 | |

| Source Hazardous Substances | Depth (feet) | Liquid | Concent. | Units |
|---|---|---|---|---|
| Aluminum | < 2 | YES | 1.3E+04 | ppm |
| Antimony | < 2 | YES | 1.2E+01 | ppm |
| Arsenic | < 2 | YES | 3.5E+00 | ppm |
| Barium | < 2 | YES | 1.3E+02 | ppm |
| Beryllium | < 2 | YES | 2.7E+00 | ppm |
| Cadmium | < 2 | YES | 3.2E+00 | ppm |
| Chromium | < 2 | YES | 4.5E+01 | ppm |
| Copper | < 2 | YES | 8.7E+01 | ppm |
| Iron | < 2 | YES | 4.2E+04 | ppm |
| Lead | < 2 | YES | 2.1E+02 | ppm |
| Magnesium | < 2 | YES | 1.4E+04 | ppm |
| Manganese | < 2 | YES | 1.6E+03 | ppm |
| Mercury | < 2 | YES | 1.0E-01 | ppm |
| Nickel | < 2 | YES | 2.2E+01 | ppm |
| Vanadium | < 2 | YES | 1.8E+01 | ppm |
| Zinc | < 2 | YES | 1.2E+03 | ppm |

Documentation for Source Type:

Two drums are located north of the OSA area.

Reference: 3 (pg. 3-3)

Documentation for Source Hazardous Substances:

Samples from the two drums were collected for laboratory analysis.

Reference: 3 (pg. 4-12)

Documentation for Source Volume:

Two drums were sampled in the OSA area. It was assumed that these drums were 55-gallon drums.

Reference: 3 (pg. 3-3)

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Sumps/OSA

| | |
|---|---|
| a. Wastestream ID | |
| b. Hazardous Constituent Quantity (C) (lbs.) | 0.00 |
| c. Data Complete? | NO |
| d. Hazardous Wastestream Quantity (W) (lbs.) | 0.00 |
| e. Data Complete? | NO |
| f. Wastestream Quantity Value (W/5,000) | 0.00E+00 |

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

| | | | |
|---|---|---|---|
| a. Source ID | | Sumps/OSA | |
| b. Source Type | | Contaminated Soil | |
| c. Secondary Source Type | | N.A. | |
| d. Source Vol.(yd3/gal) | Source Area (ft2) | 10.00 | 0.00 |
| e. Source Volume/Area Value | | 4.00E-03 | |
| f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b) | | 0.00E+00 | |
| g. Data Complete? | | NO | |
| h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f) | | 0.00E+00 | |
| i. Data Complete? | | NO | |
| k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h) | | 4.00E-03 | |

| Source Hazardous Substances | Depth (feet) | Liquid | Concent. | Units |
|---|---|---|---|---|
| Acenaphthene | < 2 | NO | 9.3E+00 | ppm |
| Acenaphthylene | < 2 | NO | 2.6E+00 | ppm |
| Aluminum | < 2 | NO | 1.5E+04 | ppm |
| Anthracene | < 2 | NO | 4.6E+00 | ppm |
| Arsenic | < 2 | NO | 9.7E+00 | ppm |
| Barium | < 2 | NO | 2.2E+02 | ppm |
| Benz(a)anthracene | < 2 | NO | 9.2E+00 | ppm |
| Benzo(a)pyrene | < 2 | NO | 7.6E+00 | ppm |
| Benzo(g,h,i)perylene | < 2 | NO | 5.0E+00 | ppm |
| Benzo(j,k)fluorene | < 2 | NO | 9.7E+00 | ppm |
| Benzo(k)fluoranthene | < 2 | NO | 6.5E+00 | ppm |
| Benzofluoranthene, 3,4- | < 2 | NO | 8.3E+00 | ppm |
| Beryllium | < 2 | NO | 2.8E+00 | ppm |
| Cadmium | < 2 | NO | 9.4E+00 | ppm |
| Chromium | < 2 | NO | 3.7E+01 | ppm |
| Chrysene | < 2 | NO | 1.2E+01 | ppm |
| Cobalt | < 2 | NO | 1.0E+01 | ppm |
| Dibenzofuran | < 2 | NO | 3.4E+00 | ppm |
| Fluorene | < 2 | NO | 9.7E+00 | ppm |
| Indeno(1,2,3-CD)pyrene | < 2 | NO | 5.0E+00 | ppm |
| Iron | < 2 | NO | 5.9E+04 | ppm |

| | | | | |
|---|---|---|---|---|
| Lead | < 2 | NO | 5.9E+02 | ppm |
| Magnesium | < 2 | NO | 1.5E+04 | ppm |
| Manganese | < 2 | NO | 2.0E+03 | ppm |
| Mercury | < 2 | NO | 1.1E+00 | ppm |
| Methyl Napthalene, 2- | < 2 | NO | 4.2E+01 | ppm |
| Nickel | < 2 | NO | 4.2E+01 | ppm |
| Phenanthrene | < 2 | NO | 2.9E+01 | ppm |
| Phenol | < 2 | NO | 3.3E+00 | ppm |
| Pyrene | < 2 | NO | 1.8E+01 | ppm |
| Vanadium | < 2 | NO | 4.3E+01 | ppm |
| Zinc | < 2 | NO | 1.2E+03 | ppm |

Documentation for Source Type:

There are several sumps throughout the site. These sumps contain runoff from the site, probably mostly rainwater. These sumps also contain sediment. It is the sediment in the sumps that is most likely the source of contamination at the site.

Reference:

Documentation for Source Hazardous Substances:

Eight sump liquid (surface water) and sediment samples were collected at the site.

Reference: 3 (pg. 4-13)

Documentation for Source Volume:

It was estimated that sediment within all sumps would total approximately 10 cubic yards.

Reference: 3 (pg. 3-5 and 3-6)

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Soil/OSA

| | |
|---|---|
| a. Wastestream ID | |
| b. Hazardous Constituent Quantity (C) (lbs.) | 0.00 |
| c. Data Complete? | NO |
| d. Hazardous Wastestream Quantity (W) (lbs.) | 0.00 |
| e. Data Complete? | NO |
| f. Wastestream Quantity Value (W/5,000) | 0.00E+00 |

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

| | | | |
|---|---|---|---|
| a. Source ID | | Soil/OSA | |
| b. Source Type | | Contaminated Soil | |
| c. Secondary Source Type | | N.A. | |
| d. Source Vol.(yd3/gal) | Source Area (ft2) | 0.00 | 150000.00 |
| e. Source Volume/Area Value | | 4.41E+00 | |
| f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b) | | 0.00E+00 | |
| g. Data Complete? | | NO | |
| h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f) | | 0.00E+00 | |
| i. Data Complete? | | NO | |
| k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h) | | 4.41E+00 | |

| Source Hazardous Substances | Depth (feet) | Liquid | Concent. | Units |
|---|---|---|---|---|
| Acenaphthene | < 2 | NO | 3.6E+00 | ppm |
| Aluminum | < 2 | NO | 3.1E+04 | ppm |
| Anthracene | < 2 | NO | 9.2E-01 | ppm |
| Antimony | < 2 | NO | 1.5E+01 | ppm |
| Barium | < 2 | NO | 1.9E+02 | ppm |
| Benz(a)anthracene | < 2 | NO | 7.8E+00 | ppm |
| Benzo(a)pyrene | < 2 | NO | 1.1E+01 | ppm |
| Benzo(g,h,i)perylene | < 2 | NO | 5.2E+00 | ppm |
| Benzo(j,k)fluorene | < 2 | NO | 7.3E+00 | ppm |
| Benzo(k)fluoranthene | < 2 | NO | 3.8E+00 | ppm |
| Benzofluoranthene, 3,4- | < 2 | NO | 1.2E+01 | ppm |
| Beryllium | < 2 | NO | 5.1E+00 | ppm |
| Chromium | < 2 | NO | 2.4E+01 | ppm |
| Chrysene | < 2 | NO | 8.1E+00 | ppm |
| Copper | < 2 | NO | 6.6E+01 | ppm |
| Dibenz(a,h)anthracene | < 2 | NO | 2.0E+00 | ppm |
| Fluorene | < 2 | NO | 6.3E-01 | ppm |
| Indeno(1,2,3-CD)pyrene | < 2 | NO | 6.7E+00 | ppm |
| Iron | < 2 | NO | 3.8E+04 | ppm |
| Lead | < 2 | NO | 2.6E+02 | ppm |
| Magnesium | < 2 | NO | 1.2E+04 | ppm |

| | | | | |
|---|---|---|---|---|
| Manganese | < 2 | NO | 1.9E+03 | ppm |
| Mercury | < 2 | NO | 1.2E+00 | ppm |
| Nickel | < 2 | NO | 2.0E+01 | ppm |
| Phenanthrene | < 2 | NO | 3.5E+00 | ppm |
| Pyrene | < 2 | NO | 8.2E+00 | ppm |
| Selenium | < 2 | NO | 2.0E+00 | ppm |
| Vanadium | < 2 | NO | 3.7E+01 | ppm |
| Zinc | < 2 | NO | 3.9E+02 | ppm |

Documentation for Source Type:

Surface soil samples were collected throughout the site. Analytical results indicate the presence of chemicals at concentrations to constitute an observed release. Therefore, an area of observed contamination can be defined.

Reference: 3

Documentation for Source Hazardous Substances:

Six surface soil samples were collected from the oil shack area, and the data is reported on Table 23.

Reference: 3 (Table 23)

Documentation for Source Area:

Area of contaminated soil is approximately 300 feet by 500 feet.

Reference: 3 (Figure 12)

3. SITE HAZARDOUS WASTE QUANTITY SUMMARY

| No. | Source ID | Migration Pathways | Vol. or Area Value (2e) | Constituent or Wastestream Value (2f,2h) | Hazardous Waste Qty. Value (2k) |
|---|---|---|---|---|---|
| 1 | Fil./Flue Ash Disp. | GW-SW-SE-A | 3.84E+02 | 0.00E+00 | 3.84E+02 |
| 2 | Debris Landfill | GW-SW-SE-A | 9.26E+01 | 0.00E+00 | 9.26E+01 |
| 3 | Drums/OSA | GW-SW-SE-A | 2.20E-01 | 0.00E+00 | 2.20E-01 |
| 4 | Sumps/OSA | GW-SW-SE-A | 4.00E-03 | 0.00E+00 | 4.00E-03 |
| 5 | Soil/OSA | GW-SW-SE-A | 4.41E+00 | 0.00E+00 | 4.41E+00 |

4. PATHWAY HAZARDOUS WASTE QUANTITY AND WASTE CHARACTERISTICS SUMMARY TABLE

| Migration Pathway | Contaminant Values | | HWQVs* | WCVs** |
|---|---|---|---|---|
| Ground Water | Toxicity/Mobility | 1.00E+04 | 100 | 32 |
| SW: Overland Flow, DW | Tox./Persistence | 1.00E+04 | 100 | 32 |
| SW: Overland Flow, HFC | Tox./Persis./Bioacc. | 5.00E+08 | 100 | 320 |
| SW: Overland Flow, Env | Etox./Persis./Bioacc. | 5.00E+08 | 100 | 320 |
| SW: GW to SW, DW | Tox./Persistence | 1.00E+04 | 100 | 32 |
| SW: GW to SW, HFC | Tox./Persis./Bioacc. | 5.00E+08 | 100 | 320 |
| SW: GW to SW, Env | Etox./Persis./Bioacc. | 5.00E+08 | 100 | 320 |
| Soil Exposure:Resident | Toxicity | 1.00E+04 | 10 | 18 |
| Soil Exposure: Nearby | Toxicity | 1.00E+04 | 10 | 18 |
| Air | Toxicity/Mobility | 2.00E+03 | 100 | 18 |

* Hazardous Waste Quantity Factor Values
** Waste Characteristics Factor Category Values

Note: SW = Surface Water
GW = Ground Water
DW = Drinking Water Threat
HFC = Human Food Chain Threat
Env = Environmental Threat

GROUND WATER PATHWAY AQUIFER SUMMARY
Hanna Furnace Site - 10/06/95

| No. | Aquifer ID | Type | Overlaying No. | Inter-Connected with | Likelihood of Release | Targets |
|---|---|---|---|---|---|---|
| 1 | Fill/Overburden Aqui | Non K | 0 | 0 | 550 | 0.00E+00 |
| 2 | Bedrock Aquifer | Non K | 1 | 1 | 550 | 0.00E+00 |

Containment

| No. | Source ID | HWQ Value | Containment Value |
|---|---|---|---|
| 1 | Fil./Flue Ash Disp. | 3.84E+02 | 10 |
| 2 | Debris Landfill | 9.26E+01 | 10 |
| 3 | Drums/OSA | 2.20E-01 | 10 |
| 4 | Sumps/OSA | 4.00E-03 | 10 |
| 5 | Soil/OSA | 4.41E+00 | 10 |
| | Containment Factor | | 10 |

Documentation for Ground Water Containment, Source Fil./Flue Ash Disp.:

There is evidence of migration of contaminants from the source area to groundwater; therefore, all sources receive a containment factor of 10.

Reference: 3 (Table 19)

Net Precipitation

Net Precipitation (inches) 42

Documentation for Net Precipitation:

Appendix A indicates that the net precipitation is 42 inches.

Reference: 3 (Appendix A)

Aquifer: Fill/Overburden Aquifer

Type of Aquifer: Non Karst

Overlaying Aquifer: 0

Interconnected with: 0

Documentation for Fill/Overburden Aquifer Aquifer:

Groundwater is present in fill, overburden, and bedrock at the site. The depth to the water table is approximately 5 feet bls. The aquifers were categorized as the fill/overburden aquifer and the bedrock aquifer. Neither aquifer is karst.

Reference: 3 (pg. 4-2)

OBSERVED RELEASE

| No. | Well ID | Well Type | Distance (miles) | Level of Contamination |
|---|---|---|---|---|
| 1 | MW-101 | Monitoring Well | 0.000 | Level I |
| 3 | MW-103 | Monitoring Well | 0.000 | Level I |
| 5 | MW-105 | Monitoring Well | 0.000 | Level I |
| 6 | MW-106 | Monitoring Well | 0.000 | Level II |
| 7 | MW-107 | Monitoring Well | 0.000 | Level I |

| Well No. | Hazardous Substance | Concent. | MCL | Cancer | RFD | Units |
|---|---|---|---|---|---|---|
| 1 | Aluminum | 8.4E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 1 | Chromium | 1.5E+01 | 1.0E+02 | 0.0E+00 | 1.8E+02 | ppb |
| 1 | Cyanide | 3.0E+03 | 2.0E+02 | 0.0E+00 | 7.0E+02 | ppb |
| 1 | Iron | 1.1E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 1 | Selenium | 1.0E+01 | 5.0E+01 | 0.0E+00 | 1.8E+02 | ppb |
| 3 | Aluminum | 1.8E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 3 | Cyanide | 5.1E+02 | 2.0E+02 | 0.0E+00 | 7.0E+02 | ppb |
| 3 | Iron | 1.7E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 3 | Lead | 3.3E+00 | 1.5E+01 | 0.0E+00 | 0.0E+00 | ppb |
| 3 | Magnesium | 7.8E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |

POTENTIAL TO RELEASE

Containment

| | |
|---|---|
| Containment Factor | 10 |

Net Precipitation

| | |
|---|---|
| Net Precipitation Factor | 10 |

Depth to Aquifer

| | | |
|---|---|---|
| A. Depth of Hazardous Substances | 5.00 | feet |

Documentation for Depth of Hazardous Substances:

Monitoring wells are screened from 5 to 15 feet bls. Analytical data from monitoring well indicate the presence of chemicals in concentrations to constitute an observed release. Therefore, the depth to contamination is 5 feet.

Reference: 3 (Tables 19 and 25)

| | | |
|---|---|---|
| B. Depth to Aquifer from Surface | 5.00 | feet |

Documentation for Depth to Aquifer from Surface :

Depth to the water table is approximately 5 feet according to the PSA report.

Reference: 3 (pg. 4-2)

| | | |
|---|---|---|
| C. Depth to Aquifer (B - A) | 0.00 | feet |

| | | |
|---|---|---|
| Depth to Aquifer Factor | 5 | |

Travel Time

| | | |
|---|---|---|
| Are All Layers Karst? | NO | |
| Thickness of Layer(s) with Lowest Conductivity | 35.00 | feet |

Documentation for Thickness of Layers with Lowest Conductivity:

Bedrock in the area ranges from 22 to 48 feet, or an average of 35 feet bls. Therefore, the thickness of the layer with the lowest hydraulic conductivity was assumed to be the entire fill/overburden and is assigned as 35 feet.

Reference: 3 (Appendix A)

| | | |
|---|---|---|
| Hydraulic Conductivity (cm/sec) | 1.0E-05 | |

Documentation for Hydraulic Conductivity:

Appendix a indicateds that the permeability of the unsaturated zone is approximately 10-5.

Reference: 3 (Appendix A)

| | | |
|---|---|---|
| Travel Time Factor | 35 | |

==========

| | | |
|---|---|---|
| Potential to Release Factor | 500 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 3 | Manganese | 1.4E+02 | 0.0E+00 | 0.0E+00 | 1.8E+02 | ppb |
| 5 | Cyanide | 4.5E+04 | 2.0E+02 | 0.0E+00 | 7.0E+02 | ppb |
| 5 | Magnesium | 1.2E+04 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 6 | Aluminum | 9.9E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 6 | Cyanide | 1.9E+02 | 2.0E+02 | 0.0E+00 | 7.0E+02 | ppb |
| 6 | Iron | 8.4E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 6 | Manganese | 4.6E+01 | 0.0E+00 | 0.0E+00 | 1.8E+02 | ppb |
| 6 | Selenium | 9.8E+00 | 5.0E+01 | 0.0E+00 | 1.8E+02 | ppb |
| 7 | Cyanide | 2.0E+01 | 2.0E+02 | 0.0E+00 | 7.0E+02 | ppb |
| 7 | Iron | 2.8E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 7 | Magnesium | 4.7E+04 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 7 | Manganese | 3.7E+02 | 0.0E+00 | 0.0E+00 | 1.8E+02 | ppb |

==========

Observed Release Factor 550

Documentation for Well MW-101:

MW-101 and MW-103 were installed to assess groundwater quality for the debris landfill. Data was presented in Table 19 of the PSA report. Data for MW-101 was reported as the average of the duplicated and sample MW-101.

Reference: 3 (pg. 4-9 and Table 19)

Documentation for Well MW-102:

MW-102 was installed to assess background conditions. Fuel odors and elevated PID readings were observed during drilling, and, thus, this well may not represent background conditions. Therefore, data from this well was not considered for observed release for the Hanna Furnace Site.

Reference: 3 (pg. 4-9)

Documentation for Well MW-104:

MW-104 was installed to assess background conditions at the southern edge of the Hanna Furnace Boundary. Data from this well will not be considered for HRS scoring purposes.

Reference: 3 (pg. 4-15)

Documentation for Well MW-105:

MW-105, MW-106, and MW-107 were installed to assess groundwater quality was being affected by contaminated soil and sumps at the site. Data is presented on Table 25.

Reference: 3 (pg. 4-15 and Table 25)

GROUND WATER PATHWAY LIKELIHOOD OF RELEASE Bedrock Aquifer AQUIFER
Hanna Furnace Site - 10/06/95

Aquifer: Bedrock Aquifer

Type of Aquifer: Non Karst

Overlaying Aquifer: 1

Interconnected with: 1

OBSERVED RELEASE

| No. | Well ID | Well Type | Distance (miles) | Level of Contamination |
|---|---|---|---|---|

- N/A and/or data not specified

==========

Observed Release Factor 0

Documentation for Well :

Groundwater data from the bedrock aquifer is not available.

Reference: 3

POTENTIAL TO RELEASE

Containment

| | | |
|---|---|---|
| Containment Factor | 10 | |

Net Precipitation

| | | |
|---|---|---|
| Net Precipitation Factor | 10 | |

Depth to Aquifer

| | | |
|---|---|---|
| A. Depth of Hazardous Substances | 0.00 | feet |

Documentation for Depth of Hazardous Substances:

Data on the bedrock aquifer is not available in the PSA report. The depth to the bedrock aquifer was given, but other data was not.

Reference: 3

| | | |
|---|---|---|
| B. Depth to Aquifer from Surface | 35.00 | feet |

Documentation for Depth to Aquifer from Surface :

Depth to bedrock ranges from 22 to 48 feet bls at the site. An average of 35 feet was presumed.

Reference: 3 (pg. 4-1)

| | | |
|---|---|---|
| C. Depth to Aquifer (B - A) | 35.00 | feet |

| | | |
|---|---|---|
| Depth to Aquifer Factor | 3 | |

Travel Time

| | | |
|---|---|---|
| Are All Layers Karst? | NO | |
| Thickness of Layer(s) with Lowest Conductivity | 0.00 | feet |
| Hydraulic Conductivity (cm/sec) | 0.0E-05 | |
| Travel Time Factor | 5 | |

| | |
|---|---|
| Potential to Release Factor | 180 |

Source: 1 Fil./Flue Ash Disp.

Source Hazardous Waste Quantity Value: 384.35

| Hazardous Substance | Toxicity Value | Mobility Value | Toxicity/ Mobility Value |
|---|---|---|---|
| Aluminum | 100 | 2.00E-05 | 2.00E-03 |
| Antimony | 10000 | 1.00E-02 | 1.00E+02 |
| Arsenic | 10000 | 1.00E-02 | 1.00E+02 |
| Barium | 10000 | 1.00E-02 | 1.00E+02 |
| Beryllium | 10000 | 1.00E-02 | 1.00E+02 |
| Cadmium | 10000 | 2.00E-01 | 2.00E+03 |
| Chromium | 10000 | 1.00E-02 | 1.00E+02 |
| Cobalt | 1 | 1.00E-02 | 1.00E-02 |
| Copper | 100 | 1.00E-02 | 1.00E+00 |
| Cyanide | 100 | 2.00E-05 | 2.00E-03 |
| DDE | 100 | 2.00E-07 | 2.00E-05 |
| Endosulfan (I or II) | 100 | 2.00E-05 | 2.00E-03 |
| Iron | 100 | 1.00E-02 | 1.00E+00 |
| Lead | 10000 | 2.00E-05 | 2.00E-01 |
| Magnesium | 100 | 2.00E-05 | 2.00E-03 |
| Manganese | 10000 | 1.00E-02 | 1.00E+02 |
| Mercury | 10000 | 2.00E-05 | 2.00E-01 |
| Methoxychlor | 100 | 2.00E-07 | 2.00E-05 |
| Nickel | 100 | 2.00E-05 | 2.00E-03 |
| PCBs | 10000 | 2.00E-07 | 2.00E-03 |
| Selenium | 100 | 1.00E-02 | 1.00E+00 |
| Thallium | 1000 | 1.00E-04 | 1.00E-01 |
| Vanadium | 100 | 2.00E-07 | 2.00E-05 |
| Zinc | 10 | 2.00E-03 | 2.00E-02 |

Source: 2 Debris Landfill

Source Hazardous Waste Quantity Value: 92.65

| Hazardous Substance | Toxicity Value | Mobility Value | Toxicity/ Mobility Value |
|---|---|---|---|
| Aluminum | 100 | 2.00E-05 | 2.00E-03 |
| Antimony | 10000 | 1.00E-02 | 1.00E+02 |
| Arsenic | 10000 | 1.00E-02 | 1.00E+02 |
| Barium | 10000 | 1.00E-02 | 1.00E+02 |
| Benz(a)anthracene | 1000 | 2.00E-09 | 2.00E-06 |
| Benzo(a)pyrene | 10000 | 2.00E-09 | 2.00E-05 |
| Benzo(j,k)fluorene | 100 | 2.00E-07 | 2.00E-05 |
| Benzo(k)fluoranthene | 100 | 2.00E-09 | 2.00E-07 |
| Benzofluoranthene, 3,4- | 10000 | 2.00E-09 | 2.00E-05 |
| Beryllium | 10000 | 1.00E-02 | 1.00E+02 |
| Cadmium | 10000 | 2.00E-01 | 2.00E+03 |
| Chromium | 10000 | 1.00E-02 | 1.00E+02 |
| Chrysene | 100 | 2.00E-09 | 2.00E-07 |
| Cobalt | 1 | 1.00E-02 | 1.00E-02 |
| Copper | 100 | 1.00E-02 | 1.00E+00 |
| Iron | 100 | 1.00E-02 | 1.00E+00 |
| Lead | 10000 | 2.00E-05 | 2.00E-01 |
| Magnesium | 100 | 2.00E-05 | 2.00E-03 |
| Manganese | 10000 | 1.00E-02 | 1.00E+02 |
| Mercury | 10000 | 2.00E-05 | 2.00E-01 |
| Methoxychlor | 100 | 2.00E-07 | 2.00E-05 |
| Nickel | 100 | 2.00E-05 | 2.00E-03 |
| PCBs | 10000 | 2.00E-07 | 2.00E-03 |
| Pyrene | 100 | 2.00E-09 | 2.00E-07 |
| Vanadium | 100 | 2.00E-07 | 2.00E-05 |
| Zinc | 10 | 2.00E-03 | 2.00E-02 |

Source: 3 Drums/OSA

Source Hazardous Waste Quantity Value: 0.22

| Hazardous Substance | Toxicity Value | Mobility Value | Toxicity/ Mobility Value |
|---|---|---|---|
| Aluminum | 100 | 1.00E+00 | 1.00E+02 |
| Antimony | 10000 | 1.00E-02 | 1.00E+02 |
| Arsenic | 10000 | 1.00E-02 | 1.00E+02 |
| Barium | 10000 | 1.00E-02 | 1.00E+02 |
| Beryllium | 10000 | 1.00E-02 | 1.00E+02 |
| Cadmium | 10000 | 1.00E+00 | 1.00E+04 |
| Chromium | 10000 | 1.00E-02 | 1.00E+02 |
| Copper | 100 | 1.00E-02 | 1.00E+00 |
| Iron | 100 | 1.00E-02 | 1.00E+00 |
| Lead | 10000 | 1.00E-02 | 1.00E+02 |
| Magnesium | 100 | 1.00E+00 | 1.00E+02 |
| Manganese | 10000 | 1.00E-02 | 1.00E+02 |
| Mercury | 10000 | 1.00E+00 | 1.00E+04 |
| Nickel | 100 | 1.00E-02 | 1.00E+00 |
| Vanadium | 100 | 1.00E-02 | 1.00E+00 |
| Zinc | 10 | 1.00E-02 | 1.00E-01 |

Source: 4 Sumps/OSA

Source Hazardous Waste Quantity Value: 0.00

| Hazardous Substance | Toxicity Value | Mobility Value | Toxicity/ Mobility Value |
|---|---|---|---|
| Acenaphthene | 10 | 2.00E-03 | 2.00E-02 |
| Acenaphthylene | 100 | 2.00E-03 | 2.00E-01 |
| Aluminum | 100 | 2.00E-05 | 2.00E-03 |
| Anthracene | 10 | 2.00E-07 | 2.00E-06 |
| Arsenic | 10000 | 1.00E-02 | 1.00E+02 |
| Barium | 10000 | 1.00E-02 | 1.00E+02 |
| Benz(a)anthracene | 1000 | 2.00E-09 | 2.00E-06 |
| Benzo(a)pyrene | 10000 | 2.00E-09 | 2.00E-05 |
| Benzo(g,h,i)perylene | 100 | 2.00E-09 | 2.00E-07 |
| Benzo(j,k)fluorene | 100 | 2.00E-07 | 2.00E-05 |
| Benzo(k)fluoranthene | 100 | 2.00E-09 | 2.00E-07 |
| Benzofluoranthene, 3,4- | 10000 | 2.00E-09 | 2.00E-05 |
| Beryllium | 10000 | 1.00E-02 | 1.00E+02 |
| Cadmium | 10000 | 2.00E-01 | 2.00E+03 |
| Chromium | 10000 | 1.00E-02 | 1.00E+02 |
| Chrysene | 100 | 2.00E-09 | 2.00E-07 |
| Cobalt | 1 | 1.00E-02 | 1.00E-02 |
| Dibenzofuran | 100 | 2.00E-05 | 2.00E-03 |
| Fluorene | 100 | 2.00E-03 | 2.00E-01 |
| Indeno(1,2,3-CD)pyrene | 100 | 2.00E-09 | 2.00E-07 |
| Iron | 100 | 1.00E-02 | 1.00E+00 |
| Lead | 10000 | 2.00E-05 | 2.00E-01 |
| Magnesium | 100 | 2.00E-05 | 2.00E-03 |
| Manganese | 10000 | 1.00E-02 | 1.00E+02 |
| Mercury | 10000 | 2.00E-05 | 2.00E-01 |
| Methyl Napthalene, 2- | 100 | 2.00E-03 | 2.00E-01 |
| Nickel | 100 | 2.00E-05 | 2.00E-03 |
| Phenanthrene | 100 | 2.00E-05 | 2.00E-03 |
| Phenol | 1 | 1.00E+00 | 1.00E+00 |
| Pyrene | 100 | 2.00E-09 | 2.00E-07 |
| Vanadium | 100 | 2.00E-07 | 2.00E-05 |
| Zinc | 10 | 2.00E-03 | 2.00E-02 |

Source: 5 Soil/OSA

Source Hazardous Waste Quantity Value: 4.41

| Hazardous Substance | Toxicity Value | Mobility Value | Toxicity/ Mobility Value |
|---|---|---|---|
| Acenaphthene | 10 | 2.00E-03 | 2.00E-02 |
| Aluminum | 100 | 2.00E-05 | 2.00E-03 |
| Anthracene | 10 | 2.00E-07 | 2.00E-06 |
| Antimony | 10000 | 1.00E-02 | 1.00E+02 |
| Barium | 10000 | 1.00E-02 | 1.00E+02 |
| Benz(a)anthracene | 1000 | 2.00E-09 | 2.00E-06 |
| Benzo(a)pyrene | 10000 | 2.00E-09 | 2.00E-05 |
| Benzo(g,h,i)perylene | 100 | 2.00E-09 | 2.00E-07 |
| Benzo(j,k)fluorene | 100 | 2.00E-07 | 2.00E-05 |
| Benzo(k)fluoranthene | 100 | 2.00E-09 | 2.00E-07 |
| Benzofluoranthene, 3,4- | 10000 | 2.00E-09 | 2.00E-05 |
| Beryllium | 10000 | 1.00E-02 | 1.00E+02 |
| Chromium | 10000 | 1.00E-02 | 1.00E+02 |
| Chrysene | 100 | 2.00E-09 | 2.00E-07 |
| Copper | 100 | 1.00E-02 | 1.00E+00 |
| Dibenz(a,h)anthracene | 100 | 2.00E-09 | 2.00E-07 |
| Fluorene | 100 | 2.00E-03 | 2.00E-01 |
| Indeno(1,2,3-CD)pyrene | 100 | 2.00E-09 | 2.00E-07 |
| Iron | 100 | 1.00E-02 | 1.00E+00 |
| Lead | 10000 | 2.00E-05 | 2.00E-01 |
| Magnesium | 100 | 2.00E-05 | 2.00E-03 |
| Manganese | 10000 | 1.00E-02 | 1.00E+02 |
| Mercury | 10000 | 2.00E-05 | 2.00E-01 |
| Nickel | 100 | 2.00E-05 | 2.00E-03 |
| Phenanthrene | 100 | 2.00E-05 | 2.00E-03 |
| Pyrene | 100 | 2.00E-09 | 2.00E-07 |
| Selenium | 100 | 1.00E-02 | 1.00E+00 |
| Vanadium | 100 | 2.00E-07 | 2.00E-05 |
| Zinc | 10 | 2.00E-03 | 2.00E-02 |

GROUND WATER PATHWAY WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Hazardous Substances Found in an Observed Release

| Well No. | Observed Release Hazardous Substance | Toxicity Value | Mobility Value | Toxicity/ Mobility Value |
|---|---|---|---|---|
| 1 | Aluminum | 100 | 1.00E+00 | 1.00E+02 |
| 1 | Chromium | 10000 | 1.00E+00 | 1.00E+04 |
| 1 | Cyanide | 100 | 1.00E+00 | 1.00E+02 |
| 1 | Iron | 100 | 1.00E+00 | 1.00E+02 |
| 1 | Selenium | 100 | 1.00E+00 | 1.00E+02 |
| 3 | Aluminum | 100 | 1.00E+00 | 1.00E+02 |
| 3 | Cyanide | 100 | 1.00E+00 | 1.00E+02 |
| 3 | Iron | 100 | 1.00E+00 | 1.00E+02 |
| 3 | Lead | 10000 | 1.00E+00 | 1.00E+04 |
| 3 | Magnesium | 100 | 1.00E+00 | 1.00E+02 |
| 3 | Manganese | 10000 | 1.00E+00 | 1.00E+04 |
| 5 | Cyanide | 100 | 1.00E+00 | 1.00E+02 |
| 5 | Magnesium | 100 | 1.00E+00 | 1.00E+02 |
| 6 | Aluminum | 100 | 1.00E+00 | 1.00E+02 |
| 6 | Cyanide | 100 | 1.00E+00 | 1.00E+02 |
| 6 | Iron | 100 | 1.00E+00 | 1.00E+02 |
| 6 | Manganese | 10000 | 1.00E+00 | 1.00E+04 |
| 6 | Selenium | 100 | 1.00E+00 | 1.00E+02 |
| 7 | Cyanide | 100 | 1.00E+00 | 1.00E+02 |
| 7 | Iron | 100 | 1.00E+00 | 1.00E+02 |
| 7 | Magnesium | 100 | 1.00E+00 | 1.00E+02 |
| 7 | Manganese | 10000 | 1.00E+00 | 1.00E+04 |

| | |
|---|---|
| Toxicity/Mobility Value from Source Hazardous Substances: | 1.00E+04 |
| Toxicity/Mobility Value from Observed Release Hazardous Substances: | 1.00E+04 |
| Toxicity/Mobility Factor: | 1.00E+04 |
| Sum of Source Hazardous Waste Quantity Values: | 4.82E+02 |
| Hazardous Waste Quantity Factor: | 100 |
| Waste Characteristics Factor Category: | 32 |

Population by Well

| No. | Well ID | Sample Type | Distance (miles) | Level of Contamination | Population |
|---|---|---|---|---|---|

- N/A and/or data not specified

Level I Population Factor: 0.00

Level II Population Factor: 0.00

Potential Contamination by Distance Category

| Distance Category (miles) | Population | Value |
|---|---|---|
| > 0 to 1/4 | 0.0 | 0.00E+00 |
| > 1/4 to 1/2 | 0.0 | 0.00E+00 |
| > 1/2 to 1 | 0.0 | 0.00E+00 |
| > 1 to 2 | 0.0 | 0.00E+00 |
| > 2 to 3 | 0.0 | 0.00E+00 |
| > 3 to 4 | 0.0 | 0.00E+00 |

Potential Contamination Factor: 0.000

Documentation for Target Population > 0 to 1/4 mile Distance Category:

Population within a 4-mile radius of the site does not consume water from groundwater. All population consumes and uses surface water for drinking and resources.

Population is calculated in the following manner:

Population in a 4-mile radius of the site was assumed based on the population estimates presented in Appendix A:

Within a 1-mile radius of the site, the population is approximately 6,000 people. Assuming that the majority of these people are located within the 1/2 to 1 mile radii ring, and only a small amount of this population presides within the 0 to 1/4 radii ring, the following was assumed:

0 to 1/4 mile radii ring: 500
1/4 to 1/2 mile radii ring: 2500
1/2 to 1 mile radii ring: 3000

Population within the other radii rings was estimated from Appendix A, also:

1 to 2 mile radii ring: 10,000-6,000= 4,000
2 to 3 mile radii ring: 100,000-10,000= 90,000
3 to 4 mile radii ring: 90,000

Reference: 3 (Appendix A)

Nearest Well

Level of Contamination: N.A.

Nearest Well Factor: 0.00E+00

Documentation for Nearest Well:

The nearest well is a monitoring well that is located on the site.

Reference: 3 (Figure 2)

Resources

Resource Use: NO

Resource Factor: 0.00E+00

Documentation for Resources:

Groundwater is unusable in the area.

Reference: 3 (Appendix A)

Wellhead Protection Area

No wellhead protection area

Wellhead Protection Area Factor: 0.00E+00

Documentation for Wellhead Protection Area:

No wellhead protection area has been defined.

Reference: 3

Population by Well

| No. | Well ID | Sample Type | Distance (miles) | Level of Contamination | Population |
|---|---|---|---|---|---|

- N/A and/or data not specified

Level I Population Factor: 0.00

Level II Population Factor: 0.00

## Potential Contamination by Distance Category

| Distance Category (miles) | Population | Value |
|---|---|---|
| > 0 to 1/4 | 0.0 | 0.00E+00 |
| > 1/4 to 1/2 | 0.0 | 0.00E+00 |
| > 1/2 to 1 | 0.0 | 0.00E+00 |
| > 1 to 2 | 0.0 | 0.00E+00 |
| > 2 to 3 | 0.0 | 0.00E+00 |
| > 3 to 4 | 0.0 | 0.00E+00 |

Potential Contamination Factor: 0.000

## Nearest Well

Level of Contamination: N.A.

Nearest Well Factor: 0.00E+00

Documentation for Nearest Well:

Distance to nearest well is unknown.

Reference:

## Resources

Resource Use: NO

Resource Factor: 0.00E+00

Documentation for Resources:

Groundwater is not used in the vicinity of the site.

Reference: 3 (Appendix a)

Wellhead Protection Area

No wellhead protection area

Wellhead Protection Area Factor: 0.00E+00

Documentation for Wellhead Protection Area:

No wellhead protection area defined in PSA report.

Reference: 3

SURFACE WATER PATHWAY SEGMENT SUMMARY
Hanna Furnace Site - 10/06/95

| No. | Segment ID | Segment Type | Water Type | Start Point (mi) | End Point (mi) | Average Flow (cfs) |
|---|---|---|---|---|---|---|
| 1 | Union Canal | Mixing Are | Fresh | 0.00 | 0.50 | 10 |
| 2 | Lake Erie | Shallow Ar | Fresh | 0.50 | 15.00 | N.A. |

Documentation for segment: Union Canal:

The Union Canal is located onsite. It was considered to be classified as a "river", and it flows for 0.5 miles to Lake Erie. Lake Erie (a moderate depth Great Lake) consists of the remainder of the SW pathway target distance (15-river-miles). Both water bodies consist of fresh water.

Reference: 3 (pg. 2-3)

SURFACE WATER PATHWAY OVERLAND FLOW/FLOOD COMPONENT LIKELIHOOD OF RELEASE
Hanna Furnace Site - 10/06/95

OBSERVED RELEASE

| No. | Sample ID | Sample Type | Distance (miles) | Level of Contamination DW | HFC | Env |
|---|---|---|---|---|---|---|
| 1 | SW-103 | Aqueous | 0.000 | Level II | Potential | Level II |
| 2 | SW-104 | Aqueous | 0.000 | Level II | Level II | Level I |
| 3 | SW-105 | Aqueous | 0.000 | Level II | Potential | Level II |
| 4 | SW-106 | Aqueous | 0.000 | Level I | Level II | Level I |
| 5 | SW-107 | Aqueous | 0.120 | Level II | Potential | Level II |
| 6 | SD-103 | Sediment | 0.000 | Level II | Level II | Level II |
| 7 | SD-104 | Sediment | 0.000 | Level II | Level II | Level II |
| 8 | SD-105 | Sediment | 0.000 | Level II | Level II | Level II |
| 9 | SD-107 | Sediment | 0.120 | Level II | Level II | Level II |

| Sample No. | Hazardous Substance | Concent. | Units |
|---|---|---|---|
| 1 | Magnesium | 8.8E+03 | ppb |
| 2 | Aluminum | 2.9E+02 | ppb |
| 2 | Lead | 9.4E+00 | ppb |
| 2 | Magnesium | 8.2E+03 | ppb |
| 2 | Zinc | 6.5E+01 | ppb |
| 3 | Magnesium | 8.7E+03 | ppb |
| 4 | Aluminum | 2.2E+04 | ppb |
| 4 | Arsenic | 1.7E+01 | ppb |
| 4 | Barium | 2.1E+02 | ppb |
| 4 | Copper | 1.3E+02 | ppb |
| 4 | Lead | 4.6E+02 | ppb |
| 4 | Magnesium | 2.3E+04 | ppb |
| 4 | Mercury | 5.4E-01 | ppb |
| 4 | Nickel | 8.0E+01 | ppb |
| 4 | Vanadium | 6.1E+01 | ppb |
| 4 | Zinc | 1.2E+03 | ppb |
| 5 | Magnesium | 8.7E+03 | ppb |
| 6 | Aluminum | 2.0E+07 | ppb |
| 6 | Arsenic | 9.0E+03 | ppb |
| 6 | Barium | 1.9E+05 | ppb |
| 6 | Beryllium | 3.5E+03 | ppb |
| 6 | Cadmium | 1.8E+03 | ppb |
| 6 | Chromium | 1.1E+04 | ppb |
| 6 | Copper | 2.3E+04 | ppb |
| 6 | Iron | 4.3E+07 | ppb |
| 6 | Lead | 8.4E+04 | ppb |
| 6 | Magnesium | 1.8E+07 | ppb |
| 6 | Manganese | 2.5E+06 | ppb |
| 6 | Nickel | 1.1E+04 | ppb |
| 6 | Vanadium | 2.1E+04 | ppb |
| 6 | Zinc | 3.9E+05 | ppb |
| 7 | Aluminum | 7.3E+06 | ppb |

| | | | |
|---|---|---|---|
| 7 | Arsenic | 3.0E+03 | ppb |
| 7 | Barium | 8.1E+04 | ppb |
| 7 | Benz(a)anthracene | 4.3E+02 | ppb |
| 7 | Benzo(a)pyrene | 6.9E+02 | ppb |
| 7 | Benzo(j,k)fluorene | 5.9E+02 | ppb |
| 7 | Benzo(k)fluoranthene | 7.7E+02 | ppb |
| 7 | Benzofluoranthene, 3,4- | 7.9E+02 | ppb |
| 7 | Beryllium | 1.0E+03 | ppb |
| 7 | Cadmium | 2.2E+03 | ppb |
| 7 | Chromium | 4.9E+04 | ppb |
| 7 | Chrysene | 7.0E+02 | ppb |
| 7 | Copper | 3.1E+04 | ppb |
| 7 | Iron | 4.7E+07 | ppb |
| 7 | Lead | 1.3E+05 | ppb |
| 7 | Magnesium | 6.2E+06 | ppb |
| 7 | Manganese | 1.3E+06 | ppb |
| 7 | Mercury | 1.0E+02 | ppb |
| 7 | Nickel | 1.7E+04 | ppb |
| 7 | Pyrene | 7.1E+02 | ppb |
| 7 | Vanadium | 2.0E+04 | ppb |
| 7 | Zinc | 8.5E+05 | ppb |
| 8 | Acenaphthylene | 4.1E+02 | ppb |
| 8 | Aluminum | 6.2E+06 | ppb |
| 8 | Anthracene | 3.3E+02 | ppb |
| 8 | Arsenic | 2.1E+04 | ppb |
| 8 | Barium | 7.7E+04 | ppb |
| 8 | Benz(a)anthracene | 2.0E+03 | ppb |
| 8 | Benzo(a)pyrene | 2.4E+03 | ppb |
| 8 | Benzo(g,h,i)perylene | 9.4E+02 | ppb |
| 8 | Benzo(j,k)fluorene | 1.8E+03 | ppb |
| 8 | Benzo(k)fluoranthene | 2.2E+03 | ppb |
| 8 | Benzofluoranthene, 3,4- | 2.3E+03 | ppb |
| 8 | Bis (2-ethylhexyl) phthalate | 7.2E+02 | ppb |
| 8 | Cadmium | 2.8E+03 | ppb |
| 8 | Chromium | 3.7E+04 | ppb |
| 8 | Chrysene | 3.1E+03 | ppb |
| 8 | Copper | 8.2E+04 | ppb |
| 8 | Iron | 8.2E+07 | ppb |
| 8 | Lead | 3.3E+05 | ppb |
| 8 | Magnesium | 1.7E+07 | ppb |
| 8 | Manganese | 3.0E+06 | ppb |
| 8 | Nickel | 2.9E+04 | ppb |
| 8 | Phenanthrene | 4.4E+02 | ppb |
| 8 | Pyrene | 4.8E+03 | ppb |
| 8 | Vanadium | 3.8E+04 | ppb |
| 8 | Zinc | 8.0E+05 | ppb |
| 9 | Acenaphthylene | 6.3E+02 | ppb |
| 9 | Acetone | 1.2E+01 | ppb |
| 9 | Aluminum | 4.9E+06 | ppb |
| 9 | Anthracene | 1.8E+03 | ppb |
| 9 | Arsenic | 6.1E+03 | ppb |

| | | | |
|---|---|---|---|
| 9 | Barium | 7.1E+04 | ppb |
| 9 | Benz(a)anthracene | 2.7E+03 | ppb |
| 9 | Benzo(a)pyrene | 1.6E+03 | ppb |
| 9 | Benzo(g,h,i)perylene | 3.4E+02 | ppb |
| 9 | Benzo(j,k)fluorene | 4.0E+03 | ppb |
| 9 | Benzo(k)fluoranthene | 1.1E+03 | ppb |
| 9 | Benzofluoranthene, 3,4- | 1.6E+03 | ppb |
| 9 | Chromium | 3.9E+04 | ppb |
| 9 | Chrysene | 2.8E+03 | ppb |
| 9 | Copper | 1.4E+04 | ppb |
| 9 | Dibenzofuran | 3.3E+02 | ppb |
| 9 | Indeno(1,2,3-CD)pyrene | 4.4E+02 | ppb |
| 9 | Iron | 1.1E+07 | ppb |
| 9 | Lead | 4.5E+04 | ppb |
| 9 | Magnesium | 7.3E+06 | ppb |
| 9 | Manganese | 4.2E+05 | ppb |
| 9 | Phenanthrene | 3.6E+03 | ppb |
| 9 | Pyrene | 4.8E+03 | ppb |
| 9 | Trichlorobenzene, 1,2,4- | 7.6E+02 | ppb |
| 9 | Vanadium | 1.2E+04 | ppb |
| 9 | Zinc | 1.6E+05 | ppb |

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Observed Release Factor 550

Documentation for Observed Release, Sample SW-103:

Five surface water samples and four sediment samples were collected from the Union Ship Canal. Results are presented on Tables 26 and 27.

Reference: 3 (pgs. 4-18 and 4-19, Tables 26 and 27)

SURFACE WATER PATHWAY OVERLAND FLOW/FLOOD COMPONENT LIKELIHOOD OF RELEASE
Hanna Furnace Site - 10/06/95

POTENTIAL TO RELEASE

Potential to Release by Overland Flow

Containment

| No. | Source ID | HWQ Value | Containment Value |
|---|---|---|---|
| 1 | Fil./Flue Ash Disp. | 3.84E+02 | 10 |
| 2 | Debris Landfill | 9.26E+01 | 10 |
| 3 | Drums/OSA | 2.20E-01 | 10 |
| 4 | Sumps/OSA | 4.00E-03 | 10 |
| 5 | Soil/OSA | 4.41E+00 | 10 |

Containment Factor: 10

Documentation for Overland Flow Containment, Source Fil./Flue Ash Disp.:

There is evidence of migration of contaminants from source area to a surface water body (the Union Canal); therefore, a containment facor of 10 is assigned for all sources.

Reference: 3

## Distance to Surface Water

Distance to Surface Water: 0.0 feet

Distance to Surface Water Factor: 25

Documentation for Distance to Surface Water:

The nearest surface water body is onsite: the Union Ship Canal.

Reference: 3 (Figure 2)

## Runoff

A. Drainage Area: 113.0 acres

Documentation for Drainage Area:

Appendix A indicates that the acreage of the site is 113 acres.

Reference: 3 (Appendix A)

B. 2-year, 24-hour Rainfall: 2.4 inches

Documentation for Rainfall:

The 2-yr, 24-hr rainfall was obtained from the Rainfall Frequency Atlas.

Reference:

C. Soil Group: B
Medium-textured soils with moderate infiltration rates

Runoff Factor: 1

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Potential to Release by Overland Flow Factor: 260

SURFACE WATER PATHWAY OVERLAND FLOW/FLOOD COMPONENT LIKELIHOOD OF RELEASE
Hanna Furnace Site - 10/06/95

Potential to Release by Flood

| No. | Source ID | HWQ Value | Flood Containment Value | Flood Frequency Value | Potential to Release by Flood |
|---|---|---|---|---|---|
| 1 | Fil./Flue Ash Disp. | 3.84E+02 | 10 | 25 | 250 |
| 2 | Debris Landfill | 9.26E+01 | 10 | 25 | 250 |
| 3 | Drums/OSA | 2.20E-01 | 10 | 25 | 250 |
| 4 | Sumps/OSA | 4.00E-03 | 10 | 25 | 250 |
| 5 | Soil/OSA | 4.41E+00 | 10 | 25 | 250 |

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Potential to Release by Flood Factor: 250

Documentation for Flood Containment, Source Fil./Flue Ash Disp.:

Site is not contained for any flood.

Reference: 3

Documentation for Flood Frequency, Source Fil./Flue Ash Disp.:

Source is located within the 100-year floodplain.

Reference: 3

Source: 1 Fil./Flue Ash Disp.

Source Hazardous Waste Quantity Value: 384.35

| Hazardous Substance | Toxicity Value | Persistence Value | Toxicity/ Persistence Value |
|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 0.00E+00 |
| Antimony | 10000 | 1.00E+00 | 1.00E+04 |
| Arsenic | 10000 | 1.00E+00 | 1.00E+04 |
| Barium | 10000 | 1.00E+00 | 1.00E+04 |
| Beryllium | 10000 | 1.00E+00 | 1.00E+04 |
| Cadmium | 10000 | 1.00E+00 | 1.00E+04 |
| Chromium | 10000 | 1.00E+00 | 1.00E+04 |
| Cobalt | 1 | 1.00E+00 | 1.00E+00 |
| Copper | 0 | 1.00E+00 | 0.00E+00 |
| Cyanide | 100 | 4.00E-01 | 4.00E+01 |
| DDE | 100 | 1.00E+00 | 1.00E+02 |
| Endosulfan (I or II) | 100 | 1.00E+00 | 1.00E+02 |
| Iron | 0 | 1.00E+00 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 1.00E+04 |
| Magnesium | 0 | 1.00E+00 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 1.00E+04 |
| Mercury | 10000 | 1.00E+00 | 1.00E+04 |
| Methoxychlor | 100 | 1.00E+00 | 1.00E+02 |
| Nickel | 100 | 1.00E+00 | 1.00E+02 |
| PCBs | 10000 | 1.00E+00 | 1.00E+04 |
| Selenium | 100 | 1.00E+00 | 1.00E+02 |
| Thallium | 1000 | 1.00E+00 | 1.00E+03 |
| Vanadium | 100 | 1.00E+00 | 1.00E+02 |
| Zinc | 10 | 1.00E+00 | 1.00E+01 |

SW PATHWAY: OVERLAND/FLOOD DRINKING WATER THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 2 Debris Landfill

Source Hazardous Waste Quantity Value: 92.65

| Hazardous Substance | Toxicity Value | Persistence Value | Toxicity/ Persistence Value |
|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 0.00E+00 |
| Antimony | 10000 | 1.00E+00 | 1.00E+04 |
| Arsenic | 10000 | 1.00E+00 | 1.00E+04 |
| Barium | 10000 | 1.00E+00 | 1.00E+04 |
| Benz(a)anthracene | 1000 | 1.00E+00 | 1.00E+03 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 1.00E+04 |
| Benzo(j,k)fluorene | 100 | 1.00E+00 | 1.00E+02 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 1.00E+04 |
| Beryllium | 10000 | 1.00E+00 | 1.00E+04 |
| Cadmium | 10000 | 1.00E+00 | 1.00E+04 |
| Chromium | 10000 | 1.00E+00 | 1.00E+04 |
| Chrysene | 0 | 1.00E+00 | 0.00E+00 |
| Cobalt | 1 | 1.00E+00 | 1.00E+00 |
| Copper | 0 | 1.00E+00 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 1.00E+04 |
| Magnesium | 0 | 1.00E+00 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 1.00E+04 |
| Mercury | 10000 | 1.00E+00 | 1.00E+04 |
| Methoxychlor | 100 | 1.00E+00 | 1.00E+02 |
| Nickel | 100 | 1.00E+00 | 1.00E+02 |
| PCBs | 10000 | 1.00E+00 | 1.00E+04 |
| Pyrene | 100 | 1.00E+00 | 1.00E+02 |
| Vanadium | 100 | 1.00E+00 | 1.00E+02 |
| Zinc | 10 | 1.00E+00 | 1.00E+01 |

Source: 3 Drums/OSA

Source Hazardous Waste Quantity Value: 0.22

| Hazardous Substance | Toxicity Value | Persistence Value | Toxicity/ Persistence Value |
|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 0.00E+00 |
| Antimony | 10000 | 1.00E+00 | 1.00E+04 |
| Arsenic | 10000 | 1.00E+00 | 1.00E+04 |
| Barium | 10000 | 1.00E+00 | 1.00E+04 |
| Beryllium | 10000 | 1.00E+00 | 1.00E+04 |
| Cadmium | 10000 | 1.00E+00 | 1.00E+04 |
| Chromium | 10000 | 1.00E+00 | 1.00E+04 |
| Copper | 0 | 1.00E+00 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 1.00E+04 |
| Magnesium | 0 | 1.00E+00 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 1.00E+04 |
| Mercury | 10000 | 1.00E+00 | 1.00E+04 |
| Nickel | 100 | 1.00E+00 | 1.00E+02 |
| Vanadium | 100 | 1.00E+00 | 1.00E+02 |
| Zinc | 10 | 1.00E+00 | 1.00E+01 |

SW PATHWAY: OVERLAND/FLOOD DRINKING WATER THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 4 Sumps/OSA

Source Hazardous Waste Quantity Value: 0.00

| Hazardous Substance | Toxicity Value | Persistence Value | Toxicity/ Persistence Value |
|---|---|---|---|
| Acenaphthene | 10 | 4.00E-01 | 4.00E+00 |
| Acenaphthylene | 0 | 1.00E+00 | 0.00E+00 |
| Aluminum | 0 | 1.00E+00 | 0.00E+00 |
| Anthracene | 10 | 4.00E-01 | 4.00E+00 |
| Arsenic | 10000 | 1.00E+00 | 1.00E+04 |
| Barium | 10000 | 1.00E+00 | 1.00E+04 |
| Benz(a)anthracene | 1000 | 1.00E+00 | 1.00E+03 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 1.00E+04 |
| Benzo(g,h,i)perylene | 0 | 1.00E+00 | 0.00E+00 |
| Benzo(j,k)fluorene | 100 | 1.00E+00 | 1.00E+02 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 1.00E+04 |
| Beryllium | 10000 | 1.00E+00 | 1.00E+04 |
| Cadmium | 10000 | 1.00E+00 | 1.00E+04 |
| Chromium | 10000 | 1.00E+00 | 1.00E+04 |
| Chrysene | 0 | 1.00E+00 | 0.00E+00 |
| Cobalt | 1 | 1.00E+00 | 1.00E+00 |
| Dibenzofuran | 0 | 1.00E+00 | 0.00E+00 |
| Fluorene | 100 | 1.00E+00 | 1.00E+02 |
| Indeno(1,2,3-CD)pyrene | 0 | 1.00E+00 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 1.00E+04 |
| Magnesium | 0 | 1.00E+00 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 1.00E+04 |
| Mercury | 10000 | 1.00E+00 | 1.00E+04 |
| Methyl Napthalene, 2- | 0 | 4.00E-01 | 0.00E+00 |
| Nickel | 100 | 1.00E+00 | 1.00E+02 |
| Phenanthrene | 0 | 4.00E-01 | 0.00E+00 |
| Phenol | 1 | 1.00E+00 | 1.00E+00 |
| Pyrene | 100 | 1.00E+00 | 1.00E+02 |
| Vanadium | 100 | 1.00E+00 | 1.00E+02 |
| Zinc | 10 | 1.00E+00 | 1.00E+01 |

Source: 5 Soil/OSA

Source Hazardous Waste Quantity Value: 4.41

| Hazardous Substance | Toxicity Value | Persistence Value | Toxicity/ Persistence Value |
|---|---|---|---|
| Acenaphthene | 10 | 4.00E-01 | 4.00E+00 |
| Aluminum | 0 | 1.00E+00 | 0.00E+00 |
| Anthracene | 10 | 4.00E-01 | 4.00E+00 |
| Antimony | 10000 | 1.00E+00 | 1.00E+04 |
| Barium | 10000 | 1.00E+00 | 1.00E+04 |
| Benz(a)anthracene | 1000 | 1.00E+00 | 1.00E+03 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 1.00E+04 |
| Benzo(g,h,i)perylene | 0 | 1.00E+00 | 0.00E+00 |
| Benzo(j,k)fluorene | 100 | 1.00E+00 | 1.00E+02 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 1.00E+04 |
| Beryllium | 10000 | 1.00E+00 | 1.00E+04 |
| Chromium | 10000 | 1.00E+00 | 1.00E+04 |
| Chrysene | 0 | 1.00E+00 | 0.00E+00 |
| Copper | 0 | 1.00E+00 | 0.00E+00 |
| Dibenz(a,h)anthracene | 0 | 1.00E+00 | 0.00E+00 |
| Fluorene | 100 | 1.00E+00 | 1.00E+02 |
| Indeno(1,2,3-CD)pyrene | 0 | 1.00E+00 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 1.00E+04 |
| Magnesium | 0 | 1.00E+00 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 1.00E+04 |
| Mercury | 10000 | 1.00E+00 | 1.00E+04 |
| Nickel | 100 | 1.00E+00 | 1.00E+02 |
| Phenanthrene | 0 | 4.00E-01 | 0.00E+00 |
| Pyrene | 100 | 1.00E+00 | 1.00E+02 |
| Selenium | 100 | 1.00E+00 | 1.00E+02 |
| Vanadium | 100 | 1.00E+00 | 1.00E+02 |
| Zinc | 10 | 1.00E+00 | 1.00E+01 |

Hazardous Substances Found in an Observed Release

| Sample No. | Observed Release Hazardous Substance | Toxicity Value | Persistence Value | Toxicity/ Persistence Value |
|---|---|---|---|---|
| 1 | Magnesium | 100 | 1.00E+00 | 1.00E+02 |
| 2 | Aluminum | 100 | 1.00E+00 | 1.00E+02 |
| 2 | Lead | 10000 | 1.00E+00 | 1.00E+04 |
| 2 | Magnesium | 100 | 1.00E+00 | 1.00E+02 |
| 2 | Zinc | 10 | 1.00E+00 | 1.00E+01 |
| 3 | Magnesium | 100 | 1.00E+00 | 1.00E+02 |
| 4 | Aluminum | 100 | 1.00E+00 | 1.00E+02 |
| 4 | Arsenic | 10000 | 1.00E+00 | 1.00E+04 |
| 4 | Barium | 10000 | 1.00E+00 | 1.00E+04 |
| 4 | Copper | 100 | 1.00E+00 | 1.00E+02 |
| 4 | Lead | 10000 | 1.00E+00 | 1.00E+04 |
| 4 | Magnesium | 100 | 1.00E+00 | 1.00E+02 |
| 4 | Mercury | 10000 | 1.00E+00 | 1.00E+04 |
| 4 | Nickel | 100 | 1.00E+00 | 1.00E+02 |
| 4 | Vanadium | 100 | 1.00E+00 | 1.00E+02 |
| 4 | Zinc | 10 | 1.00E+00 | 1.00E+01 |
| 5 | Magnesium | 100 | 1.00E+00 | 1.00E+02 |
| 6 | Aluminum | 100 | 1.00E+00 | 1.00E+02 |
| 6 | Arsenic | 10000 | 1.00E+00 | 1.00E+04 |
| 6 | Barium | 10000 | 1.00E+00 | 1.00E+04 |
| 6 | Beryllium | 10000 | 1.00E+00 | 1.00E+04 |
| 6 | Cadmium | 10000 | 1.00E+00 | 1.00E+04 |
| 6 | Chromium | 10000 | 1.00E+00 | 1.00E+04 |
| 6 | Copper | 100 | 1.00E+00 | 1.00E+02 |
| 6 | Iron | 100 | 1.00E+00 | 1.00E+02 |
| 6 | Lead | 10000 | 1.00E+00 | 1.00E+04 |
| 6 | Magnesium | 100 | 1.00E+00 | 1.00E+02 |
| 6 | Manganese | 10000 | 1.00E+00 | 1.00E+04 |
| 6 | Nickel | 100 | 1.00E+00 | 1.00E+02 |
| 6 | Vanadium | 100 | 1.00E+00 | 1.00E+02 |
| 6 | Zinc | 10 | 1.00E+00 | 1.00E+01 |
| 7 | Aluminum | 100 | 1.00E+00 | 1.00E+02 |
| 7 | Arsenic | 10000 | 1.00E+00 | 1.00E+04 |
| 7 | Barium | 10000 | 1.00E+00 | 1.00E+04 |
| 7 | Benz(a)anthracene | 1000 | 1.00E+00 | 1.00E+03 |
| 7 | Benzo(a)pyrene | 10000 | 1.00E+00 | 1.00E+04 |
| 7 | Benzo(j,k)fluorene | 100 | 1.00E+00 | 1.00E+02 |
| 7 | Benzo(k)fluoranthene | 100 | 1.00E+00 | 1.00E+02 |
| 7 | Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 1.00E+04 |
| 7 | Beryllium | 10000 | 1.00E+00 | 1.00E+04 |
| 7 | Cadmium | 10000 | 1.00E+00 | 1.00E+04 |
| 7 | Chromium | 10000 | 1.00E+00 | 1.00E+04 |
| 7 | Chrysene | 100 | 1.00E+00 | 1.00E+02 |
| 7 | Copper | 100 | 1.00E+00 | 1.00E+02 |

| | | | | |
|---|---|---|---|---|
| 7 | Iron | 100 | 1.00E+00 | 1.00E+02 |
| 7 | Lead | 10000 | 1.00E+00 | 1.00E+04 |
| 7 | Magnesium | 100 | 1.00E+00 | 1.00E+02 |
| 7 | Manganese | 10000 | 1.00E+00 | 1.00E+04 |
| 7 | Mercury | 10000 | 1.00E+00 | 1.00E+04 |
| 7 | Nickel | 100 | 1.00E+00 | 1.00E+02 |
| 7 | Pyrene | 100 | 1.00E+00 | 1.00E+02 |
| 7 | Vanadium | 100 | 1.00E+00 | 1.00E+02 |
| 7 | Zinc | 10 | 1.00E+00 | 1.00E+01 |
| 8 | Acenaphthylene | 100 | 1.00E+00 | 1.00E+02 |
| 8 | Aluminum | 100 | 1.00E+00 | 1.00E+02 |
| 8 | Anthracene | 10 | 4.00E-01 | 4.00E+00 |
| 8 | Arsenic | 10000 | 1.00E+00 | 1.00E+04 |
| 8 | Barium | 10000 | 1.00E+00 | 1.00E+04 |
| 8 | Benz(a)anthracene | 1000 | 1.00E+00 | 1.00E+03 |
| 8 | Benzo(a)pyrene | 10000 | 1.00E+00 | 1.00E+04 |
| 8 | Benzo(g,h,i)perylene | 100 | 1.00E+00 | 1.00E+02 |
| 8 | Benzo(j,k)fluorene | 100 | 1.00E+00 | 1.00E+02 |
| 8 | Benzo(k)fluoranthene | 100 | 1.00E+00 | 1.00E+02 |
| 8 | Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 1.00E+04 |
| 8 | Bis (2-ethylhexyl) phthalate | 100 | 1.00E+00 | 1.00E+02 |
| 8 | Cadmium | 10000 | 1.00E+00 | 1.00E+04 |
| 8 | Chromium | 10000 | 1.00E+00 | 1.00E+04 |
| 8 | Chrysene | 100 | 1.00E+00 | 1.00E+02 |
| 8 | Copper | 100 | 1.00E+00 | 1.00E+02 |
| 8 | Iron | 100 | 1.00E+00 | 1.00E+02 |
| 8 | Lead | 10000 | 1.00E+00 | 1.00E+04 |
| 8 | Magnesium | 100 | 1.00E+00 | 1.00E+02 |
| 8 | Manganese | 10000 | 1.00E+00 | 1.00E+04 |
| 8 | Nickel | 100 | 1.00E+00 | 1.00E+02 |
| 8 | Phenanthrene | 100 | 4.00E-01 | 4.00E+01 |
| 8 | Pyrene | 100 | 1.00E+00 | 1.00E+02 |
| 8 | Vanadium | 100 | 1.00E+00 | 1.00E+02 |
| 8 | Zinc | 10 | 1.00E+00 | 1.00E+01 |
| 9 | Acenaphthylene | 100 | 1.00E+00 | 1.00E+02 |
| 9 | Acetone | 10 | 7.00E-04 | 7.00E-03 |
| 9 | Aluminum | 100 | 1.00E+00 | 1.00E+02 |
| 9 | Anthracene | 10 | 4.00E-01 | 4.00E+00 |
| 9 | Arsenic | 10000 | 1.00E+00 | 1.00E+04 |
| 9 | Barium | 10000 | 1.00E+00 | 1.00E+04 |
| 9 | Benz(a)anthracene | 1000 | 1.00E+00 | 1.00E+03 |
| 9 | Benzo(a)pyrene | 10000 | 1.00E+00 | 1.00E+04 |
| 9 | Benzo(g,h,i)perylene | 100 | 1.00E+00 | 1.00E+02 |
| 9 | Benzo(j,k)fluorene | 100 | 1.00E+00 | 1.00E+02 |
| 9 | Benzo(k)fluoranthene | 100 | 1.00E+00 | 1.00E+02 |
| 9 | Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 1.00E+04 |
| 9 | Chromium | 10000 | 1.00E+00 | 1.00E+04 |
| 9 | Chrysene | 100 | 1.00E+00 | 1.00E+02 |
| 9 | Copper | 100 | 1.00E+00 | 1.00E+02 |
| 9 | Dibenzofuran | 100 | 1.00E+00 | 1.00E+02 |
| 9 | Indeno(1,2,3-CD)pyrene | 100 | 1.00E+00 | 1.00E+02 |

| | | | | |
|---|---|---|---|---|
| 9 | Iron | 100 | 1.00E+00 | 1.00E+02 |
| 9 | Lead | 10000 | 1.00E+00 | 1.00E+04 |
| 9 | Magnesium | 100 | 1.00E+00 | 1.00E+02 |
| 9 | Manganese | 10000 | 1.00E+00 | 1.00E+04 |
| 9 | Phenanthrene | 100 | 4.00E-01 | 4.00E+01 |
| 9 | Pyrene | 100 | 1.00E+00 | 1.00E+02 |
| 9 | Trichlorobenzene, 1,2,4- | 1000 | 4.00E-01 | 4.00E+02 |
| 9 | Vanadium | 100 | 1.00E+00 | 1.00E+02 |
| 9 | Zinc | 10 | 1.00E+00 | 1.00E+01 |

| | |
|---|---|
| Toxicity/Persistence Value from Source Hazardous Substances: | 1.00E+04 |
| Toxicity/Persistence Value from Observed Release Hazardous Substances: | 1.00E+04 |
| Toxicity/Persistence Factor: | 1.00E+04 |
| Sum of Source Hazardous Waste Quantity Values: | 4.82E+02 |
| Hazardous Waste Quantity Factor: | 100 |
| Waste Characteristics Factor Category: | 32 |

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT DRINKING WATER THREAT TARGETS
Hanna Furnace Site - 10/06/95

Level I Concentrations

Sample ID: SW-106
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units |
|---|---|---|---|
| Aluminum | 2.2E+04 | 0.0E+00 | ppb |
| Arsenic | 1.7E+01 | 5.0E+01 | ppb |
| Barium | 2.1E+02 | 2.0E+03 | ppb |
| Copper | 1.3E+02 | 1.3E+03 | ppb |
| Lead | 4.6E+02 | 1.5E+01 | ppb |
| Magnesium | 2.3E+04 | 0.0E+00 | ppb |
| Mercury | 5.4E-01 | 2.0E+00 | ppb |
| Nickel | 8.0E+01 | 1.0E+02 | ppb |
| Vanadium | 6.1E+01 | 0.0E+00 | ppb |
| Zinc | 1.2E+03 | 0.0E+00 | ppb |

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT DRINKING WATER THREAT TARGETS
Hanna Furnace Site - 10/06/95

Level II Concentrations

Sample ID: SW-103
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units |
|---|---|---|---|
| Magnesium | 8.8E+03 | 0.0E+00 | ppb |

Documentation for SW-103:

Five surface water samples and four sediment samples were collected from the Union Ship Canal. Results are presented on Tables 26 and 27.

Reference: 3 (pgs. 4-18 and 4-19, Tables 26 and 27)

Sample ID: SW-104
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units |
|---|---|---|---|
| Aluminum | 2.9E+02 | 0.0E+00 | ppb |
| Lead | 9.4E+00 | 1.5E+01 | ppb |
| Magnesium | 8.2E+03 | 0.0E+00 | ppb |
| Zinc | 6.5E+01 | 0.0E+00 | ppb |

Sample ID: SW-105
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units |
|---|---|---|---|
| Magnesium | 8.7E+03 | 0.0E+00 | ppb |

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT DRINKING WATER THREAT TARGETS
Hanna Furnace Site - 10/06/95

Sample ID: SW-107
Sample Medium: Aqueous
Location: 0.12 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units |
|---|---|---|---|
| Magnesium | 8.7E+03 | 0.0E+00 | ppb |

Sample ID: SD-103
Sample Medium: Sediment
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units |
|---|---|---|---|
| Aluminum | 2.0E+07 | N.A. | ppb |
| Arsenic | 9.0E+03 | N.A. | ppb |
| Barium | 1.9E+05 | N.A. | ppb |
| Beryllium | 3.5E+03 | N.A. | ppb |
| Cadmium | 1.8E+03 | N.A. | ppb |
| Chromium | 1.1E+04 | N.A. | ppb |
| Copper | 2.3E+04 | N.A. | ppb |
| Iron | 4.3E+07 | N.A. | ppb |
| Lead | 8.4E+04 | N.A. | ppb |
| Magnesium | 1.8E+07 | N.A. | ppb |
| Manganese | 2.5E+06 | N.A. | ppb |
| Nickel | 1.1E+04 | N.A. | ppb |
| Vanadium | 2.1E+04 | N.A. | ppb |
| Zinc | 3.9E+05 | N.A. | ppb |

Sample ID: SD-104
Sample Medium: Sediment
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units |
|---|---|---|---|
| Aluminum | 7.3E+06 | N.A. | ppb |
| Arsenic | 3.0E+03 | N.A. | ppb |
| Barium | 8.1E+04 | N.A. | ppb |
| Benz(a)anthracene | 4.3E+02 | N.A. | ppb |
| Benzo(a)pyrene | 6.9E+02 | N.A. | ppb |
| Benzo(j,k)fluorene | 5.9E+02 | N.A. | ppb |
| Benzo(k)fluoranthene | 7.7E+02 | N.A. | ppb |
| Benzofluoranthene, 3,4- | 7.9E+02 | N.A. | ppb |

| | | | |
|---|---|---|---|
| Beryllium | 1.0E+03 | N.A. | ppb |
| Cadmium | 2.2E+03 | N.A. | ppb |
| Chromium | 4.9E+04 | N.A. | ppb |
| Chrysene | 7.0E+02 | N.A. | ppb |
| Copper | 3.1E+04 | N.A. | ppb |
| Iron | 4.7E+07 | N.A. | ppb |
| Lead | 1.3E+05 | N.A. | ppb |
| Magnesium | 6.2E+06 | N.A. | ppb |
| Manganese | 1.3E+06 | N.A. | ppb |
| Mercury | 1.0E+02 | N.A. | ppb |
| Nickel | 1.7E+04 | N.A. | ppb |
| Pyrene | 7.1E+02 | N.A. | ppb |
| Vanadium | 2.0E+04 | N.A. | ppb |
| Zinc | 8.5E+05 | N.A. | ppb |

Sample ID: SD-105
Sample Medium: Sediment
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units |
|---|---|---|---|
| Acenaphthylene | 4.1E+02 | N.A. | ppb |
| Aluminum | 6.2E+06 | N.A. | ppb |
| Anthracene | 3.3E+02 | N.A. | ppb |
| Arsenic | 2.1E+04 | N.A. | ppb |
| Barium | 7.7E+04 | N.A. | ppb |
| Benz(a)anthracene | 2.0E+03 | N.A. | ppb |
| Benzo(a)pyrene | 2.4E+03 | N.A. | ppb |
| Benzo(g,h,i)perylene | 9.4E+02 | N.A. | ppb |
| Benzo(j,k)fluorene | 1.8E+03 | N.A. | ppb |
| Benzo(k)fluoranthene | 2.2E+03 | N.A. | ppb |
| Benzofluoranthene, 3,4- | 2.3E+03 | N.A. | ppb |
| Bis (2-ethylhexyl) phthalate | 7.2E+02 | N.A. | ppb |
| Cadmium | 2.8E+03 | N.A. | ppb |
| Chromium | 3.7E+04 | N.A. | ppb |
| Chrysene | 3.1E+03 | N.A. | ppb |
| Copper | 8.2E+04 | N.A. | ppb |
| Iron | 8.2E+07 | N.A. | ppb |
| Lead | 3.3E+05 | N.A. | ppb |
| Magnesium | 1.7E+07 | N.A. | ppb |
| Manganese | 3.0E+06 | N.A. | ppb |
| Nickel | 2.9E+04 | N.A. | ppb |
| Phenanthrene | 4.4E+02 | N.A. | ppb |
| Pyrene | 4.8E+03 | N.A. | ppb |
| Vanadium | 3.8E+04 | N.A. | ppb |
| Zinc | 8.0E+05 | N.A. | ppb |

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT DRINKING WATER THREAT TARGETS
Hanna Furnace Site - 10/06/95

Sample ID: SD-107
Sample Medium: Sediment
Location: 0.12 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units |
|---|---|---|---|
| Acenaphthylene | 6.3E+02 | N.A. | ppb |
| Acetone | 1.2E+01 | N.A. | ppb |
| Aluminum | 4.9E+06 | N.A. | ppb |
| Anthracene | 1.8E+03 | N.A. | ppb |
| Arsenic | 6.1E+03 | N.A. | ppb |
| Barium | 7.1E+04 | N.A. | ppb |
| Benz(a)anthracene | 2.7E+03 | N.A. | ppb |
| Benzo(a)pyrene | 1.6E+03 | N.A. | ppb |
| Benzo(g,h,i)perylene | 3.4E+02 | N.A. | ppb |
| Benzo(j,k)fluorene | 4.0E+03 | N.A. | ppb |
| Benzo(k)fluoranthene | 1.1E+03 | N.A. | ppb |
| Benzofluoranthene, 3,4- | 1.6E+03 | N.A. | ppb |
| Chromium | 3.9E+04 | N.A. | ppb |
| Chrysene | 2.8E+03 | N.A. | ppb |
| Copper | 1.4E+04 | N.A. | ppb |
| Dibenzofuran | 3.3E+02 | N.A. | ppb |
| Indeno(1,2,3-CD)pyrene | 4.4E+02 | N.A. | ppb |
| Iron | 1.1E+07 | N.A. | ppb |
| Lead | 4.5E+04 | N.A. | ppb |
| Magnesium | 7.3E+06 | N.A. | ppb |
| Manganese | 4.2E+05 | N.A. | ppb |
| Phenanthrene | 3.6E+03 | N.A. | ppb |
| Pyrene | 4.8E+03 | N.A. | ppb |
| Trichlorobenzene, 1,2,4- | 7.6E+02 | N.A. | ppb |
| Vanadium | 1.2E+04 | N.A. | ppb |
| Zinc | 1.6E+05 | N.A. | ppb |

Most Distant Level I Sample

Sample ID: SW-106
Distance from the Probable Point of Entry: 0.00 miles

Most Distant Level II Sample

Sample ID: SW-107
Distance from the Probable Point of Entry: 0.12 miles

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT DRINKING WATER THREAT TARGETS
Hanna Furnace Site - 10/06/95

Level I Concentrations

| Intake | Distance Along the In-water Segment from the Probable Point of Entry (miles) | Population |
|---|---|---|

- N/A and/or data not specified

Population Served by Level I Intakes: 0.0

Level I Population Factor: 0.00E+00

Level II Concentrations

| Intake | Distance Along the In-water Segment from the Probable Point of Entry (miles) | Population |
|---|---|---|

- N/A and/or data not specified

Population Served by Level II Intakes: 0.0

Level II Population Factor: 0.00E+00

Potential Contamination

| Intake ID | Average Annual Flow (cfs) | Population Served |
|---|---|---|
| 1 Municipal Supply | 0 | 190000.0 |

Documentation for Intake Municipal Supply:

The municipalities of Lackawanna and Buffalo receive drinking water from a municipal supply with intakes in Lake Erie more than 3 miles from the Union Ship Canal (therefore 3.5 miles from the site).

It was assumed that >100,000 people would consume water from this intake based on the population within a 3-mile radius of the site.

Reference: 3 (pg. 2-4)

| Type of Surface Water Body | Total Population | Dilution-Weighted Population |
|---|---|---|
| Shallow Ocean Zone or Great Lake | 190000.0 | 16.0 |

Dilution-Weighted Population Served by Potentially Contaminated Intakes: 16.0

Potential Contamination Factor: 2.0

Nearest Intake

Location of Nearest Drinking Water Intake: Municipal Supply
Distance from the Probable Point of Entry: 3.00 miles
Type of Surface Water Body: Shallow Ar
Dilution Weight: 0.0001000
Highest Level of Contamination: Potential

Nearest Intake Factor: 0.00

Documentation for Municipal Supply:

The municipalities of Lackawanna and Buffalo receive drinking water from a municipal supply with intakes in Lake Erie more than 3 miles from the Union Ship Canal (therefore 3.5 miles from the site).

It was assumed that >100,000 people would consume water from this intake based on the population within a 3-mile radius of the site.

Reference: 3 (pg. 2-4)

Resources

Resource Use: YES

Resource Value: 5.00E+00

Documentation for Resources:

Lake Erie is used for drinking, irrigation, and recreation.

Reference: 3 (pg. 2-4)

SW PATHWAY: OVERLAND/FLOOD HUMAN FOOD CHAIN THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 1 Fil./Flue Ash Disp.

Source Hazardous Waste Quantity Value: 384.35

| Hazardous Substance | Toxicity Value | Persistence Value | Bio-accum. Value | Toxicity/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Antimony | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| Arsenic | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Barium | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| Beryllium | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| Cadmium | 10000 | 1.00E+00 | 5.00E+03 | 5.00E+07 |
| Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Cobalt | 1 | 1.00E+00 | 5.00E-01 | 5.00E-01 |
| Copper | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Cyanide | 100 | 4.00E-01 | 5.00E-01 | 2.00E+01 |
| DDE | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| Endosulfan (I or II) | 100 | 1.00E+00 | 5.00E+03 | 5.00E+05 |
| Iron | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| Magnesium | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| Mercury | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Methoxychlor | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| Nickel | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| PCBs | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Selenium | 100 | 1.00E+00 | 5.00E+03 | 5.00E+05 |
| Thallium | 1000 | 1.00E+00 | 5.00E+02 | 5.00E+05 |
| Vanadium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |

SW PATHWAY: OVERLAND/FLOOD HUMAN FOOD CHAIN THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 2 Debris Landfill

Source Hazardous Waste Quantity Value: 92.65

| Hazardous Substance | Toxicity Value | Persistence Value | Bio-accum. Value | Toxicity/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Antimony | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| Arsenic | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Barium | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| Benz(a)anthracene | 1000 | 1.00E+00 | 5.00E+04 | 5.00E+07 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Benzo(j,k)fluorene | 100 | 1.00E+00 | 5.00E+03 | 5.00E+05 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Beryllium | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| Cadmium | 10000 | 1.00E+00 | 5.00E+03 | 5.00E+07 |
| Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Chrysene | 0 | 1.00E+00 | 5.00E+02 | 0.00E+00 |
| Cobalt | 1 | 1.00E+00 | 5.00E-01 | 5.00E-01 |
| Copper | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| Magnesium | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| Mercury | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Methoxychlor | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| Nickel | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| PCBs | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Pyrene | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| Vanadium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |

SW PATHWAY: OVERLAND/FLOOD HUMAN FOOD CHAIN THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 3 Drums/OSA

Source Hazardous Waste Quantity Value: 0.22

| Hazardous Substance | Toxicity Value | Persistence Value | Bio-accum. Value | Toxicity/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Antimony | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| Arsenic | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Barium | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| Beryllium | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| Cadmium | 10000 | 1.00E+00 | 5.00E+03 | 5.00E+07 |
| Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Copper | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| Magnesium | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| Mercury | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Nickel | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| Vanadium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |

SW PATHWAY: OVERLAND/FLOOD HUMAN FOOD CHAIN THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 4 Sumps/OSA

Source Hazardous Waste Quantity Value: 0.00

| Hazardous Substance | Toxicity Value | Persistence Value | Bio-accum. Value | Toxicity/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|
| Acenaphthene | 10 | 4.00E-01 | 5.00E+02 | 2.00E+03 |
| Acenaphthylene | 0 | 1.00E+00 | 5.00E+02 | 0.00E+00 |
| Aluminum | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Anthracene | 10 | 4.00E-01 | 5.00E+03 | 2.00E+04 |
| Arsenic | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Barium | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| Benz(a)anthracene | 1000 | 1.00E+00 | 5.00E+04 | 5.00E+07 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Benzo(g,h,i)perylene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Benzo(j,k)fluorene | 100 | 1.00E+00 | 5.00E+03 | 5.00E+05 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Beryllium | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| Cadmium | 10000 | 1.00E+00 | 5.00E+03 | 5.00E+07 |
| Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Chrysene | 0 | 1.00E+00 | 5.00E+02 | 0.00E+00 |
| Cobalt | 1 | 1.00E+00 | 5.00E-01 | 5.00E-01 |
| Dibenzofuran | 0 | 1.00E+00 | 5.00E+02 | 0.00E+00 |
| Fluorene | 100 | 1.00E+00 | 5.00E+03 | 5.00E+05 |
| Indeno(1,2,3-CD)pyrene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| Magnesium | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| Mercury | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Methyl Napthalene, 2- | 0 | 4.00E-01 | 5.00E+03 | 0.00E+00 |
| Nickel | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| Phenanthrene | 0 | 4.00E-01 | 5.00E+01 | 0.00E+00 |
| Phenol | 1 | 1.00E+00 | 5.00E+00 | 5.00E+00 |
| Pyrene | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| Vanadium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |

SW PATHWAY: OVERLAND/FLOOD HUMAN FOOD CHAIN THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 5 Soil/OSA

Source Hazardous Waste Quantity Value: 4.41

| Hazardous Substance | Toxicity Value | Persistence Value | Bio-accum. Value | Toxicity/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|
| Acenaphthene | 10 | 4.00E-01 | 5.00E+02 | 2.00E+03 |
| Aluminum | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Anthracene | 10 | 4.00E-01 | 5.00E+03 | 2.00E+04 |
| Antimony | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| Barium | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| Benz(a)anthracene | 1000 | 1.00E+00 | 5.00E+04 | 5.00E+07 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Benzo(g,h,i)perylene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Benzo(j,k)fluorene | 100 | 1.00E+00 | 5.00E+03 | 5.00E+05 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Beryllium | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Chrysene | 0 | 1.00E+00 | 5.00E+02 | 0.00E+00 |
| Copper | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Dibenz(a,h)anthracene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Fluorene | 100 | 1.00E+00 | 5.00E+03 | 5.00E+05 |
| Indeno(1,2,3-CD)pyrene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| Magnesium | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| Mercury | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Nickel | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| Phenanthrene | 0 | 4.00E-01 | 5.00E+01 | 0.00E+00 |
| Pyrene | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| Selenium | 100 | 1.00E+00 | 5.00E+03 | 5.00E+05 |
| Vanadium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |

Hazardous Substances Found in an Observed Release

| Sample No. | Observed Release Hazardous Substance | Toxicity Value | Persistence Value | Bio-accum. Value | Toxicity/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|---|
| 1 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 2 | Aluminum | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 2 | Lead | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| 2 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 2 | Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| 3 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 4 | Aluminum | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 4 | Arsenic | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| 4 | Barium | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| 4 | Copper | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 4 | Lead | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| 4 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 4 | Mercury | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 4 | Nickel | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 4 | Vanadium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 4 | Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| 5 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 6 | Aluminum | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 6 | Arsenic | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| 6 | Barium | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| 6 | Beryllium | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| 6 | Cadmium | 10000 | 1.00E+00 | 5.00E+03 | 5.00E+07 |
| 6 | Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| 6 | Copper | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 6 | Iron | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 6 | Lead | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| 6 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 6 | Manganese | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| 6 | Nickel | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 6 | Vanadium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 6 | Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| 7 | Aluminum | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 7 | Arsenic | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| 7 | Barium | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| 7 | Benz(a)anthracene | 1000 | 1.00E+00 | 5.00E+04 | 5.00E+07 |
| 7 | Benzo(a)pyrene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 7 | Benzo(j,k)fluorene | 100 | 1.00E+00 | 5.00E+03 | 5.00E+05 |
| 7 | Benzo(k)fluoranthene | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 7 | Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 7 | Beryllium | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| 7 | Cadmium | 10000 | 1.00E+00 | 5.00E+03 | 5.00E+07 |
| 7 | Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| 7 | Chrysene | 100 | 1.00E+00 | 5.00E+02 | 5.00E+04 |

| | | | | | |
|---|---|---|---|---|---|
| 7 | Copper | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 7 | Iron | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 7 | Lead | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| 7 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 7 | Manganese | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| 7 | Mercury | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 7 | Nickel | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 7 | Pyrene | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 7 | Vanadium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 7 | Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| 8 | Acenaphthylene | 100 | 1.00E+00 | 5.00E+02 | 5.00E+04 |
| 8 | Aluminum | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 8 | Anthracene | 10 | 4.00E-01 | 5.00E+03 | 2.00E+04 |
| 8 | Arsenic | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| 8 | Barium | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| 8 | Benz(a)anthracene | 1000 | 1.00E+00 | 5.00E+04 | 5.00E+07 |
| 8 | Benzo(a)pyrene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 8 | Benzo(g,h,i)perylene | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 8 | Benzo(j,k)fluorene | 100 | 1.00E+00 | 5.00E+03 | 5.00E+05 |
| 8 | Benzo(k)fluoranthene | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 8 | Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 8 | Bis (2-ethylhexyl) phthalate | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 8 | Cadmium | 10000 | 1.00E+00 | 5.00E+03 | 5.00E+07 |
| 8 | Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| 8 | Chrysene | 100 | 1.00E+00 | 5.00E+02 | 5.00E+04 |
| 8 | Copper | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 8 | Iron | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 8 | Lead | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| 8 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 8 | Manganese | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| 8 | Nickel | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 8 | Phenanthrene | 100 | 4.00E-01 | 5.00E+01 | 2.00E+03 |
| 8 | Pyrene | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 8 | Vanadium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 8 | Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| 9 | Acenaphthylene | 100 | 1.00E+00 | 5.00E+02 | 5.00E+04 |
| 9 | Acetone | 10 | 7.00E-04 | 5.00E-01 | 3.50E-03 |
| 9 | Aluminum | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 9 | Anthracene | 10 | 4.00E-01 | 5.00E+03 | 2.00E+04 |
| 9 | Arsenic | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| 9 | Barium | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| 9 | Benz(a)anthracene | 1000 | 1.00E+00 | 5.00E+04 | 5.00E+07 |
| 9 | Benzo(a)pyrene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 9 | Benzo(g,h,i)perylene | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 9 | Benzo(j,k)fluorene | 100 | 1.00E+00 | 5.00E+03 | 5.00E+05 |
| 9 | Benzo(k)fluoranthene | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 9 | Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 9 | Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| 9 | Chrysene | 100 | 1.00E+00 | 5.00E+02 | 5.00E+04 |
| 9 | Copper | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 9 | Dibenzofuran | 100 | 1.00E+00 | 5.00E+02 | 5.00E+04 |

| | | | | | |
|---|---|---|---|---|---|
| 9 | Indeno(1,2,3-CD)pyrene | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 9 | Iron | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 9 | Lead | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| 9 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 9 | Manganese | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| 9 | Phenanthrene | 100 | 4.00E-01 | 5.00E+01 | 2.00E+03 |
| 9 | Pyrene | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 9 | Trichlorobenzene, 1,2,4- | 1000 | 4.00E-01 | 5.00E+02 | 2.00E+05 |
| 9 | Vanadium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 9 | Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |

| | |
|---|---|
| Toxicity/Persistence/Bioaccumulation Value from Source Hazardous Substances: | 5.00E+08 |
| Toxicity/Persistence/Bioaccumulation Value from Observed Release Hazardous Substances: | 5.00E+08 |
| Toxicity/Persistence/Bioaccumulation Factor: | 5.00E+08 |
| Sum of Source Hazardous Waste Quantity Values: | 4.82E+02 |
| Hazardous Waste Quantity Factor: | 100 |
| Waste Characteristics Factor Category: | 320 |

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT HUMAN FOOD CHAIN THREAT TARGETS
Hanna Furnace Site - 10/06/95

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

Sample ID: SW-104
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | FDAAL Benchmark Concentration | Units |
|---|---|---|---|
| Aluminum | 2.9E+02 | N.A. | ppb |
| Lead | 9.4E+00 | N.A. | ppb |
| Magnesium | 8.2E+03 | N.A. | ppb |
| Zinc | 6.5E+01 | N.A. | ppb |

Sample ID: SW-106
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | FDAAL Benchmark Concentration | Units |
|---|---|---|---|
| Aluminum | 2.2E+04 | N.A. | ppb |
| Arsenic | 1.7E+01 | N.A. | ppb |
| Barium | 2.1E+02 | N.A. | ppb |
| Copper | 1.3E+02 | N.A. | ppb |
| Lead | 4.6E+02 | N.A. | ppb |
| Magnesium | 2.3E+04 | N.A. | ppb |
| Mercury | 5.4E-01 | N.A. | ppb |
| Nickel | 8.0E+01 | N.A. | ppb |
| Vanadium | 6.1E+01 | N.A. | ppb |
| Zinc | 1.2E+03 | N.A. | ppb |

Sample ID: SD-103
Sample Medium: Sediment
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | FDAAL Benchmark Concentration | Units |
|---|---|---|---|
| Aluminum | 2.0E+07 | N.A. | ppb |
| Arsenic | 9.0E+03 | N.A. | ppb |
| Barium | 1.9E+05 | N.A. | ppb |
| Beryllium | 3.5E+03 | N.A. | ppb |

| | | | |
|---|---|---|---|
| Cadmium | 1.8E+03 | N.A. | ppb |
| Chromium | 1.1E+04 | N.A. | ppb |
| Copper | 2.3E+04 | N.A. | ppb |
| Iron | 4.3E+07 | N.A. | ppb |
| Lead | 8.4E+04 | N.A. | ppb |
| Magnesium | 1.8E+07 | N.A. | ppb |
| Manganese | 2.5E+06 | N.A. | ppb |
| Nickel | 1.1E+04 | N.A. | ppb |
| Vanadium | 2.1E+04 | N.A. | ppb |
| Zinc | 3.9E+05 | N.A. | ppb |

Sample ID: SD-104
Sample Medium: Sediment
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | FDAAL Benchmark Concentration | Units |
|---|---|---|---|
| Aluminum | 7.3E+06 | N.A. | ppb |
| Arsenic | 3.0E+03 | N.A. | ppb |
| Barium | 8.1E+04 | N.A. | ppb |
| Benz(a)anthracene | 4.3E+02 | N.A. | ppb |
| Benzo(a)pyrene | 6.9E+02 | N.A. | ppb |
| Benzo(j,k)fluorene | 5.9E+02 | N.A. | ppb |
| Benzo(k)fluoranthene | 7.7E+02 | N.A. | ppb |
| Benzofluoranthene, 3,4- | 7.9E+02 | N.A. | ppb |
| Beryllium | 1.0E+03 | N.A. | ppb |
| Cadmium | 2.2E+03 | N.A. | ppb |
| Chromium | 4.9E+04 | N.A. | ppb |
| Chrysene | 7.0E+02 | N.A. | ppb |
| Copper | 3.1E+04 | N.A. | ppb |
| Iron | 4.7E+07 | N.A. | ppb |
| Lead | 1.3E+05 | N.A. | ppb |
| Magnesium | 6.2E+06 | N.A. | ppb |
| Manganese | 1.3E+06 | N.A. | ppb |
| Mercury | 1.0E+02 | N.A. | ppb |
| Nickel | 1.7E+04 | N.A. | ppb |
| Pyrene | 7.1E+02 | N.A. | ppb |
| Vanadium | 2.0E+04 | N.A. | ppb |
| Zinc | 8.5E+05 | N.A. | ppb |

Sample ID: SD-105
Sample Medium: Sediment
Location: 0.00 miles

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT HUMAN FOOD CHAIN THREAT TARGETS
Hanna Furnace Site - 10/06/95

| Hazardous Substance | Hazardous Substance Concentration | FDAAL Benchmark Concentration | Units |
|---|---|---|---|
| Acenaphthylene | 4.1E+02 | N.A. | ppb |
| Aluminum | 6.2E+06 | N.A. | ppb |
| Anthracene | 3.3E+02 | N.A. | ppb |
| Arsenic | 2.1E+04 | N.A. | ppb |
| Barium | 7.7E+04 | N.A. | ppb |
| Benz(a)anthracene | 2.0E+03 | N.A. | ppb |
| Benzo(a)pyrene | 2.4E+03 | N.A. | ppb |
| Benzo(g,h,i)perylene | 9.4E+02 | N.A. | ppb |
| Benzo(j,k)fluorene | 1.8E+03 | N.A. | ppb |
| Benzo(k)fluoranthene | 2.2E+03 | N.A. | ppb |
| Benzofluoranthene, 3,4- | 2.3E+03 | N.A. | ppb |
| Bis (2-ethylhexyl) phthalate | 7.2E+02 | N.A. | ppb |
| Cadmium | 2.8E+03 | N.A. | ppb |
| Chromium | 3.7E+04 | N.A. | ppb |
| Chrysene | 3.1E+03 | N.A. | ppb |
| Copper | 8.2E+04 | N.A. | ppb |
| Iron | 8.2E+07 | N.A. | ppb |
| Lead | 3.3E+05 | N.A. | ppb |
| Magnesium | 1.7E+07 | N.A. | ppb |
| Manganese | 3.0E+06 | N.A. | ppb |
| Nickel | 2.9E+04 | N.A. | ppb |
| Phenanthrene | 4.4E+02 | N.A. | ppb |
| Pyrene | 4.8E+03 | N.A. | ppb |
| Vanadium | 3.8E+04 | N.A. | ppb |
| Zinc | 8.0E+05 | N.A. | ppb |

Sample ID: SD-107
Sample Medium: Sediment
Location: 0.12 miles

| Hazardous Substance | Hazardous Substance Concentration | FDAAL Benchmark Concentration | Units |
|---|---|---|---|
| Acenaphthylene | 6.3E+02 | N.A. | ppb |
| Acetone | 1.2E+01 | N.A. | ppb |
| Aluminum | 4.9E+06 | N.A. | ppb |
| Anthracene | 1.8E+03 | N.A. | ppb |
| Arsenic | 6.1E+03 | N.A. | ppb |
| Barium | 7.1E+04 | N.A. | ppb |
| Benz(a)anthracene | 2.7E+03 | N.A. | ppb |
| Benzo(a)pyrene | 1.6E+03 | N.A. | ppb |
| Benzo(g,h,i)perylene | 3.4E+02 | N.A. | ppb |
| Benzo(j,k)fluorene | 4.0E+03 | N.A. | ppb |
| Benzo(k)fluoranthene | 1.1E+03 | N.A. | ppb |
| Benzofluoranthene, 3,4- | 1.6E+03 | N.A. | ppb |

| | | | |
|---|---|---|---|
| Chromium | 3.9E+04 | N.A. | ppb |
| Chrysene | 2.8E+03 | N.A. | ppb |
| Copper | 1.4E+04 | N.A. | ppb |
| Dibenzofuran | 3.3E+02 | N.A. | ppb |
| Indeno(1,2,3-CD)pyrene | 4.4E+02 | N.A. | ppb |
| Iron | 1.1E+07 | N.A. | ppb |
| Lead | 4.5E+04 | N.A. | ppb |
| Magnesium | 7.3E+06 | N.A. | ppb |
| Manganese | 4.2E+05 | N.A. | ppb |
| Phenanthrene | 3.6E+03 | N.A. | ppb |
| Pyrene | 4.8E+03 | N.A. | ppb |
| Trichlorobenzene, 1,2,4- | 7.6E+02 | N.A. | ppb |
| Vanadium | 1.2E+04 | N.A. | ppb |
| Zinc | 1.6E+05 | N.A. | ppb |

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

Sample ID: SD-107
Distance from the Probable Point of Entry: 0.12 miles

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT HUMAN FOOD CHAIN THREAT TARGETS
Hanna Furnace Site - 10/06/95

Level I Concentrations

| Fishery | Annual Production (pounds) | Human Food Chain Population Value |
|---|---|---|
| - N/A and/or data not specified | | |

Sum of Human Food Chain Population Values: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

| Fishery | Annual Production (pounds) | Human Food Chain Population Value |
|---|---|---|
| 1 Union Canal | 101.0 | 3.00E-01 |

Sum of Human Food Chain Population Values: 3.00E-01

Level II Concentrations Factor: 3.00E-01

Documentation for Union Canal Fishery:

People access the Union Canal and Lake Erie to fish. The quantity of fish consumed is unknown, therefore, it was assumed that between 1 and 100 pounds of fish would be consumed from each surface water segment.

Reference: 3 (pg. 2-3)

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT HUMAN FOOD CHAIN THREAT TARGETS
Hanna Furnace Site - 10/06/95

Potential Contamination

| Fishery | Annnual Production (pounds) | Type of Surface Water Body | Average Annual Flow (cfs) | Pop. Value (Pi) | Dilution Weight (Di) | Pi*Di |
|---|---|---|---|---|---|---|
| 2 Lake Erie | 101.0 | Shallow | 0 | 0.3 | 1.00E-04 | 3.00E-05 |

Sum of (Pi*Di): 3.00E-05

Potential Human Food Chain Contamination Factor: 3.00E-06

Food Chain Individual

Location of Nearest Fishery: Union Canal
Distance from the Probable Point of Entry: 0.00 miles
Type of Surface Water Body: Mixing Area
Dilution Weight: 0.1000000
Level of Contamination: Level II

Food Chain Individual Factor: 45.00

Documentation for Union Canal:

The Union Canal is located onsite. It was considered to be classified as a "river", and it flows for 0.5 miles to Lake Erie. Lake Erie (a moderate depth Great Lake) consists of the remainder of the SW pathway target distance (15-river-miles). Both water bodies consist of fresh water.

Reference: 3 (pg. 2-3)

Source: 1 Fil./Flue Ash Disp.

Source Hazardous Waste Quantity Value: 384.35

| Hazardous Substance | Eco-toxicity Value | Persistence Value | Bio-accum. Value | Ecotoxicity/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Antimony | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Arsenic | 10 | 1.00E+00 | 5.00E+01 | 5.00E+02 |
| Barium | 1 | 1.00E+00 | 5.00E-01 | 5.00E-01 |
| Beryllium | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Cadmium | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Cobalt | 0 | 1.00E+00 | 5.00E+03 | 0.00E+00 |
| Copper | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| Cyanide | 1000 | 4.00E-01 | 5.00E-01 | 2.00E+02 |
| DDE | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Endosulfan (I or II) | 10000 | 1.00E+00 | 5.00E+03 | 5.00E+07 |
| Iron | 10 | 1.00E+00 | 5.00E-01 | 5.00E+00 |
| Lead | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Magnesium | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Manganese | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Mercury | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Methoxychlor | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Nickel | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| PCBs | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Selenium | 100 | 1.00E+00 | 5.00E+03 | 5.00E+05 |
| Thallium | 0 | 1.00E+00 | 5.00E+02 | 0.00E+00 |
| Vanadium | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |

SW PATHWAY: OVERLAND FLOW/FLOOD ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 2 Debris Landfill

Source Hazardous Waste Quantity Value: 92.65

| Hazardous Substance | Eco-toxicity Value | Persistence Value | Bio-accum. Value | Ecotoxicity/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Antimony | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Arsenic | 10 | 1.00E+00 | 5.00E+01 | 5.00E+02 |
| Barium | 1 | 1.00E+00 | 5.00E-01 | 5.00E-01 |
| Benz(a)anthracene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Benzo(j,k)fluorene | 10000 | 1.00E+00 | 5.00E+03 | 5.00E+07 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Beryllium | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Cadmium | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Chrysene | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Cobalt | 0 | 1.00E+00 | 5.00E+03 | 0.00E+00 |
| Copper | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| Iron | 10 | 1.00E+00 | 5.00E-01 | 5.00E+00 |
| Lead | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Magnesium | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Manganese | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Mercury | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Methoxychlor | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Nickel | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| PCBs | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Pyrene | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Vanadium | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |

SW PATHWAY: OVERLAND FLOW/FLOOD ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 3 Drums/OSA

Source Hazardous Waste Quantity Value: 0.22

| Hazardous Substance | Eco-toxicity Value | Persistence Value | Bio-accum. Value | Ecotoxicity/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Antimony | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Arsenic | 10 | 1.00E+00 | 5.00E+01 | 5.00E+02 |
| Barium | 1 | 1.00E+00 | 5.00E-01 | 5.00E-01 |
| Beryllium | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Cadmium | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Copper | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| Iron | 10 | 1.00E+00 | 5.00E-01 | 5.00E+00 |
| Lead | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Magnesium | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Manganese | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Mercury | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Nickel | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| Vanadium | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |

SW PATHWAY: OVERLAND FLOW/FLOOD ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 4 Sumps/OSA

Source Hazardous Waste Quantity Value: 0.00

| Hazardous Substance | Eco-toxicity Value | Persistence Value | Bio-accum. Value | Ecotoxicity/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|
| Acenaphthene | 10000 | 4.00E-01 | 5.00E+02 | 2.00E+06 |
| Acenaphthylene | 0 | 1.00E+00 | 5.00E+02 | 0.00E+00 |
| Aluminum | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Anthracene | 10000 | 4.00E-01 | 5.00E+03 | 2.00E+07 |
| Arsenic | 10 | 1.00E+00 | 5.00E+01 | 5.00E+02 |
| Barium | 1 | 1.00E+00 | 5.00E-01 | 5.00E-01 |
| Benz(a)anthracene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Benzo(g,h,i)perylene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Benzo(j,k)fluorene | 10000 | 1.00E+00 | 5.00E+03 | 5.00E+07 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Beryllium | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Cadmium | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Chrysene | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Cobalt | 0 | 1.00E+00 | 5.00E+03 | 0.00E+00 |
| Dibenzofuran | 100 | 1.00E+00 | 5.00E+02 | 5.00E+04 |
| Fluorene | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Indeno(1,2,3-CD)pyrene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Iron | 10 | 1.00E+00 | 5.00E-01 | 5.00E+00 |
| Lead | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Magnesium | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Manganese | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Mercury | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Methyl Napthalene, 2- | 1000 | 4.00E-01 | 5.00E+03 | 2.00E+06 |
| Nickel | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| Phenanthrene | 1000 | 4.00E-01 | 5.00E+03 | 2.00E+06 |
| Phenol | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Pyrene | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Vanadium | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |

SW PATHWAY: OVERLAND FLOW/FLOOD ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 5 Soil/OSA

Source Hazardous Waste Quantity Value: 4.41

| Hazardous Substance | Eco-toxicity Value | Persistence Value | Bio-accum. Value | Ecotoxicity/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|
| Acenaphthene | 10000 | 4.00E-01 | 5.00E+02 | 2.00E+06 |
| Aluminum | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Anthracene | 10000 | 4.00E-01 | 5.00E+03 | 2.00E+07 |
| Antimony | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Barium | 1 | 1.00E+00 | 5.00E-01 | 5.00E-01 |
| Benz(a)anthracene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Benzo(g,h,i)perylene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Benzo(j,k)fluorene | 10000 | 1.00E+00 | 5.00E+03 | 5.00E+07 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Beryllium | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Chrysene | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Copper | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| Dibenz(a,h)anthracene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Fluorene | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Indeno(1,2,3-CD)pyrene | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Iron | 10 | 1.00E+00 | 5.00E-01 | 5.00E+00 |
| Lead | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Magnesium | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Manganese | 0 | 1.00E+00 | 5.00E+04 | 0.00E+00 |
| Mercury | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Nickel | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| Phenanthrene | 1000 | 4.00E-01 | 5.00E+03 | 2.00E+06 |
| Pyrene | 0 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Selenium | 100 | 1.00E+00 | 5.00E+03 | 5.00E+05 |
| Vanadium | 0 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |

Hazardous Substances Found in an Observed Release

| Sample No. | Observed Release Hazardous Substance | Eco-toxicity Value | Persistence Value | Bio-accum. Value | Ecotoxicity/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|---|
| 1 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 2 | Aluminum | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 2 | Lead | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| 2 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 2 | Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| 3 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 4 | Aluminum | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 4 | Arsenic | 10 | 1.00E+00 | 5.00E+01 | 5.00E+02 |
| 4 | Barium | 1 | 1.00E+00 | 5.00E-01 | 5.00E-01 |
| 4 | Copper | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 4 | Lead | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| 4 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 4 | Mercury | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 4 | Nickel | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| 4 | Vanadium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 4 | Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| 5 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 6 | Aluminum | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 6 | Arsenic | 10 | 1.00E+00 | 5.00E+01 | 5.00E+02 |
| 6 | Barium | 1 | 1.00E+00 | 5.00E-01 | 5.00E-01 |
| 6 | Beryllium | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 6 | Cadmium | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| 6 | Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| 6 | Copper | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 6 | Iron | 10 | 1.00E+00 | 5.00E-01 | 5.00E+00 |
| 6 | Lead | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| 6 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 6 | Manganese | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 6 | Nickel | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| 6 | Vanadium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 6 | Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| 7 | Aluminum | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 7 | Arsenic | 10 | 1.00E+00 | 5.00E+01 | 5.00E+02 |
| 7 | Barium | 1 | 1.00E+00 | 5.00E-01 | 5.00E-01 |
| 7 | Benz(a)anthracene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 7 | Benzo(a)pyrene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 7 | Benzo(j,k)fluorene | 10000 | 1.00E+00 | 5.00E+03 | 5.00E+07 |
| 7 | Benzo(k)fluoranthene | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 7 | Benzofluoranthene, 3,4- | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 7 | Beryllium | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 7 | Cadmium | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| 7 | Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| 7 | Chrysene | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |

| | | | | | |
|---|---|---|---|---|---|
| 7 | Copper | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 7 | Iron | 10 | 1.00E+00 | 5.00E-01 | 5.00E+00 |
| 7 | Lead | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| 7 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 7 | Manganese | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 7 | Mercury | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 7 | Nickel | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| 7 | Pyrene | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 7 | Vanadium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 7 | Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| 8 | Acenaphthylene | 100 | 1.00E+00 | 5.00E+02 | 5.00E+04 |
| 8 | Aluminum | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 8 | Anthracene | 10000 | 4.00E-01 | 5.00E+03 | 2.00E+07 |
| 8 | Arsenic | 10 | 1.00E+00 | 5.00E+01 | 5.00E+02 |
| 8 | Barium | 1 | 1.00E+00 | 5.00E-01 | 5.00E-01 |
| 8 | Benz(a)anthracene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 8 | Benzo(a)pyrene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 8 | Benzo(g,h,i)perylene | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 8 | Benzo(j,k)fluorene | 10000 | 1.00E+00 | 5.00E+03 | 5.00E+07 |
| 8 | Benzo(k)fluoranthene | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 8 | Benzofluoranthene, 3,4- | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 8 | Bis (2-ethylhexyl) phthalate | 1000 | 1.00E+00 | 5.00E+04 | 5.00E+07 |
| 8 | Cadmium | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| 8 | Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| 8 | Chrysene | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| 8 | Copper | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 8 | Iron | 10 | 1.00E+00 | 5.00E-01 | 5.00E+00 |
| 8 | Lead | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| 8 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 8 | Manganese | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 8 | Nickel | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| 8 | Phenanthrene | 1000 | 4.00E-01 | 5.00E+03 | 2.00E+06 |
| 8 | Pyrene | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 8 | Vanadium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 8 | Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |
| 9 | Acenaphthylene | 100 | 1.00E+00 | 5.00E+02 | 5.00E+04 |
| 9 | Acetone | 100 | 7.00E-04 | 5.00E-01 | 3.50E-02 |
| 9 | Aluminum | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 9 | Anthracene | 10000 | 4.00E-01 | 5.00E+03 | 2.00E+07 |
| 9 | Arsenic | 10 | 1.00E+00 | 5.00E+01 | 5.00E+02 |
| 9 | Barium | 1 | 1.00E+00 | 5.00E-01 | 5.00E-01 |
| 9 | Benz(a)anthracene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 9 | Benzo(a)pyrene | 10000 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| 9 | Benzo(g,h,i)perylene | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 9 | Benzo(j,k)fluorene | 10000 | 1.00E+00 | 5.00E+03 | 5.00E+07 |
| 9 | Benzo(k)fluoranthene | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 9 | Benzofluoranthene, 3,4- | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 9 | Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| 9 | Chrysene | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| 9 | Copper | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 9 | Dibenzofuran | 100 | 1.00E+00 | 5.00E+02 | 5.00E+04 |

| | | | | | |
|---|---|---|---|---|---|
| 9 | Indeno(1,2,3-CD)pyrene | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 9 | Iron | 10 | 1.00E+00 | 5.00E-01 | 5.00E+00 |
| 9 | Lead | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| 9 | Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 9 | Manganese | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| 9 | Phenanthrene | 1000 | 4.00E-01 | 5.00E+03 | 2.00E+06 |
| 9 | Pyrene | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| 9 | Trichlorobenzene, 1,2,4- | 1000 | 4.00E-01 | 5.00E+02 | 2.00E+05 |
| 9 | Vanadium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| 9 | Zinc | 10 | 1.00E+00 | 5.00E+02 | 5.00E+03 |

| | |
|---|---|
| Ecotoxicity/Persistence/Bioaccummulation Value from Source Hazardous Substances: | 5.00E+08 |
| Ecotoxicity/Persistence/Bioaccummulation Value from Observed Release Hazardous Substances: | 5.00E+08 |
| Ecotoxicity/Persistence/Bioaccummulation Factor: | 5.00E+08 |
| Sum of Source Hazardous Waste Quantity Values: | 4.82E+02 |
| Hazardous Waste Quantity Factor: | 100 |
| Waste Characteristics Factor Category: | 320 |

Level I Concentrations

Sample ID: SW-104
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmarks Concentrations FRESH | SALT | Units |
|---|---|---|---|---|
| Aluminum | 2.9E+02 | 0.0E+01 | 0.0E+01 | ppb |
| Lead | 9.4E+00 | 3.2E+00 | 5.6E+00 | ppb |
| Magnesium | 8.2E+03 | 0.0E+01 | 0.0E+01 | ppb |
| Zinc | 6.5E+01 | 1.1E+02 | 8.6E+01 | ppb |

Sample ID: SW-106
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmarks Concentrations FRESH | SALT | Units |
|---|---|---|---|---|
| Aluminum | 2.2E+04 | 0.0E+01 | 0.0E+01 | ppb |
| Arsenic | 1.7E+01 | 1.9E+02 | 3.6E+01 | ppb |
| Barium | 2.1E+02 | 0.0E+01 | 0.0E+01 | ppb |
| Copper | 1.3E+02 | 1.2E+01 | 2.9E+00 | ppb |
| Lead | 4.6E+02 | 3.2E+00 | 5.6E+00 | ppb |
| Magnesium | 2.3E+04 | 0.0E+01 | 0.0E+01 | ppb |
| Mercury | 5.4E-01 | 1.2E-02 | 2.5E-02 | ppb |
| Nickel | 8.0E+01 | 1.6E+02 | 8.3E+00 | ppb |
| Vanadium | 6.1E+01 | 0.0E+01 | 0.0E+01 | ppb |
| Zinc | 1.2E+03 | 1.1E+02 | 8.6E+01 | ppb |

Level II Concentrations

Sample ID: SW-103
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmarks Concentrations FRESH | SALT | Units |
|---|---|---|---|---|
| Magnesium | 8.8E+03 | 0.0E+01 | 0.0E+01 | ppb |

Documentation for SW-103:

Five surface water samples and four sediment samples were collected from the Union Ship Canal. Results are presented on Tables 26 and 27.

Reference: 3 (pgs. 4-18 and 4-19, Tables 26 and 27)

Sample ID: SW-105
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmarks Concentrations FRESH | SALT | Units |
|---|---|---|---|---|
| Magnesium | 8.7E+03 | 0.0E+01 | 0.0E+01 | ppb |

Sample ID: SW-107
Sample Medium: Aqueous
Location: 0.12 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmarks Concentrations FRESH | SALT | Units |
|---|---|---|---|---|
| Magnesium | 8.7E+03 | 0.0E+01 | 0.0E+01 | ppb |

Sample ID: SD-103
Sample Medium: Sediment
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmarks Concentrations FRESH | SALT | Units |
|---|---|---|---|---|
| Aluminum | 2.0E+07 | | N.A. | ppb |
| Arsenic | 9.0E+03 | | N.A. | ppb |
| Barium | 1.9E+05 | | N.A. | ppb |
| Beryllium | 3.5E+03 | | N.A. | ppb |
| Cadmium | 1.8E+03 | | N.A. | ppb |
| Chromium | 1.1E+04 | | N.A. | ppb |
| Copper | 2.3E+04 | | N.A. | ppb |
| Iron | 4.3E+07 | | N.A. | ppb |
| Lead | 8.4E+04 | | N.A. | ppb |
| Magnesium | 1.8E+07 | | N.A. | ppb |
| Manganese | 2.5E+06 | | N.A. | ppb |
| Nickel | 1.1E+04 | | N.A. | ppb |
| Vanadium | 2.1E+04 | | N.A. | ppb |
| Zinc | 3.9E+05 | | N.A. | ppb |

Sample ID: SD-104
Sample Medium: Sediment
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmarks Concentrations FRESH | SALT | Units |
|---|---|---|---|---|
| Aluminum | 7.3E+06 | | N.A. | ppb |
| Arsenic | 3.0E+03 | | N.A. | ppb |
| Barium | 8.1E+04 | | N.A. | ppb |
| Benz(a)anthracene | 4.3E+02 | | N.A. | ppb |
| Benzo(a)pyrene | 6.9E+02 | | N.A. | ppb |
| Benzo(j,k)fluorene | 5.9E+02 | | N.A. | ppb |
| Benzo(k)fluoranthene | 7.7E+02 | | N.A. | ppb |
| Benzofluoranthene, 3,4- | 7.9E+02 | | N.A. | ppb |
| Beryllium | 1.0E+03 | | N.A. | ppb |
| Cadmium | 2.2E+03 | | N.A. | ppb |
| Chromium | 4.9E+04 | | N.A. | ppb |
| Chrysene | 7.0E+02 | | N.A. | ppb |
| Copper | 3.1E+04 | | N.A. | ppb |
| Iron | 4.7E+07 | | N.A. | ppb |
| Lead | 1.3E+05 | | N.A. | ppb |
| Magnesium | 6.2E+06 | | N.A. | ppb |
| Manganese | 1.3E+06 | | N.A. | ppb |
| Mercury | 1.0E+02 | | N.A. | ppb |
| Nickel | 1.7E+04 | | N.A. | ppb |
| Pyrene | 7.1E+02 | | N.A. | ppb |
| Vanadium | 2.0E+04 | | N.A. | ppb |
| Zinc | 8.5E+05 | | N.A. | ppb |

Sample ID: SD-105
Sample Medium: Sediment
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmarks Concentrations FRESH | SALT | Units |
|---|---|---|---|---|
| Acenaphthylene | 4.1E+02 | | N.A. | ppb |
| Aluminum | 6.2E+06 | | N.A. | ppb |
| Anthracene | 3.3E+02 | | N.A. | ppb |
| Arsenic | 2.1E+04 | | N.A. | ppb |
| Barium | 7.7E+04 | | N.A. | ppb |
| Benz(a)anthracene | 2.0E+03 | | N.A. | ppb |
| Benzo(a)pyrene | 2.4E+03 | | N.A. | ppb |
| Benzo(g,h,i)perylene | 9.4E+02 | | N.A. | ppb |
| Benzo(j,k)fluorene | 1.8E+03 | | N.A. | ppb |
| Benzo(k)fluoranthene | 2.2E+03 | | N.A. | ppb |
| Benzofluoranthene, 3,4- | 2.3E+03 | | N.A. | ppb |
| Bis (2-ethylhexyl) phthalate | 7.2E+02 | | N.A. | ppb |
| Cadmium | 2.8E+03 | | N.A. | ppb |
| Chromium | 3.7E+04 | | N.A. | ppb |
| Chrysene | 3.1E+03 | | N.A. | ppb |
| Copper | 8.2E+04 | | N.A. | ppb |
| Iron | 8.2E+07 | | N.A. | ppb |
| Lead | 3.3E+05 | | N.A. | ppb |
| Magnesium | 1.7E+07 | | N.A. | ppb |
| Manganese | 3.0E+06 | | N.A. | ppb |
| Nickel | 2.9E+04 | | N.A. | ppb |
| Phenanthrene | 4.4E+02 | | N.A. | ppb |
| Pyrene | 4.8E+03 | | N.A. | ppb |
| Vanadium | 3.8E+04 | | N.A. | ppb |
| Zinc | 8.0E+05 | | N.A. | ppb |

Sample ID: SD-107
Sample Medium: Sediment
Location: 0.12 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmarks Concentrations FRESH | SALT | Units |
|---|---|---|---|---|
| Acenaphthylene | 6.3E+02 | | N.A. | ppb |
| Acetone | 1.2E+01 | | N.A. | ppb |
| Aluminum | 4.9E+06 | | N.A. | ppb |
| Anthracene | 1.8E+03 | | N.A. | ppb |
| Arsenic | 6.1E+03 | | N.A. | ppb |
| Barium | 7.1E+04 | | N.A. | ppb |

| | | | |
|---|---|---|---|
| Benz(a)anthracene | 2.7E+03 | N.A. | ppb |
| Benzo(a)pyrene | 1.6E+03 | N.A. | ppb |
| Benzo(g,h,i)perylene | 3.4E+02 | N.A. | ppb |
| Benzo(j,k)fluorene | 4.0E+03 | N.A. | ppb |
| Benzo(k)fluoranthene | 1.1E+03 | N.A. | ppb |
| Benzofluoranthene, 3,4- | 1.6E+03 | N.A. | ppb |
| Chromium | 3.9E+04 | N.A. | ppb |
| Chrysene | 2.8E+03 | N.A. | ppb |
| Copper | 1.4E+04 | N.A. | ppb |
| Dibenzofuran | 3.3E+02 | N.A. | ppb |
| Indeno(1,2,3-CD)pyrene | 4.4E+02 | N.A. | ppb |
| Iron | 1.1E+07 | N.A. | ppb |
| Lead | 4.5E+04 | N.A. | ppb |
| Magnesium | 7.3E+06 | N.A. | ppb |
| Manganese | 4.2E+05 | N.A. | ppb |
| Phenanthrene | 3.6E+03 | N.A. | ppb |
| Pyrene | 4.8E+03 | N.A. | ppb |
| Trichlorobenzene, 1,2,4- | 7.6E+02 | N.A. | ppb |
| Vanadium | 1.2E+04 | N.A. | ppb |
| Zinc | 1.6E+05 | N.A. | ppb |

Most Distant Level I Sample

Sample ID: SW-104
Distance from the Probable Point of Entry: 0.00 miles

Most Distant Level II Sample

Sample ID: SW-107
Distance from the Probable Point of Entry: 0.12 miles

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT ENVIRONMENTAL THREAT TARGETS
Hanna Furnace Site - 10/06/95

Level I Concentrations

| Sensitive Environment | Distance from Probable Point of Entry to Sensitive Env. (miles) | Sensitive Environment Value |
|---|---|---|
| - N/A and/or data not specified | | |

Sum of Sensitive Environments Values: 0

Wetlands

| Wetland | Distance from Probable Point of Entry to Wetland (miles) | Wetlands Frontage (miles) |
|---|---|---|
| - N/A and/or data not specified | | |

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

==========

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level I Concentrations Factor: 0.00E+00

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT ENVIRONMENTAL THREAT TARGETS
Hanna Furnace Site - 10/06/95

Level II Concentrations

| Sensitive Environment | Distance from Probable Point of Entry to Sensitive Env. (miles) | Sensitive Environment Value |
|---|---|---|
| - N/A and/or data not specified | | |

Sum of Sensitive Environments Values: 0

Wetlands

| Wetland | Distance from Probable Point of Entry to Wetland (miles) | Wetlands Frontage (miles) |
|---|---|---|
| - N/A and/or data not specified | | |

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

==========

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level II Concentrations Factor: 0.00E+00

## Potential Contamination

### Sensitive Environments

| Type of Surface Water Body | | Sensitive Environment | Sensitive Environment Value |
|---|---|---|---|
| Shallow Area | 4 | Osprey | 75 |
| Shallow Area | 5 | Red-Shouldered Hawk | 75 |
| Shallow Area | 6 | Northern Harrier | 75 |
| Shallow Area | 7 | Common Tern | 75 |
| Shallow Area | 8 | Blandings Turtle | 75 |
| Shallow Area | 9 | Peregrine Falcon | 75 |
| Shallow Area | 10 | Bald Eagle | 75 |

### Wetlands

| Type of Surface Water Body | | Sensitive Environment | Wetlands Frontage | Wetlands Value |
|---|---|---|---|---|
| Shallow Area | 1 | BU-1 Wetland | 1.00 | 25 |
| Shallow Area | 2 | BU-7 Wetland | 1.00 | 25 |
| Shallow Area | 3 | BU-15 Wetland | 1.00 | 25 |

Documentation for Sensitive Environment BU-1 Wetland:

There are three classified wetlands within 3 mile of the site. These wetlands form a part of the Tifft Nature Preserved. The wetland frontage was assumed to be 1 mile for each of these wetlands.

Reference: 3 (Pg. 2-3)

Documentation for Sensitive Environment Osprey:

Endangered and threatened species were identified at the Tifft Nature Preserve. These are listed on Table 1 of the PSA report. These species could potentially forage from Lake Erie.

Reference: 3 (Table 1)

SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT ENVIRONMENTAL THREAT TARGETS
Hanna Furnace Site - 10/06/95

| Type of Surface Water Body | Sum of Sens. Environment Values(Sj) | Sum of Wetland Frontage Values(Wj) | Dilution Weight (Dj) | Dj(Wj+Sj) |
|---|---|---|---|---|
| Shallow Ocean Zone or Great Lake | 525 | 75 | 1.00E-04 | 6.00E-02 |

Sum of Dj(Wj+Sj): 6.00E-02
Sum of Dj(Wj+Sj)/10: 6.00E-03

==========

Potential Contamination Sensitive Environment Factor: 6.00E-03

SURFACE WATER PATHWAY GW TO SW CONTAINMENT SUMMARY
Hanna Furnace Site - 10/06/95

Containment

| No. | Source ID | HWQ Value | Containment Value |
|---|---|---|---|
| 1 | Fil./Flue Ash Disp. | 3.84E+02 | 10 |
| 2 | Debris Landfill | 9.26E+01 | 10 |
| 3 | Drums/OSA | 2.20E-01 | 10 |
| 4 | Sumps/OSA | 4.00E-03 | 10 |
| 5 | Soil/OSA | 4.41E+00 | 10 |
| | Containment Factor | | 10 |

Documentation for Ground Water Containment, Source Fil./Flue Ash Disp.:

There is evidence of migration of contaminants from the source area to groundwater; therefore, all sources receive a containment factor of 10.

Reference: 3 (Table 19)

Net Precipitation

Net Precipitation (inches) 0.00

Documentation for Net Precipitation:

Appendix A indicates that the net precipitation is 42 inches.

Reference: 3 (Appendix A)

SURFACE WATER PATHWAY GW TO SW COMPONENT LIKELIHOOD OF RELEASE
Hanna Furnace Site - 10/06/95

Aquifer: Fill/Overburden Aquifer

Type of Aquifer: Non Karst

Overlaying Aquifer: 0

Interconnected with: 0

Documentation for Fill/Overburden Aquifer Aquifer:

Groundwater is present in fill, overburden, and bedrock at the site. The depth to the water table is approximately 5 feet bls. The aquifers were categorized as the fill/overburden aquifer and the bedrock aquifer. Neither aquifer is karst.

Reference: 3 (pg. 4-2)

OBSERVED RELEASE

| No. | Well ID | Well Type | Distance (miles) | Level of Contamination |
|---|---|---|---|---|
| 1 | MW-101 | Monitoring Well | 0.000 | Level I |
| 3 | MW-103 | Monitoring Well | 0.000 | Level I |
| 5 | MW-105 | Monitoring Well | 0.000 | Level I |
| 6 | MW-106 | Monitoring Well | 0.000 | Level II |
| 7 | MW-107 | Monitoring Well | 0.000 | Level I |

| Well No. | Hazardous Substance | Concent. | MCL | Cancer | RFD | Units |
|---|---|---|---|---|---|---|
| 1 | Aluminum | 8.4E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 1 | Chromium | 1.5E+01 | 1.0E+02 | 0.0E+00 | 1.8E+02 | ppb |
| 1 | Cyanide | 3.0E+03 | 2.0E+02 | 0.0E+00 | 7.0E+02 | ppb |
| 1 | Iron | 1.1E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 1 | Selenium | 1.0E+01 | 5.0E+01 | 0.0E+00 | 1.8E+02 | ppb |
| 3 | Aluminum | 1.8E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 3 | Cyanide | 5.1E+02 | 2.0E+02 | 0.0E+00 | 7.0E+02 | ppb |
| 3 | Iron | 1.7E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 3 | Lead | 3.3E+00 | 1.5E+01 | 0.0E+00 | 0.0E+00 | ppb |
| 3 | Magnesium | 7.8E+03 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |

| | | | | | | |
|---|---|---|---|---|---|---|
| 3 | Manganese | 1.4E+02 | 0.0E+00 | 0.0E+00 | 1.8E+02 | ppb |
| 5 | Cyanide | 4.5E+04 | 2.0E+02 | 0.0E+00 | 7.0E+02 | ppb |
| 5 | Magnesium | 1.2E+04 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 6 | Aluminum | 9.9E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 6 | Cyanide | 1.9E+02 | 2.0E+02 | 0.0E+00 | 7.0E+02 | ppb |
| 6 | Iron | 8.4E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 6 | Manganese | 4.6E+01 | 0.0E+00 | 0.0E+00 | 1.8E+02 | ppb |
| 6 | Selenium | 9.8E+00 | 5.0E+01 | 0.0E+00 | 1.8E+02 | ppb |
| 7 | Cyanide | 2.0E+01 | 2.0E+02 | 0.0E+00 | 7.0E+02 | ppb |
| 7 | Iron | 2.8E+02 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 7 | Magnesium | 4.7E+04 | 0.0E+00 | 0.0E+00 | 0.0E+00 | ppb |
| 7 | Manganese | 3.7E+02 | 0.0E+00 | 0.0E+00 | 1.8E+02 | ppb |

==========

Observed Release Factor 550

Documentation for Well MW-101:

MW-101 and MW-103 were installed to assess groundwater quality for the debris landfill. Data was presented in Table 19 of the PSA report. Data for MW-101 was reported as the average of the duplicated and sample MW-101.

Reference: 3 (pg. 4-9 and Table 19)

Documentation for Well MW-102:

MW-102 was installed to assess background conditions. Fuel odors and elevated PID readings were observed during drilling, and, thus, this well may not represent background conditions. Therefore, data from this well was not considered for observed release for the Hanna Furnace Site.

Reference: 3 (pg. 4-9)

Documentation for Well MW-104:

MW-104 was installed to assess background conditions at the southern edge of the Hanna Furnace Boundary. Data from this well will not be considered for HRS scoring purposes.

Reference: 3 (pg. 4-15)

Documentation for Well MW-105:

MW-105, MW-106, and MW-107 were installed to assess groundwater quality was being affected by contaminated soil and sumps at the site. Data is presented on Table 25.

Reference: 3 (pg. 4-15 and Table 25)

POTENTIAL TO RELEASE

Ground Water to Surface Water Angle

| | | |
|---|---|---|
| Probable Point of Entry | 0.00 | miles |
| Angle Theta | 58 | |

Documentation for Ground to Surface Water PPE and Angle Theta:

The closed surface water body is located on site (the Union Ship Canal); therefore, the distance to the nearest surface water body is 0. The angle theta was measured according to the HRS rule

Reference: 3

Containment

| | | |
|---|---|---|
| Containment Factor | 10 | |

Net Precipitation

| | | |
|---|---|---|
| Net Precipitation Factor | 10 | |

Depth to Aquifer

| | | |
|---|---|---|
| A. Depth of Hazardous Substances | 5.00 | feet |

Documentation for Depth of Hazardous Substances:

Monitoring wells are screened from 5 to 15 feet bls. Analytical data from monitoring well indicate the presence of chemicals in concentrations to constitute an observed release. Therefore, the depth to contamination is 5 feet.

Reference: 3 (Tables 19 and 25)

| | | |
|---|---|---|
| B. Depth to Aquifer from Surface | 5.00 | feet |

Documentation for Depth to Aquifer from Surface :

Depth to the water table is approximately 5 feet according to the PSA report.

Reference: 3 (pg. 4-2)

| | | |
|---|---|---|
| C. Depth to Aquifer (B - A) | 0.00 | feet |
| Depth to Aquifer Factor | 5 | |

Travel Time

| | | |
|---|---|---|
| Are All Layers Karst? | NO | |
| Thickness of Layer(s) with Lowest Conductivity | 35.00 | feet |

Documentation for Thickness of Layers with Lowest Conductivity:

Bedrock in the area ranges from 22 to 48 feet, or an average of 35 feet bls. Therefore, the thickness of the layer with the lowest hydraulic conductivity was assumed to be the entire fill/overburden and is assigned as 35 feet.

Reference: 3 (Appendix A)

| | |
|---|---|
| Hydraulic Conductivity (cm/sec) | 1.0E-05 |

Documentation for Hydraulic Conductivity:

Appendix a indicateds that the permeability of the unsaturated zone is approximately 10-5.

Reference: 3 (Appendix A)

| | |
|---|---|
| Travel Time Factor | 35 |
| Potential to Release Factor | 500 |

SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 1 Fil./Flue Ash Disp.

Source Hazardous Waste Quantity Value: 384.35

| Hazardous Substance | Toxicity Factor Value | Persist. Value | Mobility Value | Toxicity/ Mobililty/ Persistence |
|---|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 2.00E-05 | 0.00E+00 |
| Antimony | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Arsenic | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Barium | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Beryllium | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Cadmium | 10000 | 1.00E+00 | 2.00E-01 | 2.00E+03 |
| Chromium | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Cobalt | 1 | 1.00E+00 | 1.00E-02 | 1.00E-02 |
| Copper | 0 | 1.00E+00 | 1.00E-02 | 0.00E+00 |
| Cyanide | 100 | 4.00E-01 | 2.00E-05 | 8.00E-04 |
| DDE | 100 | 1.00E+00 | 2.00E-07 | 2.00E-05 |
| Endosulfan (I or II) | 100 | 1.00E+00 | 2.00E-05 | 2.00E-03 |
| Iron | 0 | 1.00E+00 | 1.00E-02 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 2.00E-05 | 2.00E-01 |
| Magnesium | 0 | 1.00E+00 | 2.00E-05 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Mercury | 10000 | 1.00E+00 | 2.00E-05 | 2.00E-01 |
| Methoxychlor | 100 | 1.00E+00 | 2.00E-07 | 2.00E-05 |
| Nickel | 100 | 1.00E+00 | 2.00E-05 | 2.00E-03 |
| PCBs | 10000 | 1.00E+00 | 2.00E-07 | 2.00E-03 |
| Selenium | 100 | 1.00E+00 | 1.00E-02 | 1.00E+00 |
| Thallium | 1000 | 1.00E+00 | 1.00E-04 | 1.00E-01 |
| Vanadium | 100 | 1.00E+00 | 2.00E-07 | 2.00E-05 |
| Zinc | 10 | 1.00E+00 | 2.00E-03 | 2.00E-02 |

SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 2 Debris Landfill

Source Hazardous Waste Quantity Value: 92.65

| Hazardous Substance | Toxicity Factor Value | Persist. Value | Mobility Value | Toxicity/ Mobililty/ Persistence |
|---|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 2.00E-05 | 0.00E+00 |
| Antimony | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Arsenic | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Barium | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Benz(a)anthracene | 1000 | 1.00E+00 | 2.00E-09 | 2.00E-06 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 2.00E-09 | 2.00E-05 |
| Benzo(j,k)fluorene | 100 | 1.00E+00 | 2.00E-07 | 2.00E-05 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 2.00E-09 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 2.00E-09 | 2.00E-05 |
| Beryllium | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Cadmium | 10000 | 1.00E+00 | 2.00E-01 | 2.00E+03 |
| Chromium | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Chrysene | 0 | 1.00E+00 | 2.00E-09 | 0.00E+00 |
| Cobalt | 1 | 1.00E+00 | 1.00E-02 | 1.00E-02 |
| Copper | 0 | 1.00E+00 | 1.00E-02 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 1.00E-02 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 2.00E-05 | 2.00E-01 |
| Magnesium | 0 | 1.00E+00 | 2.00E-05 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Mercury | 10000 | 1.00E+00 | 2.00E-05 | 2.00E-01 |
| Methoxychlor | 100 | 1.00E+00 | 2.00E-07 | 2.00E-05 |
| Nickel | 100 | 1.00E+00 | 2.00E-05 | 2.00E-03 |
| PCBs | 10000 | 1.00E+00 | 2.00E-07 | 2.00E-03 |
| Pyrene | 100 | 1.00E+00 | 2.00E-09 | 2.00E-07 |
| Vanadium | 100 | 1.00E+00 | 2.00E-07 | 2.00E-05 |
| Zinc | 10 | 1.00E+00 | 2.00E-03 | 2.00E-02 |

SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 3 Drums/OSA

Source Hazardous Waste Quantity Value: 0.22

| Hazardous Substance | Toxicity Factor Value | Persist. Value | Mobility Value | Toxicity/ Mobililty/ Persistence |
|---|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 1.00E+00 | 0.00E+00 |
| Antimony | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Arsenic | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Barium | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Beryllium | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Cadmium | 10000 | 1.00E+00 | 1.00E+00 | 1.00E+04 |
| Chromium | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Copper | 0 | 1.00E+00 | 1.00E-02 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 1.00E-02 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Magnesium | 0 | 1.00E+00 | 1.00E+00 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Mercury | 10000 | 1.00E+00 | 1.00E+00 | 1.00E+04 |
| Nickel | 100 | 1.00E+00 | 1.00E-02 | 1.00E+00 |
| Vanadium | 100 | 1.00E+00 | 1.00E-02 | 1.00E+00 |
| Zinc | 10 | 1.00E+00 | 1.00E-02 | 1.00E-01 |

SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 4 Sumps/OSA

Source Hazardous Waste Quantity Value: 0.00

| Hazardous Substance | Toxicity Factor Value | Persist. Value | Mobility Value | Toxicity/ Mobililty/ Persistence |
|---|---|---|---|---|
| Acenaphthene | 10 | 4.00E-01 | 2.00E-03 | 8.00E-03 |
| Acenaphthylene | 0 | 1.00E+00 | 2.00E-03 | 0.00E+00 |
| Aluminum | 0 | 1.00E+00 | 2.00E-05 | 0.00E+00 |
| Anthracene | 10 | 4.00E-01 | 2.00E-07 | 8.00E-07 |
| Arsenic | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Barium | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Benz(a)anthracene | 1000 | 1.00E+00 | 2.00E-09 | 2.00E-06 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 2.00E-09 | 2.00E-05 |
| Benzo(g,h,i)perylene | 0 | 1.00E+00 | 2.00E-09 | 0.00E+00 |
| Benzo(j,k)fluorene | 100 | 1.00E+00 | 2.00E-07 | 2.00E-05 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 2.00E-09 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 2.00E-09 | 2.00E-05 |
| Beryllium | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Cadmium | 10000 | 1.00E+00 | 2.00E-01 | 2.00E+03 |
| Chromium | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Chrysene | 0 | 1.00E+00 | 2.00E-09 | 0.00E+00 |
| Cobalt | 1 | 1.00E+00 | 1.00E-02 | 1.00E-02 |
| Dibenzofuran | 0 | 1.00E+00 | 2.00E-05 | 0.00E+00 |
| Fluorene | 100 | 1.00E+00 | 2.00E-03 | 2.00E-01 |
| Indeno(1,2,3-CD)pyrene | 0 | 1.00E+00 | 2.00E-09 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 1.00E-02 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 2.00E-05 | 2.00E-01 |
| Magnesium | 0 | 1.00E+00 | 2.00E-05 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Mercury | 10000 | 1.00E+00 | 2.00E-05 | 2.00E-01 |
| Methyl Napthalene, 2- | 0 | 4.00E-01 | 2.00E-03 | 0.00E+00 |
| Nickel | 100 | 1.00E+00 | 2.00E-05 | 2.00E-03 |
| Phenanthrene | 0 | 4.00E-01 | 2.00E-05 | 0.00E+00 |
| Phenol | 1 | 1.00E+00 | 1.00E+00 | 1.00E+00 |
| Pyrene | 100 | 1.00E+00 | 2.00E-09 | 2.00E-07 |
| Vanadium | 100 | 1.00E+00 | 2.00E-07 | 2.00E-05 |
| Zinc | 10 | 1.00E+00 | 2.00E-03 | 2.00E-02 |

SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 5 Soil/OSA

Source Hazardous Waste Quantity Value: 4.41

| Hazardous Substance | Toxicity Factor Value | Persist. Value | Mobility Value | Toxicity/ Mobililty/ Persistence |
|---|---|---|---|---|
| Acenaphthene | 10 | 4.00E-01 | 2.00E-03 | 8.00E-03 |
| Aluminum | 0 | 1.00E+00 | 2.00E-05 | 0.00E+00 |
| Anthracene | 10 | 4.00E-01 | 2.00E-07 | 8.00E-07 |
| Antimony | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Barium | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Benz(a)anthracene | 1000 | 1.00E+00 | 2.00E-09 | 2.00E-06 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 2.00E-09 | 2.00E-05 |
| Benzo(g,h,i)perylene | 0 | 1.00E+00 | 2.00E-09 | 0.00E+00 |
| Benzo(j,k)fluorene | 100 | 1.00E+00 | 2.00E-07 | 2.00E-05 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 2.00E-09 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 2.00E-09 | 2.00E-05 |
| Beryllium | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Chromium | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Chrysene | 0 | 1.00E+00 | 2.00E-09 | 0.00E+00 |
| Copper | 0 | 1.00E+00 | 1.00E-02 | 0.00E+00 |
| Dibenz(a,h)anthracene | 0 | 1.00E+00 | 2.00E-09 | 0.00E+00 |
| Fluorene | 100 | 1.00E+00 | 2.00E-03 | 2.00E-01 |
| Indeno(1,2,3-CD)pyrene | 0 | 1.00E+00 | 2.00E-09 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 1.00E-02 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 2.00E-05 | 2.00E-01 |
| Magnesium | 0 | 1.00E+00 | 2.00E-05 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 1.00E-02 | 1.00E+02 |
| Mercury | 10000 | 1.00E+00 | 2.00E-05 | 2.00E-01 |
| Nickel | 100 | 1.00E+00 | 2.00E-05 | 2.00E-03 |
| Phenanthrene | 0 | 4.00E-01 | 2.00E-05 | 0.00E+00 |
| Pyrene | 100 | 1.00E+00 | 2.00E-09 | 2.00E-07 |
| Selenium | 100 | 1.00E+00 | 1.00E-02 | 1.00E+00 |
| Vanadium | 100 | 1.00E+00 | 2.00E-07 | 2.00E-05 |
| Zinc | 10 | 1.00E+00 | 2.00E-03 | 2.00E-02 |

SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Hazardous Substances Found in an Observed Release

| Observed Release Hazardous Substance | Toxicity Factor Value | Persist. Value | Toxicity/ Persistence |
|---|---|---|---|
| Aluminum | 100 | 1.00E+00 | 1.00E+02 |
| Chromium | 10000 | 1.00E+00 | 1.00E+04 |
| Cyanide | 100 | 4.00E-01 | 4.00E+01 |
| Iron | 100 | 1.00E+00 | 1.00E+02 |
| Lead | 10000 | 1.00E+00 | 1.00E+04 |
| Magnesium | 100 | 1.00E+00 | 1.00E+02 |
| Manganese | 10000 | 1.00E+00 | 1.00E+04 |
| Selenium | 100 | 1.00E+00 | 1.00E+02 |

SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

| | |
|---|---|
| Toxicity/Mobility/Persistence Value from Source Hazardous Substances: | 1.00E+04 |
| Toxicity/Mobility/Persistence Value from Observed Release Hazardous Substances: | 1.00E+04 |
| Toxicity/Mobility/Persistence Factor: | 1.00E+04 |
| Sum of Source Hazardous Waste Quantity Values: | 4.82E+02 |
| Hazardous Waste Quantity Factor: | 100 |
| Waste Characteristics Factor Category: | 32 |

SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT TARGETS
Hanna Furnace Site - 10/06/95

Level I Concentrations

Sample ID: SW-106
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|
| Aluminum | 2.2E+04 | 0.0E+00 | ppb | YES |
| Arsenic | 1.7E+01 | 5.0E+01 | ppb | NO |
| Barium | 2.1E+02 | 2.0E+03 | ppb | NO |
| Copper | 1.3E+02 | 1.3E+03 | ppb | NO |
| Lead | 4.6E+02 | 1.5E+01 | ppb | YES |
| Magnesium | 2.3E+04 | 0.0E+00 | ppb | YES |
| Mercury | 5.4E-01 | 2.0E+00 | ppb | NO |
| Nickel | 8.0E+01 | 1.0E+02 | ppb | NO |
| Vanadium | 6.1E+01 | 0.0E+00 | ppb | NO |
| Zinc | 1.2E+03 | 0.0E+00 | ppb | NO |

Level II Concentrations

Sample ID: SW-103
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|
| Magnesium | 8.8E+03 | 0.0E+00 | ppb | YES |

Documentation for SW-103:

Five surface water samples and four sediment samples were collected from the Union Ship Canal. Results are presented on Tables 26 and 27.

Reference: 3 (pgs. 4-18 and 4-19, Tables 26 and 27)

Sample ID: SW-104
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|
| Aluminum | 2.9E+02 | 0.0E+00 | ppb | YES |
| Lead | 9.4E+00 | 1.5E+01 | ppb | YES |
| Magnesium | 8.2E+03 | 0.0E+00 | ppb | YES |
| Zinc | 6.5E+01 | 0.0E+00 | ppb | NO |

Sample ID: SW-105
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|
| Magnesium | 8.7E+03 | 0.0E+00 | ppb | YES |

Sample ID: SW-107
Sample Medium: Aqueous
Location: 0.12 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|
| Magnesium | 8.7E+03 | 0.0E+00 | ppb | YES |

Sample ID: SD-103
Sample Medium: Sediment
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|
| Aluminum | 2.0E+07 | N.A. | ppb | YES |
| Arsenic | 9.0E+03 | N.A. | ppb | NO |
| Barium | 1.9E+05 | N.A. | ppb | NO |
| Beryllium | 3.5E+03 | N.A. | ppb | NO |
| Cadmium | 1.8E+03 | N.A. | ppb | NO |
| Chromium | 1.1E+04 | N.A. | ppb | YES |
| Copper | 2.3E+04 | N.A. | ppb | NO |
| Iron | 4.3E+07 | N.A. | ppb | YES |
| Lead | 8.4E+04 | N.A. | ppb | YES |
| Magnesium | 1.8E+07 | N.A. | ppb | YES |
| Manganese | 2.5E+06 | N.A. | ppb | YES |
| Nickel | 1.1E+04 | N.A. | ppb | NO |
| Vanadium | 2.1E+04 | N.A. | ppb | NO |
| Zinc | 3.9E+05 | N.A. | ppb | NO |

Sample ID: SD-104
Sample Medium: Sediment
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|
| Aluminum | 7.3E+06 | N.A. | ppb | YES |
| Arsenic | 3.0E+03 | N.A. | ppb | NO |
| Barium | 8.1E+04 | N.A. | ppb | NO |
| Benz(a)anthracene | 4.3E+02 | N.A. | ppb | NO |
| Benzo(a)pyrene | 6.9E+02 | N.A. | ppb | NO |
| Benzo(j,k)fluorene | 5.9E+02 | N.A. | ppb | NO |
| Benzo(k)fluoranthene | 7.7E+02 | N.A. | ppb | NO |
| Benzofluoranthene, 3,4- | 7.9E+02 | N.A. | ppb | NO |

| | | | | |
|---|---|---|---|---|
| Beryllium | 1.0E+03 | N.A. | ppb | NO |
| Cadmium | 2.2E+03 | N.A. | ppb | NO |
| Chromium | 4.9E+04 | N.A. | ppb | YES |
| Chrysene | 7.0E+02 | N.A. | ppb | NO |
| Copper | 3.1E+04 | N.A. | ppb | NO |
| Iron | 4.7E+07 | N.A. | ppb | YES |
| Lead | 1.3E+05 | N.A. | ppb | YES |
| Magnesium | 6.2E+06 | N.A. | ppb | YES |
| Manganese | 1.3E+06 | N.A. | ppb | YES |
| Mercury | 1.0E+02 | N.A. | ppb | NO |
| Nickel | 1.7E+04 | N.A. | ppb | NO |
| Pyrene | 7.1E+02 | N.A. | ppb | NO |
| Vanadium | 2.0E+04 | N.A. | ppb | NO |
| Zinc | 8.5E+05 | N.A. | ppb | NO |

Sample ID: SD-105
Sample Medium: Sediment
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|
| Acenaphthylene | 4.1E+02 | N.A. | ppb | NO |
| Aluminum | 6.2E+06 | N.A. | ppb | YES |
| Anthracene | 3.3E+02 | N.A. | ppb | NO |
| Arsenic | 2.1E+04 | N.A. | ppb | NO |
| Barium | 7.7E+04 | N.A. | ppb | NO |
| Benz(a)anthracene | 2.0E+03 | N.A. | ppb | NO |
| Benzo(a)pyrene | 2.4E+03 | N.A. | ppb | NO |
| Benzo(g,h,i)perylene | 9.4E+02 | N.A. | ppb | NO |
| Benzo(j,k)fluorene | 1.8E+03 | N.A. | ppb | NO |
| Benzo(k)fluoranthene | 2.2E+03 | N.A. | ppb | NO |
| Benzofluoranthene, 3,4- | 2.3E+03 | N.A. | ppb | NO |
| Bis (2-ethylhexyl) phthalate | 7.2E+02 | N.A. | ppb | NO |
| Cadmium | 2.8E+03 | N.A. | ppb | NO |
| Chromium | 3.7E+04 | N.A. | ppb | YES |
| Chrysene | 3.1E+03 | N.A. | ppb | NO |
| Copper | 8.2E+04 | N.A. | ppb | NO |
| Iron | 8.2E+07 | N.A. | ppb | YES |
| Lead | 3.3E+05 | N.A. | ppb | YES |
| Magnesium | 1.7E+07 | N.A. | ppb | YES |
| Manganese | 3.0E+06 | N.A. | ppb | YES |
| Nickel | 2.9E+04 | N.A. | ppb | NO |
| Phenanthrene | 4.4E+02 | N.A. | ppb | NO |
| Pyrene | 4.8E+03 | N.A. | ppb | NO |
| Vanadium | 3.8E+04 | N.A. | ppb | NO |
| Zinc | 8.0E+05 | N.A. | ppb | NO |

SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT TARGETS
Hanna Furnace Site - 10/06/95

Sample ID: SD-107
Sample Medium: Sediment
Location: 0.12 miles

| Hazardous Substance | Hazardous Substance Concentration | DW MCL Benchmark Concentration | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|
| Acenaphthylene | 6.3E+02 | N.A. | ppb | NO |
| Acetone | 1.2E+01 | N.A. | ppb | NO |
| Aluminum | 4.9E+06 | N.A. | ppb | YES |
| Anthracene | 1.8E+03 | N.A. | ppb | NO |
| Arsenic | 6.1E+03 | N.A. | ppb | NO |
| Barium | 7.1E+04 | N.A. | ppb | NO |
| Benz(a)anthracene | 2.7E+03 | N.A. | ppb | NO |
| Benzo(a)pyrene | 1.6E+03 | N.A. | ppb | NO |
| Benzo(g,h,i)perylene | 3.4E+02 | N.A. | ppb | NO |
| Benzo(j,k)fluorene | 4.0E+03 | N.A. | ppb | NO |
| Benzo(k)fluoranthene | 1.1E+03 | N.A. | ppb | NO |
| Benzofluoranthene, 3,4- | 1.6E+03 | N.A. | ppb | NO |
| Chromium | 3.9E+04 | N.A. | ppb | YES |
| Chrysene | 2.8E+03 | N.A. | ppb | NO |
| Copper | 1.4E+04 | N.A. | ppb | NO |
| Dibenzofuran | 3.3E+02 | N.A. | ppb | NO |
| Indeno(1,2,3-CD)pyrene | 4.4E+02 | N.A. | ppb | NO |
| Iron | 1.1E+07 | N.A. | ppb | YES |
| Lead | 4.5E+04 | N.A. | ppb | YES |
| Magnesium | 7.3E+06 | N.A. | ppb | YES |
| Manganese | 4.2E+05 | N.A. | ppb | YES |
| Phenanthrene | 3.6E+03 | N.A. | ppb | NO |
| Pyrene | 4.8E+03 | N.A. | ppb | NO |
| Trichlorobenzene, 1,2,4- | 7.6E+02 | N.A. | ppb | NO |
| Vanadium | 1.2E+04 | N.A. | ppb | NO |
| Zinc | 1.6E+05 | N.A. | ppb | NO |

Most Distant Level I Sample

Sample ID: SW-106
Distance from the Probable Point of Entry: 0.00 miles

Most Distant Level II Sample

Sample ID: SW-107
Distance from the Probable Point of Entry: 0.12 miles

Level I Concentrations

| Intake | Distance Along the In-water Segment from the Probable Point of Entry (miles) | Population |
|---|---|---|

- N/A and/or data not specified

Population Served by Level I Intakes: 0.0

Level I Population Factor: 0.00E+00

Level II Concentrations

| Intake | Distance Along the In-water Segment from the Probable Point of Entry (miles) | Population |
|---|---|---|

- N/A and/or data not specified

Population Served by Level II Intakes: 0.0

Level II Population Factor: 0.00E+00

Potential Contamination

| Intake ID | Average Annual Flow (cfs) | Population Served |
|---|---|---|
| 1 Municipal Supply | 0 | 190000.0 |

Documentation for Intake Municipal Supply:

The municipalities of Lackawanna and Buffalo receive drinking water from a municipal supply with intakes in Lake Erie more than 3 miles from the Union Ship Canal (therefore 3.5 miles from the site).

It was assumed that >100,000 people would consume water from this intake based on the population within a 3-mile radius of the site.

Reference: 3 (pg. 2-4)

| Type of Surface Water Body | Total Population | Dilution-Weighted Population |
|---|---|---|
| Shallow Ocean Zone or Great Lake | 190000.0 | 16.0 |

Dilution-Weighted Population Served by Potentially Contaminated Intakes: 16.0

Potential Contamination Factor: 0.3

Nearest Intake

Location of Nearest Drinking Water Intake: Municipal Supply
Distance from the Probable Point of Entry: 3.00 miles
Type of Surface Water Body: Shallow Ar
Dilution Weight: 0.0000200
Highest Level of Contamination: Potential

Nearest Intake Factor: 0.00

Documentation for Municipal Supply:

The municipalities of Lackawanna and Buffalo receive drinking water from a municipal supply with intakes in Lake Erie more than 3 miles from the Union Ship Canal (therefore 3.5 miles from the site).

It was assumed that >100,000 people would consume water from this intake based on the population within a 3-mile radius of the site.

Reference: 3 (pg. 2-4)

Resources

Resource Use: YES

Resource Value: 5.00E+00

Documentation for Resources:

Lake Erie is used for drinking, irrigation, and recreation.

Reference: 3 (pg. 2-4)

SW PATHWAY: GW TO SW COMPONENT HUMAM FOOD CHAIN THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 1 Fil./Flue Ash Disp.

Source Hazardous Waste Quantity Value: 384.35

| Hazardous Substance | Toxicity Value | Persist. Value | Mobility Value | Bio-accum. Value | Tox./Mobil./ Persistence/ Bioaccum. Value |
|---|---|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 2.00E-05 | 5.00E+01 | 0.00E+00 |
| Antimony | 10000 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E+01 |
| Arsenic | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+00 | 5.00E+02 |
| Barium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E+01 |
| Beryllium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+01 | 5.00E+03 |
| Cadmium | 10000 | 1.00E+00 | 2.00E-01 | 5.00E+03 | 1.00E+07 |
| Chromium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+00 | 5.00E+02 |
| Cobalt | 1 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E-03 |
| Copper | 0 | 1.00E+00 | 1.00E-02 | 5.00E+04 | 0.00E+00 |
| Cyanide | 100 | 4.00E-01 | 2.00E-05 | 5.00E-01 | 4.00E-04 |
| DDE | 100 | 1.00E+00 | 2.00E-07 | 5.00E+04 | 1.00E+00 |
| Endosulfan (I or II) | 100 | 1.00E+00 | 2.00E-05 | 5.00E+03 | 1.00E+01 |
| Iron | 0 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 2.00E-05 | 5.00E+01 | 1.00E+01 |
| Magnesium | 0 | 1.00E+00 | 2.00E-05 | 5.00E-01 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E+01 |
| Mercury | 10000 | 1.00E+00 | 2.00E-05 | 5.00E+04 | 1.00E+04 |
| Methoxychlor | 100 | 1.00E+00 | 2.00E-07 | 5.00E+04 | 1.00E+00 |
| Nickel | 100 | 1.00E+00 | 2.00E-05 | 5.00E-01 | 1.00E-03 |
| PCBs | 10000 | 1.00E+00 | 2.00E-07 | 5.00E+04 | 1.00E+02 |
| Selenium | 100 | 1.00E+00 | 1.00E-02 | 5.00E+03 | 5.00E+03 |
| Thallium | 1000 | 1.00E+00 | 1.00E-04 | 5.00E+02 | 5.00E+01 |
| Vanadium | 100 | 1.00E+00 | 2.00E-07 | 5.00E-01 | 1.00E-05 |
| Zinc | 10 | 1.00E+00 | 2.00E-03 | 5.00E+02 | 1.00E+01 |

SW PATHWAY: GW TO SW COMPONENT HUMAM FOOD CHAIN THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 2 Debris Landfill

Source Hazardous Waste Quantity Value: 92.65

| Hazardous Substance | Toxicity Value | Persist. Value | Mobility Value | Bio-accum. Value | Tox./Mobil./ Persistence/ Bioaccum. Value |
|---|---|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 2.00E-05 | 5.00E+01 | 0.00E+00 |
| Antimony | 10000 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E+01 |
| Arsenic | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+00 | 5.00E+02 |
| Barium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E+01 |
| Benz(a)anthracene | 1000 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 1.00E-01 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 1.00E+00 |
| Benzo(j,k)fluorene | 100 | 1.00E+00 | 2.00E-07 | 5.00E+03 | 1.00E-01 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 1.00E+00 |
| Beryllium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+01 | 5.00E+03 |
| Cadmium | 10000 | 1.00E+00 | 2.00E-01 | 5.00E+03 | 1.00E+07 |
| Chromium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+00 | 5.00E+02 |
| Chrysene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+02 | 0.00E+00 |
| Cobalt | 1 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E-03 |
| Copper | 0 | 1.00E+00 | 1.00E-02 | 5.00E+04 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 2.00E-05 | 5.00E+01 | 1.00E+01 |
| Magnesium | 0 | 1.00E+00 | 2.00E-05 | 5.00E-01 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E+01 |
| Mercury | 10000 | 1.00E+00 | 2.00E-05 | 5.00E+04 | 1.00E+04 |
| Methoxychlor | 100 | 1.00E+00 | 2.00E-07 | 5.00E+04 | 1.00E+00 |
| Nickel | 100 | 1.00E+00 | 2.00E-05 | 5.00E-01 | 1.00E-03 |
| PCBs | 10000 | 1.00E+00 | 2.00E-07 | 5.00E+04 | 1.00E+02 |
| Pyrene | 100 | 1.00E+00 | 2.00E-09 | 5.00E+01 | 1.00E-05 |
| Vanadium | 100 | 1.00E+00 | 2.00E-07 | 5.00E-01 | 1.00E-05 |
| Zinc | 10 | 1.00E+00 | 2.00E-03 | 5.00E+02 | 1.00E+01 |

SW PATHWAY: GW TO SW COMPONENT HUMAM FOOD CHAIN THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 3 Drums/OSA

Source Hazardous Waste Quantity Value: 0.22

| Hazardous Substance | Toxicity Value | Persist. Value | Mobility Value | Bio-accum. Value | Tox./Mobil./ Persistence/ Bioaccum. Value |
|---|---|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Antimony | 10000 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E+01 |
| Arsenic | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+00 | 5.00E+02 |
| Barium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E+01 |
| Beryllium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+01 | 5.00E+03 |
| Cadmium | 10000 | 1.00E+00 | 1.00E+00 | 5.00E+03 | 5.00E+07 |
| Chromium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+00 | 5.00E+02 |
| Copper | 0 | 1.00E+00 | 1.00E-02 | 5.00E+04 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+01 | 5.00E+03 |
| Magnesium | 0 | 1.00E+00 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E+01 |
| Mercury | 10000 | 1.00E+00 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Nickel | 100 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E-01 |
| Vanadium | 100 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E-01 |
| Zinc | 10 | 1.00E+00 | 1.00E-02 | 5.00E+02 | 5.00E+01 |

SW PATHWAY: GW TO SW COMPONENT HUMAM FOOD CHAIN THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 4 Sumps/OSA

Source Hazardous Waste Quantity Value: 0.00

| Hazardous Substance | Toxicity Value | Persist. Value | Mobility Value | Bio-accum. Value | Tox./Mobil./ Persistence/ Bioaccum. Value |
|---|---|---|---|---|---|
| Acenaphthene | 10 | 4.00E-01 | 2.00E-03 | 5.00E+02 | 4.00E+00 |
| Acenaphthylene | 0 | 1.00E+00 | 2.00E-03 | 5.00E+02 | 0.00E+00 |
| Aluminum | 0 | 1.00E+00 | 2.00E-05 | 5.00E+01 | 0.00E+00 |
| Anthracene | 10 | 4.00E-01 | 2.00E-07 | 5.00E+03 | 4.00E-03 |
| Arsenic | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+00 | 5.00E+02 |
| Barium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E+01 |
| Benz(a)anthracene | 1000 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 1.00E-01 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 1.00E+00 |
| Benzo(g,h,i)perylene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Benzo(j,k)fluorene | 100 | 1.00E+00 | 2.00E-07 | 5.00E+03 | 1.00E-01 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 1.00E+00 |
| Beryllium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+01 | 5.00E+03 |
| Cadmium | 10000 | 1.00E+00 | 2.00E-01 | 5.00E+03 | 1.00E+07 |
| Chromium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+00 | 5.00E+02 |
| Chrysene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+02 | 0.00E+00 |
| Cobalt | 1 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E-03 |
| Dibenzofuran | 0 | 1.00E+00 | 2.00E-05 | 5.00E+02 | 0.00E+00 |
| Fluorene | 100 | 1.00E+00 | 2.00E-03 | 5.00E+03 | 1.00E+03 |
| Indeno(1,2,3-CD)pyrene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 2.00E-05 | 5.00E+01 | 1.00E+01 |
| Magnesium | 0 | 1.00E+00 | 2.00E-05 | 5.00E-01 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E+01 |
| Mercury | 10000 | 1.00E+00 | 2.00E-05 | 5.00E+04 | 1.00E+04 |
| Methyl Napthalene, 2- | 0 | 4.00E-01 | 2.00E-03 | 5.00E+03 | 0.00E+00 |
| Nickel | 100 | 1.00E+00 | 2.00E-05 | 5.00E-01 | 1.00E-03 |
| Phenanthrene | 0 | 4.00E-01 | 2.00E-05 | 5.00E+01 | 0.00E+00 |
| Phenol | 1 | 1.00E+00 | 1.00E+00 | 5.00E+00 | 5.00E+00 |
| Pyrene | 100 | 1.00E+00 | 2.00E-09 | 5.00E+01 | 1.00E-05 |
| Vanadium | 100 | 1.00E+00 | 2.00E-07 | 5.00E-01 | 1.00E-05 |
| Zinc | 10 | 1.00E+00 | 2.00E-03 | 5.00E+02 | 1.00E+01 |

Source: 5 Soil/OSA

Source Hazardous Waste Quantity Value: 4.41

| Hazardous Substance | Toxicity Value | Persist. Value | Mobility Value | Bio-accum. Value | Tox./Mobil./ Persistence/ Bioaccum. Value |
|---|---|---|---|---|---|
| Acenaphthene | 10 | 4.00E-01 | 2.00E-03 | 5.00E+02 | 4.00E+00 |
| Aluminum | 0 | 1.00E+00 | 2.00E-05 | 5.00E+01 | 0.00E+00 |
| Anthracene | 10 | 4.00E-01 | 2.00E-07 | 5.00E+03 | 4.00E-03 |
| Antimony | 10000 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E+01 |
| Barium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E+01 |
| Benz(a)anthracene | 1000 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 1.00E-01 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 1.00E+00 |
| Benzo(g,h,i)perylene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Benzo(j,k)fluorene | 100 | 1.00E+00 | 2.00E-07 | 5.00E+03 | 1.00E-01 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 10000 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 1.00E+00 |
| Beryllium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+01 | 5.00E+03 |
| Chromium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+00 | 5.00E+02 |
| Chrysene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+02 | 0.00E+00 |
| Copper | 0 | 1.00E+00 | 1.00E-02 | 5.00E+04 | 0.00E+00 |
| Dibenz(a,h)anthracene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Fluorene | 100 | 1.00E+00 | 2.00E-03 | 5.00E+03 | 1.00E+03 |
| Indeno(1,2,3-CD)pyrene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Iron | 0 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 0.00E+00 |
| Lead | 10000 | 1.00E+00 | 2.00E-05 | 5.00E+01 | 1.00E+01 |
| Magnesium | 0 | 1.00E+00 | 2.00E-05 | 5.00E-01 | 0.00E+00 |
| Manganese | 10000 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E+01 |
| Mercury | 10000 | 1.00E+00 | 2.00E-05 | 5.00E+04 | 1.00E+04 |
| Nickel | 100 | 1.00E+00 | 2.00E-05 | 5.00E-01 | 1.00E-03 |
| Phenanthrene | 0 | 4.00E-01 | 2.00E-05 | 5.00E+01 | 0.00E+00 |
| Pyrene | 100 | 1.00E+00 | 2.00E-09 | 5.00E+01 | 1.00E-05 |
| Selenium | 100 | 1.00E+00 | 1.00E-02 | 5.00E+03 | 5.00E+03 |
| Vanadium | 100 | 1.00E+00 | 2.00E-07 | 5.00E-01 | 1.00E-05 |
| Zinc | 10 | 1.00E+00 | 2.00E-03 | 5.00E+02 | 1.00E+01 |

Hazardous Substances Found in an Observed Release

| Observed Release Hazardous Substance | Toxicity Value | Persist. Value | Bio-accum. Value | Toxicity/ Persistence Bioaccum. Value |
|---|---|---|---|---|
| Aluminum | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Cyanide | 100 | 4.00E-01 | 5.00E-01 | 2.00E+01 |
| Iron | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| Lead | 10000 | 1.00E+00 | 5.00E+01 | 5.00E+05 |
| Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| Manganese | 10000 | 1.00E+00 | 5.00E-01 | 5.00E+03 |
| Selenium | 100 | 1.00E+00 | 5.00E+03 | 5.00E+05 |

| | |
|---|---|
| Toxicity/Mobility/Persistence/Bioaccumulation Value from Source Hazardous Substances: | 5.00E+08 |
| Toxicity/Mobility/Persistence/Bioaccumulation Value from Observed Release Hazardous Substances: | 5.00E+05 |
| Toxicity/Mobility/Persistence/Bioaccumulation Factor: | 5.00E+08 |
| Sum of Source Hazardous Waste Quantity Values: | 4.82E+02 |
| Hazardous Waste Quantity Factor: | 100 |
| Waste Characteristics Factor Category: | 320 |

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

Level I Concentrations

| Fishery | Annual Production (pounds) | Human Food Chain Population Value |
|---|---|---|

- N/A and/or data not specified

Sum of Human Food Chain Population Values: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

| Fishery | Annual Production (pounds) | Human Food Chain Population Value |
|---|---|---|
| - N/A and/or data not specified | | |

Sum of Human Food Chain Population Values: 0.00E+00

Level II Concentrations Factor: 0.00E+00

Potential Contamination

| Fishery | Annnual Production (pounds) | Type of Surface Water Body | Average Annual Flow (cfs) | Pop. Value (Pi) | Dilution Weight (Di) | Pi*Di |
|---|---|---|---|---|---|---|
| 1 Union Canal | 101.0 | Mixing A | 10 | 0.3 | 2.00E-02 | 6.00E-03 |
| 2 Lake Erie | 101.0 | Shallow | 0 | 0.3 | 2.00E-05 | 6.00E-06 |

Sum of (Pi*Di): 6.01E-03

Potential Human Food Chain Contamination Factor: 6.01E-04

Documentation for Union Canal Fishery:

People access the Union Canal and Lake Erie to fish. The quantity of fish consumed is unknown, therefore, it was assumed that between 1 and 100 pounds of fish would be consumed from each surface water segment.

Reference: 3 (pg. 2-3)

Food Chain Individual

Location of Nearest Fishery: Union Canal
Distance from the Probable Point of Entry: 0.00 miles
Type of Surface Water Body: Mixing Area
Dilution Weight: 0.0200000
Level of Contamination: Potential

Food Chain Individual Factor: 45.00

Documentation for Union Canal:

The Union Canal is located onsite. It was considered to be classified as a "river", and it flows for 0.5 miles to Lake Erie. Lake Erie (a moderate depth Great Lake) consists of the remainder of the SW pathway target distance (15-river-miles). Both water bodies

consist of fresh water.

Reference: 3 (pg. 2-3)

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 1 Fil./Flue Ash Disp.

Source Hazardous Waste Quantity Value: 384.35

| Hazardous Substance | Eco-toxicity Value | Persist. Value | Mob. Value | Bio-accum. Value | Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 2.00E-05 | 5.00E+01 | 0.00E+00 |
| Antimony | 0 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 0.00E+00 |
| Arsenic | 10 | 1.00E+00 | 1.00E-02 | 5.00E+01 | 5.00E+00 |
| Barium | 1 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E-03 |
| Beryllium | 0 | 1.00E+00 | 1.00E-02 | 5.00E+01 | 0.00E+00 |
| Cadmium | 1000 | 1.00E+00 | 2.00E-01 | 5.00E+03 | 1.00E+06 |
| Chromium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+00 | 5.00E+02 |
| Cobalt | 0 | 1.00E+00 | 1.00E-02 | 5.00E+03 | 0.00E+00 |
| Copper | 100 | 1.00E+00 | 1.00E-02 | 5.00E+04 | 5.00E+04 |
| Cyanide | 1000 | 4.00E-01 | 2.00E-05 | 5.00E-01 | 4.00E-03 |
| DDE | 10000 | 1.00E+00 | 2.00E-07 | 5.00E+04 | 1.00E+02 |
| Endosulfan (I or II) | 10000 | 1.00E+00 | 2.00E-05 | 5.00E+03 | 1.00E+03 |
| Iron | 10 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E-02 |
| Lead | 1000 | 1.00E+00 | 2.00E-05 | 5.00E+03 | 1.00E+02 |
| Magnesium | 0 | 1.00E+00 | 2.00E-05 | 5.00E-01 | 0.00E+00 |
| Manganese | 0 | 1.00E+00 | 1.00E-02 | 5.00E+04 | 0.00E+00 |
| Mercury | 10000 | 1.00E+00 | 2.00E-05 | 5.00E+04 | 1.00E+04 |
| Methoxychlor | 10000 | 1.00E+00 | 2.00E-07 | 5.00E+04 | 1.00E+02 |
| Nickel | 10 | 1.00E+00 | 2.00E-05 | 5.00E+02 | 1.00E-01 |
| PCBs | 10000 | 1.00E+00 | 2.00E-07 | 5.00E+04 | 1.00E+02 |
| Selenium | 100 | 1.00E+00 | 1.00E-02 | 5.00E+03 | 5.00E+03 |
| Thallium | 0 | 1.00E+00 | 1.00E-04 | 5.00E+02 | 0.00E+00 |
| Vanadium | 0 | 1.00E+00 | 2.00E-07 | 5.00E-01 | 0.00E+00 |
| Zinc | 10 | 1.00E+00 | 2.00E-03 | 5.00E+02 | 1.00E+01 |

Source: 2 Debris Landfill

Source Hazardous Waste Quantity Value: 92.65

| Hazardous Substance | Eco-toxicity Value | Persist. Value | Mob. Value | Bio-accum. Value | Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 2.00E-05 | 5.00E+01 | 0.00E+00 |
| Antimony | 0 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 0.00E+00 |
| Arsenic | 10 | 1.00E+00 | 1.00E-02 | 5.00E+01 | 5.00E+00 |
| Barium | 1 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E-03 |
| Benz(a)anthracene | 10000 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 1.00E+00 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 1.00E+00 |
| Benzo(j,k)fluorene | 10000 | 1.00E+00 | 2.00E-07 | 5.00E+03 | 1.00E+01 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Beryllium | 0 | 1.00E+00 | 1.00E-02 | 5.00E+01 | 0.00E+00 |
| Cadmium | 1000 | 1.00E+00 | 2.00E-01 | 5.00E+03 | 1.00E+06 |
| Chromium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+00 | 5.00E+02 |
| Chrysene | 1000 | 1.00E+00 | 2.00E-09 | 5.00E+03 | 1.00E-02 |
| Cobalt | 0 | 1.00E+00 | 1.00E-02 | 5.00E+03 | 0.00E+00 |
| Copper | 100 | 1.00E+00 | 1.00E-02 | 5.00E+04 | 5.00E+04 |
| Iron | 10 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E-02 |
| Lead | 1000 | 1.00E+00 | 2.00E-05 | 5.00E+03 | 1.00E+02 |
| Magnesium | 0 | 1.00E+00 | 2.00E-05 | 5.00E-01 | 0.00E+00 |
| Manganese | 0 | 1.00E+00 | 1.00E-02 | 5.00E+04 | 0.00E+00 |
| Mercury | 10000 | 1.00E+00 | 2.00E-05 | 5.00E+04 | 1.00E+04 |
| Methoxychlor | 10000 | 1.00E+00 | 2.00E-07 | 5.00E+04 | 1.00E+02 |
| Nickel | 10 | 1.00E+00 | 2.00E-05 | 5.00E+02 | 1.00E-01 |
| PCBs | 10000 | 1.00E+00 | 2.00E-07 | 5.00E+04 | 1.00E+02 |
| Pyrene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+01 | 0.00E+00 |
| Vanadium | 0 | 1.00E+00 | 2.00E-07 | 5.00E-01 | 0.00E+00 |
| Zinc | 10 | 1.00E+00 | 2.00E-03 | 5.00E+02 | 1.00E+01 |

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 3 Drums/OSA

Source Hazardous Waste Quantity Value: 0.22

| Hazardous Substance | Eco-toxicity Value | Persist. Value | Mob. Value | Bio-accum. Value | Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|---|
| Aluminum | 0 | 1.00E+00 | 1.00E+00 | 5.00E+01 | 0.00E+00 |
| Antimony | 0 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 0.00E+00 |
| Arsenic | 10 | 1.00E+00 | 1.00E-02 | 5.00E+01 | 5.00E+00 |
| Barium | 1 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E-03 |
| Beryllium | 0 | 1.00E+00 | 1.00E-02 | 5.00E+01 | 0.00E+00 |
| Cadmium | 1000 | 1.00E+00 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Chromium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+00 | 5.00E+02 |
| Copper | 100 | 1.00E+00 | 1.00E-02 | 5.00E+04 | 5.00E+04 |
| Iron | 10 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E-02 |
| Lead | 1000 | 1.00E+00 | 1.00E-02 | 5.00E+03 | 5.00E+04 |
| Magnesium | 0 | 1.00E+00 | 1.00E+00 | 5.00E-01 | 0.00E+00 |
| Manganese | 0 | 1.00E+00 | 1.00E-02 | 5.00E+04 | 0.00E+00 |
| Mercury | 10000 | 1.00E+00 | 1.00E+00 | 5.00E+04 | 5.00E+08 |
| Nickel | 10 | 1.00E+00 | 1.00E-02 | 5.00E+02 | 5.00E+01 |
| Vanadium | 0 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 0.00E+00 |
| Zinc | 10 | 1.00E+00 | 1.00E-02 | 5.00E+02 | 5.00E+01 |

Source: 4 Sumps/OSA

Source Hazardous Waste Quantity Value: 0.00

| Hazardous Substance | Eco-toxicity Value | Persist. Value | Mob. Value | Bio-accum. Value | Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|---|
| Acenaphthene | 10000 | 4.00E-01 | 2.00E-03 | 5.00E+02 | 4.00E+03 |
| Acenaphthylene | 0 | 1.00E+00 | 2.00E-03 | 5.00E+02 | 0.00E+00 |
| Aluminum | 0 | 1.00E+00 | 2.00E-05 | 5.00E+01 | 0.00E+00 |
| Anthracene | 10000 | 4.00E-01 | 2.00E-07 | 5.00E+03 | 4.00E+00 |
| Arsenic | 10 | 1.00E+00 | 1.00E-02 | 5.00E+01 | 5.00E+00 |
| Barium | 1 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E-03 |
| Benz(a)anthracene | 10000 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 1.00E+00 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 1.00E+00 |
| Benzo(g,h,i)perylene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Benzo(j,k)fluorene | 10000 | 1.00E+00 | 2.00E-07 | 5.00E+03 | 1.00E+01 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Beryllium | 0 | 1.00E+00 | 1.00E-02 | 5.00E+01 | 0.00E+00 |
| Cadmium | 1000 | 1.00E+00 | 2.00E-01 | 5.00E+03 | 1.00E+06 |
| Chromium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+00 | 5.00E+02 |
| Chrysene | 1000 | 1.00E+00 | 2.00E-09 | 5.00E+03 | 1.00E-02 |
| Cobalt | 0 | 1.00E+00 | 1.00E-02 | 5.00E+03 | 0.00E+00 |
| Dibenzofuran | 100 | 1.00E+00 | 2.00E-05 | 5.00E+02 | 1.00E+00 |
| Fluorene | 1000 | 1.00E+00 | 2.00E-03 | 5.00E+03 | 1.00E+04 |
| Indeno(1,2,3-CD)pyrene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Iron | 10 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E-02 |
| Lead | 1000 | 1.00E+00 | 2.00E-05 | 5.00E+03 | 1.00E+02 |
| Magnesium | 0 | 1.00E+00 | 2.00E-05 | 5.00E-01 | 0.00E+00 |
| Manganese | 0 | 1.00E+00 | 1.00E-02 | 5.00E+04 | 0.00E+00 |
| Mercury | 10000 | 1.00E+00 | 2.00E-05 | 5.00E+04 | 1.00E+04 |
| Methyl Napthalene, 2- | 1000 | 4.00E-01 | 2.00E-03 | 5.00E+03 | 4.00E+03 |
| Nickel | 10 | 1.00E+00 | 2.00E-05 | 5.00E+02 | 1.00E-01 |
| Phenanthrene | 1000 | 4.00E-01 | 2.00E-05 | 5.00E+03 | 4.00E+01 |
| Phenol | 10000 | 1.00E+00 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Pyrene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+01 | 0.00E+00 |
| Vanadium | 0 | 1.00E+00 | 2.00E-07 | 5.00E-01 | 0.00E+00 |
| Zinc | 10 | 1.00E+00 | 2.00E-03 | 5.00E+02 | 1.00E+01 |

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 5 Soil/OSA

Source Hazardous Waste Quantity Value: 4.41

| Hazardous Substance | Eco-toxicity Value | Persist. Value | Mob. Value | Bio-accum. Value | Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|---|
| Acenaphthene | 10000 | 4.00E-01 | 2.00E-03 | 5.00E+02 | 4.00E+03 |
| Aluminum | 0 | 1.00E+00 | 2.00E-05 | 5.00E+01 | 0.00E+00 |
| Anthracene | 10000 | 4.00E-01 | 2.00E-07 | 5.00E+03 | 4.00E+00 |
| Antimony | 0 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 0.00E+00 |
| Barium | 1 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E-03 |
| Benz(a)anthracene | 10000 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 1.00E+00 |
| Benzo(a)pyrene | 10000 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 1.00E+00 |
| Benzo(g,h,i)perylene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Benzo(j,k)fluorene | 10000 | 1.00E+00 | 2.00E-07 | 5.00E+03 | 1.00E+01 |
| Benzo(k)fluoranthene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Benzofluoranthene, 3,4- | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Beryllium | 0 | 1.00E+00 | 1.00E-02 | 5.00E+01 | 0.00E+00 |
| Chromium | 10000 | 1.00E+00 | 1.00E-02 | 5.00E+00 | 5.00E+02 |
| Chrysene | 1000 | 1.00E+00 | 2.00E-09 | 5.00E+03 | 1.00E-02 |
| Copper | 100 | 1.00E+00 | 1.00E-02 | 5.00E+04 | 5.00E+04 |
| Dibenz(a,h)anthracene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Fluorene | 1000 | 1.00E+00 | 2.00E-03 | 5.00E+03 | 1.00E+04 |
| Indeno(1,2,3-CD)pyrene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+04 | 0.00E+00 |
| Iron | 10 | 1.00E+00 | 1.00E-02 | 5.00E-01 | 5.00E-02 |
| Lead | 1000 | 1.00E+00 | 2.00E-05 | 5.00E+03 | 1.00E+02 |
| Magnesium | 0 | 1.00E+00 | 2.00E-05 | 5.00E-01 | 0.00E+00 |
| Manganese | 0 | 1.00E+00 | 1.00E-02 | 5.00E+04 | 0.00E+00 |
| Mercury | 10000 | 1.00E+00 | 2.00E-05 | 5.00E+04 | 1.00E+04 |
| Nickel | 10 | 1.00E+00 | 2.00E-05 | 5.00E+02 | 1.00E-01 |
| Phenanthrene | 1000 | 4.00E-01 | 2.00E-05 | 5.00E+03 | 4.00E+01 |
| Pyrene | 0 | 1.00E+00 | 2.00E-09 | 5.00E+01 | 0.00E+00 |
| Selenium | 100 | 1.00E+00 | 1.00E-02 | 5.00E+03 | 5.00E+03 |
| Vanadium | 0 | 1.00E+00 | 2.00E-07 | 5.00E-01 | 0.00E+00 |
| Zinc | 10 | 1.00E+00 | 2.00E-03 | 5.00E+02 | 1.00E+01 |

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Hazardous Substances Found in an Observed Release

| Observed Release Hazardous Substance | Eco-toxicity Value | Persist. Value | Bio-accum. Value | Ecotoxicity/ Persistence/ Bioaccum. Value |
|---|---|---|---|---|
| Aluminum | 100 | 1.00E+00 | 5.00E+01 | 5.00E+03 |
| Chromium | 10000 | 1.00E+00 | 5.00E+00 | 5.00E+04 |
| Cyanide | 1000 | 4.00E-01 | 5.00E-01 | 2.00E+02 |
| Iron | 10 | 1.00E+00 | 5.00E-01 | 5.00E+00 |
| Lead | 1000 | 1.00E+00 | 5.00E+03 | 5.00E+06 |
| Magnesium | 100 | 1.00E+00 | 5.00E-01 | 5.00E+01 |
| Manganese | 100 | 1.00E+00 | 5.00E+04 | 5.00E+06 |
| Selenium | 100 | 1.00E+00 | 5.00E+03 | 5.00E+05 |

| | |
|---|---|
| Ecotoxicity/Mobility/Persistence/Bioaccummulation Value from Source Substances: | 5.00E+08 |
| Ecotoxicity/Mobility/Persistence/Bioaccummulation Value from Observed Hazardous Substances: | 5.00E+06 |
| Ecotoxicity/Mobility/Persistence/Bioaccummulation Factor: | 5.00E+08 |
| Sum of Source Hazardous Waste Quantity Values: | 4.82E+02 |
| Hazardous Waste Quantity Factor: | 100 |
| Waste Characteristics Factor Category: | 320 |

Level I Concentrations

Sample ID: SW-104
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmark Concentrations FRESH | SALT | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|---|
| Aluminum | 2.9E+02 | 0.0E+01 | 0.0E+01 | ppb | YES |
| Lead | 9.4E+00 | 3.2E+00 | 5.6E+00 | ppb | YES |
| Magnesium | 8.2E+03 | 0.0E+01 | 0.0E+01 | ppb | YES |
| Zinc | 6.5E+01 | 1.1E+02 | 8.6E+01 | ppb | NO |

Sample ID: SW-106
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmark Concentrations FRESH | SALT | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|---|
| Aluminum | 2.2E+04 | 0.0E+01 | 0.0E+01 | ppb | YES |
| Arsenic | 1.7E+01 | 1.9E+02 | 3.6E+01 | ppb | NO |
| Barium | 2.1E+02 | 0.0E+01 | 0.0E+01 | ppb | NO |
| Copper | 1.3E+02 | 1.2E+01 | 2.9E+00 | ppb | NO |
| Lead | 4.6E+02 | 3.2E+00 | 5.6E+00 | ppb | YES |
| Magnesium | 2.3E+04 | 0.0E+01 | 0.0E+01 | ppb | YES |
| Mercury | 5.4E-01 | 1.2E-02 | 2.5E-02 | ppb | NO |
| Nickel | 8.0E+01 | 1.6E+02 | 8.3E+00 | ppb | NO |
| Vanadium | 6.1E+01 | 0.0E+01 | 0.0E+01 | ppb | NO |
| Zinc | 1.2E+03 | 1.1E+02 | 8.6E+01 | ppb | NO |

Level II Concentrations

Sample ID: SW-103
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmark Concentrations FRESH | SALT | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|---|
| Magnesium | 8.8E+03 | 0.0E+01 | 0.0E+01 | ppb | YES |

Documentation for SW-103:

Five surface water samples and four sediment samples were collected from the Union Ship Canal. Results are presented on Tables 26 and 27.

Reference: 3 (pgs. 4-18 and 4-19, Tables 26 and 27)

Sample ID: SW-105
Sample Medium: Aqueous
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmark Concentrations FRESH | SALT | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|---|
| Magnesium | 8.7E+03 | 0.0E+01 | 0.0E+01 | ppb | YES |

Sample ID: SW-107
Sample Medium: Aqueous
Location: 0.12 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmark Concentrations FRESH | SALT | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|---|
| Magnesium | 8.7E+03 | 0.0E+01 | 0.0E+01 | ppb | YES |

Sample ID: SD-103
Sample Medium: Sediment
Location: 0.00 miles

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT TARGETS
Hanna Furnace Site - 10/06/95

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmark Concentrations FRESH | SALT | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|---|
| Aluminum | 2.0E+07 | | N.A. | ppb | YES |
| Arsenic | 9.0E+03 | | N.A. | ppb | NO |
| Barium | 1.9E+05 | | N.A. | ppb | NO |
| Beryllium | 3.5E+03 | | N.A. | ppb | NO |
| Cadmium | 1.8E+03 | | N.A. | ppb | NO |
| Chromium | 1.1E+04 | | N.A. | ppb | YES |
| Copper | 2.3E+04 | | N.A. | ppb | NO |
| Iron | 4.3E+07 | | N.A. | ppb | YES |
| Lead | 8.4E+04 | | N.A. | ppb | YES |
| Magnesium | 1.8E+07 | | N.A. | ppb | YES |
| Manganese | 2.5E+06 | | N.A. | ppb | YES |
| Nickel | 1.1E+04 | | N.A. | ppb | NO |
| Vanadium | 2.1E+04 | | N.A. | ppb | NO |
| Zinc | 3.9E+05 | | N.A. | ppb | NO |

Sample ID: SD-104
Sample Medium: Sediment
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmark Concentrations FRESH | SALT | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|---|
| Aluminum | 7.3E+06 | | N.A. | ppb | YES |
| Arsenic | 3.0E+03 | | N.A. | ppb | NO |
| Barium | 8.1E+04 | | N.A. | ppb | NO |
| Benz(a)anthracene | 4.3E+02 | | N.A. | ppb | NO |
| Benzo(a)pyrene | 6.9E+02 | | N.A. | ppb | NO |
| Benzo(j,k)fluorene | 5.9E+02 | | N.A. | ppb | NO |
| Benzo(k)fluoranthene | 7.7E+02 | | N.A. | ppb | NO |
| Benzofluoranthene, 3,4- | 7.9E+02 | | N.A. | ppb | NO |
| Beryllium | 1.0E+03 | | N.A. | ppb | NO |
| Cadmium | 2.2E+03 | | N.A. | ppb | NO |
| Chromium | 4.9E+04 | | N.A. | ppb | YES |
| Chrysene | 7.0E+02 | | N.A. | ppb | NO |
| Copper | 3.1E+04 | | N.A. | ppb | NO |
| Iron | 4.7E+07 | | N.A. | ppb | YES |
| Lead | 1.3E+05 | | N.A. | ppb | YES |
| Magnesium | 6.2E+06 | | N.A. | ppb | YES |
| Manganese | 1.3E+06 | | N.A. | ppb | YES |
| Mercury | 1.0E+02 | | N.A. | ppb | NO |
| Nickel | 1.7E+04 | | N.A. | ppb | NO |
| Pyrene | 7.1E+02 | | N.A. | ppb | NO |
| Vanadium | 2.0E+04 | | N.A. | ppb | NO |
| Zinc | 8.5E+05 | | N.A. | ppb | NO |

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT TARGETS
Hanna Furnace Site - 10/06/95

Sample ID: SD-105
Sample Medium: Sediment
Location: 0.00 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmark Concentrations FRESH | SALT | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|---|
| Acenaphthylene | 4.1E+02 | | N.A. | ppb | NO |
| Aluminum | 6.2E+06 | | N.A. | ppb | YES |
| Anthracene | 3.3E+02 | | N.A. | ppb | NO |
| Arsenic | 2.1E+04 | | N.A. | ppb | NO |
| Barium | 7.7E+04 | | N.A. | ppb | NO |
| Benz(a)anthracene | 2.0E+03 | | N.A. | ppb | NO |
| Benzo(a)pyrene | 2.4E+03 | | N.A. | ppb | NO |
| Benzo(g,h,i)perylene | 9.4E+02 | | N.A. | ppb | NO |
| Benzo(j,k)fluorene | 1.8E+03 | | N.A. | ppb | NO |
| Benzo(k)fluoranthene | 2.2E+03 | | N.A. | ppb | NO |
| Benzofluoranthene, 3,4- | 2.3E+03 | | N.A. | ppb | NO |
| Bis (2-ethylhexyl) phthalate | 7.2E+02 | | N.A. | ppb | NO |
| Cadmium | 2.8E+03 | | N.A. | ppb | NO |
| Chromium | 3.7E+04 | | N.A. | ppb | YES |
| Chrysene | 3.1E+03 | | N.A. | ppb | NO |
| Copper | 8.2E+04 | | N.A. | ppb | NO |
| Iron | 8.2E+07 | | N.A. | ppb | YES |
| Lead | 3.3E+05 | | N.A. | ppb | YES |
| Magnesium | 1.7E+07 | | N.A. | ppb | YES |
| Manganese | 3.0E+06 | | N.A. | ppb | YES |
| Nickel | 2.9E+04 | | N.A. | ppb | NO |
| Phenanthrene | 4.4E+02 | | N.A. | ppb | NO |
| Pyrene | 4.8E+03 | | N.A. | ppb | NO |
| Vanadium | 3.8E+04 | | N.A. | ppb | NO |
| Zinc | 8.0E+05 | | N.A. | ppb | NO |

Sample ID: SD-107
Sample Medium: Sediment
Location: 0.12 miles

| Hazardous Substance | Hazardous Substance Concentration | AWQC Benchmark Concentrations FRESH | SALT | Units | Observed in Upper Aquifer ? |
|---|---|---|---|---|---|
| Acenaphthylene | 6.3E+02 | | N.A. | ppb | NO |
| Acetone | 1.2E+01 | | N.A. | ppb | NO |
| Aluminum | 4.9E+06 | | N.A. | ppb | YES |
| Anthracene | 1.8E+03 | | N.A. | ppb | NO |
| Arsenic | 6.1E+03 | | N.A. | ppb | NO |
| Barium | 7.1E+04 | | N.A. | ppb | NO |

| | | | | |
|---|---|---|---|---|
| Benz(a)anthracene | 2.7E+03 | N.A. | ppb | NO |
| Benzo(a)pyrene | 1.6E+03 | N.A. | ppb | NO |
| Benzo(g,h,i)perylene | 3.4E+02 | N.A. | ppb | NO |
| Benzo(j,k)fluorene | 4.0E+03 | N.A. | ppb | NO |
| Benzo(k)fluoranthene | 1.1E+03 | N.A. | ppb | NO |
| Benzofluoranthene, 3,4- | 1.6E+03 | N.A. | ppb | NO |
| Chromium | 3.9E+04 | N.A. | ppb | YES |
| Chrysene | 2.8E+03 | N.A. | ppb | NO |
| Copper | 1.4E+04 | N.A. | ppb | NO |
| Dibenzofuran | 3.3E+02 | N.A. | ppb | NO |
| Indeno(1,2,3-CD)pyrene | 4.4E+02 | N.A. | ppb | NO |
| Iron | 1.1E+07 | N.A. | ppb | YES |
| Lead | 4.5E+04 | N.A. | ppb | YES |
| Magnesium | 7.3E+06 | N.A. | ppb | YES |
| Manganese | 4.2E+05 | N.A. | ppb | YES |
| Phenanthrene | 3.6E+03 | N.A. | ppb | NO |
| Pyrene | 4.8E+03 | N.A. | ppb | NO |
| Trichlorobenzene, 1,2,4- | 7.6E+02 | N.A. | ppb | NO |
| Vanadium | 1.2E+04 | N.A. | ppb | NO |
| Zinc | 1.6E+05 | N.A. | ppb | NO |

Most Distant Level I Sample

Sample ID: SW-104
Distance from the Probable Point of Entry: 0.00 miles

Most Distant Level II Sample

Sample ID: SW-107
Distance from the Probable Point of Entry: 0.12 miles

Level I Concentrations

| Sensitive Environment | Distance from Probable Point of Entry to Sensitive Env. (miles) | Sensitive Environment Value |
|---|---|---|
| - N/A and/or data not specified | | |

Sum of Sensitive Environments Values: 0

Wetlands

| Wetland | Distance from Probable Point of Entry to Wetland (miles) | Wetlands Frontage (miles) |
|---|---|---|
| - N/A and/or data not specified | | |

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

==========

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

| Sensitive Environment | Distance from Probable Point of Entry to Sensitive Env. (miles) | Sensitive Environment Value |
|---|---|---|
| - N/A and/or data not specified | | |

Sum of Sensitive Environments Values: 0

Wetlands

| Wetland | Distance from Probable Point of Entry to Wetland (miles) | Wetlands Frontage (miles) |
|---|---|---|
| - N/A and/or data not specified | | |

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level II Concentrations Factor: 0.00E+00

## Potential Contamination

### Sensitive Environments

| Type of Surface Water Body | | Sensitive Environment | Sensitive Environment Value |
|---|---|---|---|
| Shallow Area | 4 | Osprey | 75 |
| Shallow Area | 5 | Red-Shouldered Hawk | 75 |
| Shallow Area | 6 | Northern Harrier | 75 |
| Shallow Area | 7 | Common Tern | 75 |
| Shallow Area | 8 | Blandings Turtle | 75 |
| Shallow Area | 9 | Peregrine Falcon | 75 |
| Shallow Area | 10 | Bald Eagle | 75 |

### Wetlands

| Type of Surface Water Body | | Sensitive Environment | Wetlands Frontage | Wetlands Value |
|---|---|---|---|---|
| Shallow Area | 1 | BU-1 Wetland | 1.00 | 25 |
| Shallow Area | 2 | BU-7 Wetland | 1.00 | 25 |
| Shallow Area | 3 | BU-15 Wetland | 1.00 | 25 |

Documentation for Sensitive Environment BU-1 Wetland:

There are three classified wetlands within 3 mile of the site. These wetlands form a part of the Tifft Nature Preserved. The wetland frontage was assumed to be 1 mile for each of these wetlands.

Reference: 3 (Pg. 2-3)

Documentation for Sensitive Environment Osprey:

Endangered and threatened species were identified at the Tifft Nature Preserve. These are listed on Table 1 of the PSA report. These species could potentially forage from Lake Erie.

Reference: 3 (Table 1)

SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT TARGETS
Hanna Furnace Site - 10/06/95

| Type of Surface Water Body | Sum of Sens. Environment Values(Sj) | Sum of Wetland Frontage Values(Wj) | Dilution Weight (Dj) | Dj(Wj+Sj) |
|---|---|---|---|---|
| Shallow Ocean Zone or Great Lake | 525 | 75 | 2.00E-05 | 1.20E-02 |

Sum of Dj(Wj+Sj): 1.20E-02
Sum of Dj(Wj+Sj)/10: 1.20E-03

==========

Potential Contamination Sensitive Environment Factor: 1.20E-03

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT LIKELIHOOD OF EXPOSURE
Hanna Furnace Site - 10/06/95

Likelihood of Exposure

| No. | Source ID | Level of Contamination |
|---|---|---|
| 1 | Fil./Flue Ash Disp. | Level I |
| 2 | Debris Landfill | Level I |
| 3 | Drums/OSA | Level I |
| 4 | Sumps/OSA | Level I |
| 5 | Soil/OSA | Level I |

Likelihood of Exposure Factor: 550

Documentation for Area of Contamination, Source Fil./Flue Ash Disp.:

Area of contamination was measured from Figure 2 of the PSA report.

Reference: 3 (Figure 2)

| Source No. | Hazardous Substance | Depth (ft.) | Concent. | Cancer | RFD | Units |
|---|---|---|---|---|---|---|
| 1 | Aluminum | < 2 | 8.6E+03 | 0.0E+00 | 0.0E+00 | ppm |
| 1 | Antimony | < 2 | 2.6E+01 | 0.0E+00 | 2.3E+02 | ppm |
| 1 | Arsenic | < 2 | 1.3E+01 | 3.3E-01 | 1.7E+02 | ppm |
| 1 | Barium | < 2 | 1.1E+02 | 0.0E+00 | 4.1E+04 | ppm |
| 1 | Beryllium | < 2 | 2.0E+00 | 1.4E-01 | 2.9E+03 | ppm |
| 1 | Cadmium | < 2 | 1.6E+01 | 0.0E+00 | 2.9E+02 | ppm |
| 1 | Chromium | < 2 | 2.2E+02 | 0.0E+00 | 2.9E+03 | ppm |
| 1 | Cobalt | < 2 | 1.9E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 1 | Copper | < 2 | 2.1E+02 | 0.0E+00 | 0.0E+00 | ppm |
| 1 | Cyanide | < 2 | 7.8E+00 | 0.0E+00 | 1.2E+04 | ppm |
| 1 | DDE | < 2 | 3.9E-03 | 1.7E+00 | 0.0E+00 | ppm |
| 1 | Endosulfan (I or II) | < 2 | 5.8E-03 | 0.0E+00 | 3.5E+03 | ppm |
| 1 | Iron | < 2 | 1.7E+05 | 0.0E+00 | 0.0E+00 | ppm |
| 1 | Lead | < 2 | 4.5E+03 | 0.0E+00 | 0.0E+00 | ppm |
| 1 | Magnesium | < 2 | 1.1E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 1 | Manganese | < 2 | 4.8E+03 | 0.0E+00 | 2.9E+03 | ppm |
| 1 | Mercury | < 2 | 1.0E-01 | 0.0E+00 | 1.7E+02 | ppm |
| 1 | Methoxychlor | < 2 | 1.7E-02 | 0.0E+00 | 2.9E+03 | ppm |
| 1 | Nickel | < 2 | 8.9E+01 | 0.0E+00 | 1.2E+04 | ppm |
| 1 | PCBs | < 2 | 2.8E-01 | 7.6E-02 | 0.0E+00 | ppm |
| 1 | Selenium | < 2 | 1.6E+00 | 0.0E+00 | 2.9E+03 | ppm |
| 1 | Thallium | < 2 | 6.8E+00 | 0.0E+00 | 0.0E+00 | ppm |

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT LIKELIHOOD OF EXPOSURE
Hanna Furnace Site - 10/06/95

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | Vanadium | < 2 | 6.5E+01 | 0.0E+00 | 4.1E+03 | ppm |
| 1 | Zinc | < 2 | 4.6E+03 | 0.0E+00 | 1.7E+05 | ppm |
| 2 | Aluminum | < 2 | 1.0E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Antimony | < 2 | 1.6E+01 | 0.0E+00 | 2.3E+02 | ppm |
| 2 | Arsenic | < 2 | 1.5E+01 | 3.3E-01 | 1.7E+02 | ppm |
| 2 | Barium | < 2 | 1.1E+02 | 0.0E+00 | 4.1E+04 | ppm |
| 2 | Benz(a)anthracene | < 2 | 4.0E-01 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Benzo(a)pyrene | < 2 | 4.2E-01 | 8.0E-02 | 0.0E+00 | ppm |
| 2 | Benzo(j,k)fluorene | < 2 | 6.4E-01 | 0.0E+00 | 2.3E+04 | ppm |
| 2 | Benzo(k)fluoranthene | < 2 | 3.7E-01 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Benzofluoranthene, 3,4- | < 2 | 5.4E-01 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Beryllium | < 2 | 1.4E+00 | 1.4E-01 | 2.9E+03 | ppm |
| 2 | Cadmium | < 2 | 5.2E+00 | 0.0E+00 | 2.9E+02 | ppm |
| 2 | Chromium | < 2 | 8.5E+01 | 0.0E+00 | 2.9E+03 | ppm |
| 2 | Chrysene | < 2 | 5.0E-01 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Cobalt | < 2 | 1.6E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Copper | < 2 | 1.8E+02 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Iron | < 2 | 1.6E+05 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Lead | < 2 | 5.0E+02 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Magnesium | < 2 | 1.2E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Manganese | < 2 | 4.9E+03 | 0.0E+00 | 2.9E+03 | ppm |
| 2 | Mercury | < 2 | 1.0E-01 | 0.0E+00 | 1.7E+02 | ppm |
| 2 | Methoxychlor | < 2 | 1.7E-02 | 0.0E+00 | 2.9E+03 | ppm |
| 2 | Nickel | < 2 | 6.2E+01 | 0.0E+00 | 1.2E+04 | ppm |
| 2 | PCBs | < 2 | 7.9E-02 | 7.6E-02 | 0.0E+00 | ppm |
| 2 | Pyrene | < 2 | 6.0E-01 | 0.0E+00 | 1.7E+04 | ppm |
| 2 | Vanadium | < 2 | 5.3E+01 | 0.0E+00 | 4.1E+03 | ppm |
| 2 | Zinc | < 2 | 1.0E+03 | 0.0E+00 | 1.7E+05 | ppm |
| 3 | Aluminum | < 2 | 1.3E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 3 | Antimony | < 2 | 1.2E+01 | 0.0E+00 | 2.3E+02 | ppm |
| 3 | Arsenic | < 2 | 3.5E+00 | 3.3E-01 | 1.7E+02 | ppm |
| 3 | Barium | < 2 | 1.3E+02 | 0.0E+00 | 4.1E+04 | ppm |
| 3 | Beryllium | < 2 | 2.7E+00 | 1.4E-01 | 2.9E+03 | ppm |
| 3 | Cadmium | < 2 | 3.2E+00 | 0.0E+00 | 2.9E+02 | ppm |
| 3 | Chromium | < 2 | 4.5E+01 | 0.0E+00 | 2.9E+03 | ppm |
| 3 | Copper | < 2 | 8.7E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 3 | Iron | < 2 | 4.2E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 3 | Lead | < 2 | 2.1E+02 | 0.0E+00 | 0.0E+00 | ppm |
| 3 | Magnesium | < 2 | 1.4E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 3 | Manganese | < 2 | 1.6E+03 | 0.0E+00 | 2.9E+03 | ppm |
| 3 | Mercury | < 2 | 1.0E-01 | 0.0E+00 | 1.7E+02 | ppm |
| 3 | Nickel | < 2 | 2.2E+01 | 0.0E+00 | 1.2E+04 | ppm |
| 3 | Vanadium | < 2 | 1.8E+01 | 0.0E+00 | 4.1E+03 | ppm |
| 3 | Zinc | < 2 | 1.2E+03 | 0.0E+00 | 1.7E+05 | ppm |
| 4 | Acenaphthene | < 2 | 9.3E+00 | 0.0E+00 | 3.5E+04 | ppm |
| 4 | Acenaphthylene | < 2 | 2.6E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Aluminum | < 2 | 1.5E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Anthracene | < 2 | 4.6E+00 | 0.0E+00 | 1.7E+05 | ppm |
| 4 | Arsenic | < 2 | 9.7E+00 | 3.3E-01 | 1.7E+02 | ppm |
| 4 | Barium | < 2 | 2.2E+02 | 0.0E+00 | 4.1E+04 | ppm |
| 4 | Benz(a)anthracene | < 2 | 9.2E+00 | 0.0E+00 | 0.0E+00 | ppm |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4 | Benzo(a)pyrene | < 2 | 7.6E+00 | 8.0E-02 | 0.0E+00 | ppm |
| 4 | Benzo(g,h,i)perylene | < 2 | 5.0E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Benzo(j,k)fluorene | < 2 | 9.7E+00 | 0.0E+00 | 2.3E+04 | ppm |
| 4 | Benzo(k)fluoranthene | < 2 | 6.5E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Benzofluoranthene, 3,4- | < 2 | 8.3E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Beryllium | < 2 | 2.8E+00 | 1.4E-01 | 2.9E+03 | ppm |
| 4 | Cadmium | < 2 | 9.4E+00 | 0.0E+00 | 2.9E+02 | ppm |
| 4 | Chromium | < 2 | 3.7E+01 | 0.0E+00 | 2.9E+03 | ppm |
| 4 | Chrysene | < 2 | 1.2E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Cobalt | < 2 | 1.0E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Dibenzofuran | < 2 | 3.4E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Fluorene | < 2 | 9.7E+00 | 0.0E+00 | 2.3E+04 | ppm |
| 4 | Indeno(1,2,3-CD)pyrene | < 2 | 5.0E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Iron | < 2 | 5.9E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Lead | < 2 | 5.9E+02 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Magnesium | < 2 | 1.5E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Manganese | < 2 | 2.0E+03 | 0.0E+00 | 2.9E+03 | ppm |
| 4 | Mercury | < 2 | 1.1E+00 | 0.0E+00 | 1.7E+02 | ppm |
| 4 | Methyl Napthalene, 2- | < 2 | 4.2E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Nickel | < 2 | 4.2E+01 | 0.0E+00 | 1.2E+04 | ppm |
| 4 | Phenanthrene | < 2 | 2.9E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Phenol | < 2 | 3.3E+00 | 0.0E+00 | 3.5E+05 | ppm |
| 4 | Pyrene | < 2 | 1.8E+01 | 0.0E+00 | 1.7E+04 | ppm |
| 4 | Vanadium | < 2 | 4.3E+01 | 0.0E+00 | 4.1E+03 | ppm |
| 4 | Zinc | < 2 | 1.2E+03 | 0.0E+00 | 1.7E+05 | ppm |
| 5 | Acenaphthene | < 2 | 3.6E+00 | 0.0E+00 | 3.5E+04 | ppm |
| 5 | Aluminum | < 2 | 3.1E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Anthracene | < 2 | 9.2E-01 | 0.0E+00 | 1.7E+05 | ppm |
| 5 | Antimony | < 2 | 1.5E+01 | 0.0E+00 | 2.3E+02 | ppm |
| 5 | Barium | < 2 | 1.9E+02 | 0.0E+00 | 4.1E+04 | ppm |
| 5 | Benz(a)anthracene | < 2 | 7.8E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Benzo(a)pyrene | < 2 | 1.1E+01 | 8.0E-02 | 0.0E+00 | ppm |
| 5 | Benzo(g,h,i)perylene | < 2 | 5.2E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Benzo(j,k)fluorene | < 2 | 7.3E+00 | 0.0E+00 | 2.3E+04 | ppm |
| 5 | Benzo(k)fluoranthene | < 2 | 3.8E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Benzofluoranthene, 3,4- | < 2 | 1.2E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Beryllium | < 2 | 5.1E+00 | 1.4E-01 | 2.9E+03 | ppm |
| 5 | Chromium | < 2 | 2.4E+01 | 0.0E+00 | 2.9E+03 | ppm |
| 5 | Chrysene | < 2 | 8.1E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Copper | < 2 | 6.6E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Dibenz(a,h)anthracene | < 2 | 2.0E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Fluorene | < 2 | 6.3E-01 | 0.0E+00 | 2.3E+04 | ppm |
| 5 | Indeno(1,2,3-CD)pyrene | < 2 | 6.7E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Iron | < 2 | 3.8E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Lead | < 2 | 2.6E+02 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Magnesium | < 2 | 1.2E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Manganese | < 2 | 1.9E+03 | 0.0E+00 | 2.9E+03 | ppm |
| 5 | Mercury | < 2 | 1.2E+00 | 0.0E+00 | 1.7E+02 | ppm |
| 5 | Nickel | < 2 | 2.0E+01 | 0.0E+00 | 1.2E+04 | ppm |
| 5 | Phenanthrene | < 2 | 3.5E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Pyrene | < 2 | 8.2E+00 | 0.0E+00 | 1.7E+04 | ppm |

| | | | | | | |
|---|---|---|---|---|---|---|
| 5 | Selenium | < 2 | 2.0E+00 | 0.0E+00 | 2.9E+03 | ppm |
| 5 | Vanadium | < 2 | 3.7E+01 | 0.0E+00 | 4.1E+03 | ppm |
| 5 | Zinc | < 2 | 3.9E+02 | 0.0E+00 | 1.7E+05 | ppm |

Documentation for Source Fil./Flue Ash Disp., Contaminants:

Four surface soil samples (SS-101 through SS-104) were collected from locations at the filter cake/flue ash disposal area. Results were presented in Table 14. Average results from sample SS-101 and its duplicate were reported. Where the duplicate was non-detect, the CRQL was used in the average calculation.

Reference: 3 (pg. 4-4 and Table 14)

Documentation for Source Debris Landfill, Contaminants:

Four surface soil samples were collected from the debris landfill (SS-105 through SS-108). These are reported on Table 14 of the PSA report. Analytical data from sample SS-105 was reported for this soil pathway.

Reference: 3 (pg. 4-4 and Table 14)

Documentation for Source Drums/OSA, Contaminants:

Samples from the two drums were collected for laboratory analysis.

Reference: 3 (pg. 4-12)

Documentation for Source Sumps/OSA, Contaminants:

Eight sump liquid (surface water) and sediment samples were collected at the site.

Reference: 3 (pg. 4-13)

Documentation for Source Soil/OSA, Contaminants:

Six surface soil samples were collected from the oil shack area, and the data is reported on Table 23.

Reference: 3 (Table 23)

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 1 Fil./Flue Ash Disp.

Source Hazardous Waste Quantity Value: 38.44

| Hazardous Substance | Toxicity Value |
|---|---|
| Aluminum | 0 |
| Antimony | 10000 |
| Arsenic | 10000 |
| Barium | 10000 |
| Beryllium | 10000 |
| Cadmium | 10000 |
| Chromium | 10000 |
| Cobalt | 1 |
| Copper | 0 |
| Cyanide | 100 |
| DDE | 100 |
| Endosulfan (I or II) | 100 |
| Iron | 0 |
| Lead | 10000 |
| Magnesium | 0 |
| Manganese | 10000 |
| Mercury | 10000 |
| Methoxychlor | 100 |
| Nickel | 100 |
| PCBs | 10000 |
| Selenium | 100 |
| Thallium | 1000 |
| Vanadium | 100 |
| Zinc | 10 |

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 2 Debris Landfill

Source Hazardous Waste Quantity Value: 9.26

| Hazardous Substance | Toxicity Value |
|---|---|
| Aluminum | 0 |
| Antimony | 10000 |
| Arsenic | 10000 |
| Barium | 10000 |
| Benz(a)anthracene | 1000 |
| Benzo(a)pyrene | 10000 |
| Benzo(j,k)fluorene | 100 |
| Benzo(k)fluoranthene | 0 |
| Benzofluoranthene, 3,4- | 10000 |
| Beryllium | 10000 |
| Cadmium | 10000 |
| Chromium | 10000 |
| Chrysene | 0 |
| Cobalt | 1 |
| Copper | 0 |
| Iron | 0 |
| Lead | 10000 |
| Magnesium | 0 |
| Manganese | 10000 |
| Mercury | 10000 |
| Methoxychlor | 100 |
| Nickel | 100 |
| PCBs | 10000 |
| Pyrene | 100 |
| Vanadium | 100 |
| Zinc | 10 |

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 3 Drums/OSA

Source Hazardous Waste Quantity Value: 0.22

| Hazardous Substance | Toxicity Value |
|---|---|
| Aluminum | 0 |
| Antimony | 10000 |
| Arsenic | 10000 |
| Barium | 10000 |
| Beryllium | 10000 |
| Cadmium | 10000 |
| Chromium | 10000 |
| Copper | 0 |
| Iron | 0 |
| Lead | 10000 |
| Magnesium | 0 |
| Manganese | 10000 |
| Mercury | 10000 |
| Nickel | 100 |
| Vanadium | 100 |
| Zinc | 10 |

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 4 Sumps/OSA

Source Hazardous Waste Quantity Value: 0.00

| Hazardous Substance | Toxicity Value |
|---|---|
| Acenaphthene | 10 |
| Acenaphthylene | 0 |
| Aluminum | 0 |
| Anthracene | 10 |
| Arsenic | 10000 |
| Barium | 10000 |
| Benz(a)anthracene | 1000 |
| Benzo(a)pyrene | 10000 |
| Benzo(g,h,i)perylene | 0 |
| Benzo(j,k)fluorene | 100 |
| Benzo(k)fluoranthene | 0 |
| Benzofluoranthene, 3,4- | 10000 |
| Beryllium | 10000 |
| Cadmium | 10000 |
| Chromium | 10000 |
| Chrysene | 0 |
| Cobalt | 1 |
| Dibenzofuran | 0 |
| Fluorene | 100 |
| Indeno(1,2,3-CD)pyrene | 0 |
| Iron | 0 |
| Lead | 10000 |
| Magnesium | 0 |
| Manganese | 10000 |
| Mercury | 10000 |
| Methyl Napthalene, 2- | 0 |
| Nickel | 100 |
| Phenanthrene | 0 |
| Phenol | 1 |
| Pyrene | 100 |
| Vanadium | 100 |
| Zinc | 10 |

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 5 Soil/OSA

Source Hazardous Waste Quantity Value: 4.41

| Hazardous Substance | Toxicity Value |
|---|---|
| Acenaphthene | 10 |
| Aluminum | 0 |
| Anthracene | 10 |
| Antimony | 10000 |
| Barium | 10000 |
| Benz(a)anthracene | 1000 |
| Benzo(a)pyrene | 10000 |
| Benzo(g,h,i)perylene | 0 |
| Benzo(j,k)fluorene | 100 |
| Benzo(k)fluoranthene | 0 |
| Benzofluoranthene, 3,4- | 10000 |
| Beryllium | 10000 |
| Chromium | 10000 |
| Chrysene | 0 |
| Copper | 0 |
| Dibenz(a,h)anthracene | 0 |
| Fluorene | 100 |
| Indeno(1,2,3-CD)pyrene | 0 |
| Iron | 0 |
| Lead | 10000 |
| Magnesium | 0 |
| Manganese | 10000 |
| Mercury | 10000 |
| Nickel | 100 |
| Phenanthrene | 0 |
| Pyrene | 100 |
| Selenium | 100 |
| Vanadium | 100 |
| Zinc | 10 |

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT WASTE CHARACTERISTICS

Hanna Furnace Site - 10/06/95

| | |
|---|---|
| Toxicity Factor: | 1.00E+04 |
| Sum of Source Hazardous Waste Quantity Values: | 5.23E+01 |
| Hazardous Waste Quantity Factor: | 10 |
| Waste Characteristics Factor Category: | 18 |

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT TARGETS
Hanna Furnace Site - 10/06/95

Targets

Level I Population: 0.0 Value: 0.00

Documentation for Level I Population:

No persons live, attend school or daycare, or work on any area of observed contamination or within a 200-foot radius of the site.

Reference:

Level II Population: 0.0 Value: 0.00

Workers: 0.0 Value: 0.00

Documentation for Workers:

No workers are on site.

Reference: 3 (Appendix A)

Resident Individual: Potentia Value: 0.00

Resources: NO Value: 0.00

Documentation for Resources:

The area of observed contamination (and within a 200-foot radius) is not used as a resource.

Reference:

SOIL EXPOSURE PATHWAY RESIDENT POPULATION THREAT TARGETS
Hanna Furnace Site - 10/06/95

| Terrestial Sensitive Environment | Value |
|---|---|
| - N/A and/or data not specified | |

Terrestrial Sensitive Environments Factor: 0.00

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT LIKELIHOOD OF EXPOSURE
Hanna Furnace Site - 10/06/95

Likelihood of Exposure

| No. | Source ID | Level of Contamination | Attractiveness/ Accessibility | Area of Contam. (sq. feet) |
|---|---|---|---|---|
| 1 | Fil./Flue Ash Disp. | Level I | 50 | 140000 |
| 2 | Debris Landfill | Level I | 50 | 315000 |
| 3 | Drums/OSA | Level I | 50 | 0 |
| 4 | Sumps/OSA | Level I | 50 | 100 |
| 5 | Soil/OSA | Level I | 50 | 150000 |

Highest Attractiveness/Accessibility Value: 50
Sum of Eligible Areas Of Contamination (sq. feet): 605100
Area of Contamination Value: 100

Likelihood of Exposure Factor Category: 375

Documentation for Attractiveness/Accessibility, Source Fil./Flue Ash Disp.:

The site is moderately accessible, and is used for public recreation. Household trash and tire tracks from dirt bikes were observed at the site during the site visit. Also, the Union Ship canal is regularly used for recreational fishing.

Reference: 3 (pg. ES-2)

| Source No. | Hazardous Substance | Depth (ft.) | Concent. | Cancer | RFD | Units |
|---|---|---|---|---|---|---|
| 1 | Aluminum | < 2 | 8.6E+03 | 0.0E+00 | 0.0E+00 | ppm |
| 1 | Antimony | < 2 | 2.6E+01 | 0.0E+00 | 2.3E+02 | ppm |
| 1 | Arsenic | < 2 | 1.3E+01 | 3.3E-01 | 1.7E+02 | ppm |
| 1 | Barium | < 2 | 1.1E+02 | 0.0E+00 | 4.1E+04 | ppm |
| 1 | Beryllium | < 2 | 2.0E+00 | 1.4E-01 | 2.9E+03 | ppm |
| 1 | Cadmium | < 2 | 1.6E+01 | 0.0E+00 | 2.9E+02 | ppm |
| 1 | Chromium | < 2 | 2.2E+02 | 0.0E+00 | 2.9E+03 | ppm |
| 1 | Cobalt | < 2 | 1.9E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 1 | Copper | < 2 | 2.1E+02 | 0.0E+00 | 0.0E+00 | ppm |
| 1 | Cyanide | < 2 | 7.8E+00 | 0.0E+00 | 1.2E+04 | ppm |
| 1 | DDE | < 2 | 3.9E-03 | 1.7E+00 | 0.0E+00 | ppm |
| 1 | Endosulfan (I or II) | < 2 | 5.8E-03 | 0.0E+00 | 3.5E+03 | ppm |
| 1 | Iron | < 2 | 1.7E+05 | 0.0E+00 | 0.0E+00 | ppm |
| 1 | Lead | < 2 | 4.5E+03 | 0.0E+00 | 0.0E+00 | ppm |
| 1 | Magnesium | < 2 | 1.1E+04 | 0.0E+00 | 0.0E+00 | ppm |

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT LIKELIHOOD OF EXPOSURE
Hanna Furnace Site - 10/06/95

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | Manganese | < 2 | 4.8E+03 | 0.0E+00 | 2.9E+03 | ppm |
| 1 | Mercury | < 2 | 1.0E-01 | 0.0E+00 | 1.7E+02 | ppm |
| 1 | Methoxychlor | < 2 | 1.7E-02 | 0.0E+00 | 2.9E+03 | ppm |
| 1 | Nickel | < 2 | 8.9E+01 | 0.0E+00 | 1.2E+04 | ppm |
| 1 | PCBs | < 2 | 2.8E-01 | 7.6E-02 | 0.0E+00 | ppm |
| 1 | Selenium | < 2 | 1.6E+00 | 0.0E+00 | 2.9E+03 | ppm |
| 1 | Thallium | < 2 | 6.8E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 1 | Vanadium | < 2 | 6.5E+01 | 0.0E+00 | 4.1E+03 | ppm |
| 1 | Zinc | < 2 | 4.6E+03 | 0.0E+00 | 1.7E+05 | ppm |
| 2 | Aluminum | < 2 | 1.0E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Antimony | < 2 | 1.6E+01 | 0.0E+00 | 2.3E+02 | ppm |
| 2 | Arsenic | < 2 | 1.5E+01 | 3.3E-01 | 1.7E+02 | ppm |
| 2 | Barium | < 2 | 1.1E+02 | 0.0E+00 | 4.1E+04 | ppm |
| 2 | Benz(a)anthracene | < 2 | 4.0E-01 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Benzo(a)pyrene | < 2 | 4.2E-01 | 8.0E-02 | 0.0E+00 | ppm |
| 2 | Benzo(j,k)fluorene | < 2 | 6.4E-01 | 0.0E+00 | 2.3E+04 | ppm |
| 2 | Benzo(k)fluoranthene | < 2 | 3.7E-01 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Benzofluoranthene, 3,4- | < 2 | 5.4E-01 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Beryllium | < 2 | 1.4E+00 | 1.4E-01 | 2.9E+03 | ppm |
| 2 | Cadmium | < 2 | 5.2E+00 | 0.0E+00 | 2.9E+02 | ppm |
| 2 | Chromium | < 2 | 8.5E+01 | 0.0E+00 | 2.9E+03 | ppm |
| 2 | Chrysene | < 2 | 5.0E-01 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Cobalt | < 2 | 1.6E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Copper | < 2 | 1.8E+02 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Iron | < 2 | 1.6E+05 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Lead | < 2 | 5.0E+02 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Magnesium | < 2 | 1.2E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 2 | Manganese | < 2 | 4.9E+03 | 0.0E+00 | 2.9E+03 | ppm |
| 2 | Mercury | < 2 | 1.0E-01 | 0.0E+00 | 1.7E+02 | ppm |
| 2 | Methoxychlor | < 2 | 1.7E-02 | 0.0E+00 | 2.9E+03 | ppm |
| 2 | Nickel | < 2 | 6.2E+01 | 0.0E+00 | 1.2E+04 | ppm |
| 2 | PCBs | < 2 | 7.9E-02 | 7.6E-02 | 0.0E+00 | ppm |
| 2 | Pyrene | < 2 | 6.0E-01 | 0.0E+00 | 1.7E+04 | ppm |
| 2 | Vanadium | < 2 | 5.3E+01 | 0.0E+00 | 4.1E+03 | ppm |
| 2 | Zinc | < 2 | 1.0E+03 | 0.0E+00 | 1.7E+05 | ppm |
| 3 | Aluminum | < 2 | 1.3E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 3 | Antimony | < 2 | 1.2E+01 | 0.0E+00 | 2.3E+02 | ppm |
| 3 | Arsenic | < 2 | 3.5E+00 | 3.3E-01 | 1.7E+02 | ppm |
| 3 | Barium | < 2 | 1.3E+02 | 0.0E+00 | 4.1E+04 | ppm |
| 3 | Beryllium | < 2 | 2.7E+00 | 1.4E-01 | 2.9E+03 | ppm |
| 3 | Cadmium | < 2 | 3.2E+00 | 0.0E+00 | 2.9E+02 | ppm |
| 3 | Chromium | < 2 | 4.5E+01 | 0.0E+00 | 2.9E+03 | ppm |
| 3 | Copper | < 2 | 8.7E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 3 | Iron | < 2 | 4.2E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 3 | Lead | < 2 | 2.1E+02 | 0.0E+00 | 0.0E+00 | ppm |
| 3 | Magnesium | < 2 | 1.4E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 3 | Manganese | < 2 | 1.6E+03 | 0.0E+00 | 2.9E+03 | ppm |
| 3 | Mercury | < 2 | 1.0E-01 | 0.0E+00 | 1.7E+02 | ppm |
| 3 | Nickel | < 2 | 2.2E+01 | 0.0E+00 | 1.2E+04 | ppm |
| 3 | Vanadium | < 2 | 1.8E+01 | 0.0E+00 | 4.1E+03 | ppm |
| 3 | Zinc | < 2 | 1.2E+03 | 0.0E+00 | 1.7E+05 | ppm |

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT LIKELIHOOD OF EXPOSURE
Hanna Furnace Site - 10/06/95

| | | | | | | |
|---|---|---|---|---|---|---|
| 4 | Acenaphthene | < 2 | 9.3E+00 | 0.0E+00 | 3.5E+04 | ppm |
| 4 | Acenaphthylene | < 2 | 2.6E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Aluminum | < 2 | 1.5E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Anthracene | < 2 | 4.6E+00 | 0.0E+00 | 1.7E+05 | ppm |
| 4 | Arsenic | < 2 | 9.7E+00 | 3.3E-01 | 1.7E+02 | ppm |
| 4 | Barium | < 2 | 2.2E+02 | 0.0E+00 | 4.1E+04 | ppm |
| 4 | Benz(a)anthracene | < 2 | 9.2E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Benzo(a)pyrene | < 2 | 7.6E+00 | 8.0E-02 | 0.0E+00 | ppm |
| 4 | Benzo(g,h,i)perylene | < 2 | 5.0E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Benzo(j,k)fluorene | < 2 | 9.7E+00 | 0.0E+00 | 2.3E+04 | ppm |
| 4 | Benzo(k)fluoranthene | < 2 | 6.5E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Benzofluoranthene, 3,4- | < 2 | 8.3E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Beryllium | < 2 | 2.8E+00 | 1.4E-01 | 2.9E+03 | ppm |
| 4 | Cadmium | < 2 | 9.4E+00 | 0.0E+00 | 2.9E+02 | ppm |
| 4 | Chromium | < 2 | 3.7E+01 | 0.0E+00 | 2.9E+03 | ppm |
| 4 | Chrysene | < 2 | 1.2E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Cobalt | < 2 | 1.0E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Dibenzofuran | < 2 | 3.4E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Fluorene | < 2 | 9.7E+00 | 0.0E+00 | 2.3E+04 | ppm |
| 4 | Indeno(1,2,3-CD)pyrene | < 2 | 5.0E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Iron | < 2 | 5.9E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Lead | < 2 | 5.9E+02 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Magnesium | < 2 | 1.5E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Manganese | < 2 | 2.0E+03 | 0.0E+00 | 2.9E+03 | ppm |
| 4 | Mercury | < 2 | 1.1E+00 | 0.0E+00 | 1.7E+02 | ppm |
| 4 | Methyl Napthalene, 2- | < 2 | 4.2E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Nickel | < 2 | 4.2E+01 | 0.0E+00 | 1.2E+04 | ppm |
| 4 | Phenanthrene | < 2 | 2.9E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 4 | Phenol | < 2 | 3.3E+00 | 0.0E+00 | 3.5E+05 | ppm |
| 4 | Pyrene | < 2 | 1.8E+01 | 0.0E+00 | 1.7E+04 | ppm |
| 4 | Vanadium | < 2 | 4.3E+01 | 0.0E+00 | 4.1E+03 | ppm |
| 4 | Zinc | < 2 | 1.2E+03 | 0.0E+00 | 1.7E+05 | ppm |
| 5 | Acenaphthene | < 2 | 3.6E+00 | 0.0E+00 | 3.5E+04 | ppm |
| 5 | Aluminum | < 2 | 3.1E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Anthracene | < 2 | 9.2E-01 | 0.0E+00 | 1.7E+05 | ppm |
| 5 | Antimony | < 2 | 1.5E+01 | 0.0E+00 | 2.3E+02 | ppm |
| 5 | Barium | < 2 | 1.9E+02 | 0.0E+00 | 4.1E+04 | ppm |
| 5 | Benz(a)anthracene | < 2 | 7.8E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Benzo(a)pyrene | < 2 | 1.1E+01 | 8.0E-02 | 0.0E+00 | ppm |
| 5 | Benzo(g,h,i)perylene | < 2 | 5.2E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Benzo(j,k)fluorene | < 2 | 7.3E+00 | 0.0E+00 | 2.3E+04 | ppm |
| 5 | Benzo(k)fluoranthene | < 2 | 3.8E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Benzofluoranthene, 3,4- | < 2 | 1.2E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Beryllium | < 2 | 5.1E+00 | 1.4E-01 | 2.9E+03 | ppm |
| 5 | Chromium | < 2 | 2.4E+01 | 0.0E+00 | 2.9E+03 | ppm |
| 5 | Chrysene | < 2 | 8.1E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Copper | < 2 | 6.6E+01 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Dibenz(a,h)anthracene | < 2 | 2.0E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Fluorene | < 2 | 6.3E-01 | 0.0E+00 | 2.3E+04 | ppm |
| 5 | Indeno(1,2,3-CD)pyrene | < 2 | 6.7E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Iron | < 2 | 3.8E+04 | 0.0E+00 | 0.0E+00 | ppm |

| | | | | | | |
|---|---|---|---|---|---|---|
| 5 | Lead | < 2 | 2.6E+02 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Magnesium | < 2 | 1.2E+04 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Manganese | < 2 | 1.9E+03 | 0.0E+00 | 2.9E+03 | ppm |
| 5 | Mercury | < 2 | 1.2E+00 | 0.0E+00 | 1.7E+02 | ppm |
| 5 | Nickel | < 2 | 2.0E+01 | 0.0E+00 | 1.2E+04 | ppm |
| 5 | Phenanthrene | < 2 | 3.5E+00 | 0.0E+00 | 0.0E+00 | ppm |
| 5 | Pyrene | < 2 | 8.2E+00 | 0.0E+00 | 1.7E+04 | ppm |
| 5 | Selenium | < 2 | 2.0E+00 | 0.0E+00 | 2.9E+03 | ppm |
| 5 | Vanadium | < 2 | 3.7E+01 | 0.0E+00 | 4.1E+03 | ppm |
| 5 | Zinc | < 2 | 3.9E+02 | 0.0E+00 | 1.7E+05 | ppm |

Documentation for Source Fil./Flue Ash Disp., Contaminants:

Four surface soil samples (SS-101 through SS-104) were collected from locations at the filter cake/flue ash disposal area. Results were presented in Table 14. Average results from sample SS-101 and its duplicate were reported. Where the duplicate was non-detect, the CRQL was used in the average calculation.

Reference: 3 (pg. 4-4 and Table 14)

Documentation for Source Debris Landfill, Contaminants:

Four surface soil samples were collected from the debris landfill (SS-105 through SS-108). These are reported on Table 14 of the PSA report. Analytical data from sample SS-105 was reported for this soil pathway.

Reference: 3 (pg. 4-4 and Table 14)

Documentation for Source Drums/OSA, Contaminants:

Samples from the two drums were collected for laboratory analysis.

Reference: 3 (pg. 4-12)

Documentation for Source Sumps/OSA, Contaminants:

Eight sump liquid (surface water) and sediment samples were collected at the site.

Reference: 3 (pg. 4-13)

Documentation for Source Soil/OSA, Contaminants:

Six surface soil samples were collected from the oil shack area, and the data is reported on Table 23.

Reference: 3 (Table 23)

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 1 Fil./Flue Ash Disp.

Source Hazardous Waste Quantity Value: 38.44

| Hazardous Substance | Toxicity Value |
|---|---|
| Aluminum | 0 |
| Antimony | 10000 |
| Arsenic | 10000 |
| Barium | 10000 |
| Beryllium | 10000 |
| Cadmium | 10000 |
| Chromium | 10000 |
| Cobalt | 1 |
| Copper | 0 |
| Cyanide | 100 |
| DDE | 100 |
| Endosulfan (I or II) | 100 |
| Iron | 0 |
| Lead | 10000 |
| Magnesium | 0 |
| Manganese | 10000 |
| Mercury | 10000 |
| Methoxychlor | 100 |
| Nickel | 100 |
| PCBs | 10000 |
| Selenium | 100 |
| Thallium | 1000 |
| Vanadium | 100 |
| Zinc | 10 |

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 2 Debris Landfill

Source Hazardous Waste Quantity Value: 9.26

| Hazardous Substance | Toxicity Value |
|---|---|
| Aluminum | 0 |
| Antimony | 10000 |
| Arsenic | 10000 |
| Barium | 10000 |
| Benz(a)anthracene | 1000 |
| Benzo(a)pyrene | 10000 |
| Benzo(j,k)fluorene | 100 |
| Benzo(k)fluoranthene | 0 |
| Benzofluoranthene, 3,4- | 10000 |
| Beryllium | 10000 |
| Cadmium | 10000 |
| Chromium | 10000 |
| Chrysene | 0 |
| Cobalt | 1 |
| Copper | 0 |
| Iron | 0 |
| Lead | 10000 |
| Magnesium | 0 |
| Manganese | 10000 |
| Mercury | 10000 |
| Methoxychlor | 100 |
| Nickel | 100 |
| PCBs | 10000 |
| Pyrene | 100 |
| Vanadium | 100 |
| Zinc | 10 |

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 3 Drums/OSA

Source Hazardous Waste Quantity Value: 0.22

| Hazardous Substance | Toxicity Value |
|---|---|
| Aluminum | 0 |
| Antimony | 10000 |
| Arsenic | 10000 |
| Barium | 10000 |
| Beryllium | 10000 |
| Cadmium | 10000 |
| Chromium | 10000 |
| Copper | 0 |
| Iron | 0 |
| Lead | 10000 |
| Magnesium | 0 |
| Manganese | 10000 |
| Mercury | 10000 |
| Nickel | 100 |
| Vanadium | 100 |
| Zinc | 10 |

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 4 Sumps/OSA

Source Hazardous Waste Quantity Value: 0.00

| Hazardous Substance | Toxicity Value |
|---|---|
| Acenaphthene | 10 |
| Acenaphthylene | 0 |
| Aluminum | 0 |
| Anthracene | 10 |
| Arsenic | 10000 |
| Barium | 10000 |
| Benz(a)anthracene | 1000 |
| Benzo(a)pyrene | 10000 |
| Benzo(g,h,i)perylene | 0 |
| Benzo(j,k)fluorene | 100 |
| Benzo(k)fluoranthene | 0 |
| Benzofluoranthene, 3,4- | 10000 |
| Beryllium | 10000 |
| Cadmium | 10000 |
| Chromium | 10000 |
| Chrysene | 0 |
| Cobalt | 1 |
| Dibenzofuran | 0 |
| Fluorene | 100 |
| Indeno(1,2,3-CD)pyrene | 0 |
| Iron | 0 |
| Lead | 10000 |
| Magnesium | 0 |
| Manganese | 10000 |
| Mercury | 10000 |
| Methyl Napthalene, 2- | 0 |
| Nickel | 100 |
| Phenanthrene | 0 |
| Phenol | 1 |
| Pyrene | 100 |
| Vanadium | 100 |
| Zinc | 10 |

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 5 Soil/OSA

Source Hazardous Waste Quantity Value: 4.41

| Hazardous Substance | Toxicity Value |
|---|---|
| Acenaphthene | 10 |
| Aluminum | 0 |
| Anthracene | 10 |
| Antimony | 10000 |
| Barium | 10000 |
| Benz(a)anthracene | 1000 |
| Benzo(a)pyrene | 10000 |
| Benzo(g,h,i)perylene | 0 |
| Benzo(j,k)fluorene | 100 |
| Benzo(k)fluoranthene | 0 |
| Benzofluoranthene, 3,4- | 10000 |
| Beryllium | 10000 |
| Chromium | 10000 |
| Chrysene | 0 |
| Copper | 0 |
| Dibenz(a,h)anthracene | 0 |
| Fluorene | 100 |
| Indeno(1,2,3-CD)pyrene | 0 |
| Iron | 0 |
| Lead | 10000 |
| Magnesium | 0 |
| Manganese | 10000 |
| Mercury | 10000 |
| Nickel | 100 |
| Phenanthrene | 0 |
| Pyrene | 100 |
| Selenium | 100 |
| Vanadium | 100 |
| Zinc | 10 |

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS

Hanna Furnace Site - 10/06/95

| | |
|---|---|
| Toxicity Factor: | 1.00E+04 |
| Sum of Source Hazardous Waste Quantity Values: | 5.23E+01 |
| Hazardous Waste Quantity Factor: | 10 |
| Waste Characteristics Factor Category: | 18 |

SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT TARGETS
Hanna Furnace Site - 10/06/95

Nearby Individual

Population within 1/4 mile: 500.0

Nearby Individual Value: 1.0

Population Within 1 Mile

| Travel Distance Category | Number of People | Value |
|---|---|---|
| > 0 to 1/4 mile | 500.0 | 1.3 |
| > 1/4 to 1/2 mile | 2500.0 | 2.0 |
| > 1/2 to 1 mile | 3000.0 | 1.0 |
| | Population Within 1 Mile Factor: | 4.0 |

Documentation for Population > 0 to 1/4 mile Distance Category:

Refer to the population description from the groundwater pathway.

Reference: 3 (pg. 2-3)

AIR PATHWAY LIKELIHOOD OF RELEASE
Hanna Furnace Site - 10/06/95

OBSERVED RELEASE

| No. | Sample ID | Distance (miles) | Level of Contamination |
|---|---|---|---|

- N/A and/or data not specified

==========

Observed Release Factor: 0

Gas Migration Potential

GAS POTENTIAL TO RELEASE

| Source ID | Source Type | Gas Contain. Value (A) | Gas Source Type Value (B) | Gas Migrtn. Potent. Value (C) | Sum (B+C) | Gas Potential to Rel. Value A(B+C) |
|---|---|---|---|---|---|---|
| Fil./Flue Ash Disp. | Landfill | 10 | 11 | 11 | 22 | 220 |
| Debris Landfill | Landfill | 10 | 11 | 11 | 22 | 220 |
| Drums/OSA | Drums | 10 | 0 | 11 | 11 | 110 |
| Sumps/OSA | Contaminated Soil | 10 | 0 | 11 | 11 | 110 |
| Soil/OSA | Contaminated Soil | 10 | 19 | 11 | 30 | 300 |

Gas Potential to Release Factor: 300

Documentation for Gas Containment, Source Fil./Flue Ash Disp.:

For all sources, a containment factor of 10 was specified because although a soil cover exists at the site, waste (debris and flue ash) are uncovered in some areas and some vegetation exists at the site, but it is not resistent to gas or particulate migration.

Reference: 3

Documentation for Source Type, Source Fil./Flue Ash Disp.:

The filter cake/flue ash disposal area is a landfill.

Reference: 3

Documentation for Source Type, Source Debris Landfill:

The debris landfill is a landfill.

Reference: 3

Documentation for Source Type, Source Drums/OSA:

Two drums are located north of the OSA area.

Reference: 3 (pg. 3-3)

Documentation for Source Type, Source Sumps/OSA:

There are several sumps throughout the site. These sumps contain runoff from the site, probably mostly rainwater. These sumps also contain sediment. It is the sediment in the sumps that is most likely the source of contamination at the site.

Reference:

Documentation for Source Type, Source Soil/OSA:

Surface soil samples were collected throughout the site. Analytical results indicate the presence of chemicals at concentrations to constitute an observed release. Therefore, an area of observed contamination can be defined.

Reference: 3

Source: Fil./Flue Ash Disp.

| Gaseous Hazardous Substance | Hazardous Substance Gas Migration Potential Value |
|---|---|
| DDE | 6 |
| Endosulfan (I or II) | 11 |
| Mercury | 11 |
| Methoxychlor | 6 |
| PCBs | 11 |

Average of Gas Migration Potential Value for 3 Hazardous Substances: 11.000

Gas Migration Potential Value From Table 6-7: 11

Source: Debris Landfill

| Gaseous Hazardous Substance | Hazardous Substance Gas Migration Potential Value |
|---|---|
| Benz(a)anthracene | 6 |
| Benzo(a)pyrene | 6 |
| Benzo(j,k)fluorene | 6 |
| Benzo(k)fluoranthene | 6 |
| Benzofluoranthene, 3,4- | 6 |
| Chrysene | 6 |
| Mercury | 11 |
| Methoxychlor | 6 |
| PCBs | 11 |
| Pyrene | 6 |

Average of Gas Migration Potential Value for 3 Hazardous Substances: 9.333

Gas Migration Potential Value From Table 6-7: 11

Source: Drums/OSA

| Gaseous Hazardous Substance | Hazardous Substance Gas Migration Potential Value |
|---|---|
| Mercury | 11 |

Average of Gas Migration Potential Value for 3 Hazardous Substances: 11.000

Gas Migration Potential Value From Table 6-7: 11

Source: Sumps/OSA

| Gaseous Hazardous Substance | Hazardous Substance Gas Migration Potential Value |
|---|---|
| Acenaphthene | 11 |
| Acenaphthylene | 11 |
| Anthracene | 6 |
| Benz(a)anthracene | 6 |
| Benzo(a)pyrene | 6 |
| Benzo(j,k)fluorene | 6 |
| Benzo(k)fluoranthene | 6 |
| Benzofluoranthene, 3,4- | 6 |
| Chrysene | 6 |
| Dibenzofuran | 11 |
| Fluorene | 11 |
| Mercury | 11 |
| Methyl Napthalene, 2- | 11 |
| Phenanthrene | 11 |
| Phenol | 11 |
| Pyrene | 6 |

Average of Gas Migration Potential Value for 3 Hazardous Substances: 11.000

Gas Migration Potential Value From Table 6-7: 11

Source: Soil/OSA

| Gaseous Hazardous Substance | Hazardous Substance Gas Migration Potential Value |
|---|---|
| Acenaphthene | 11 |
| Anthracene | 6 |
| Benz(a)anthracene | 6 |
| Benzo(a)pyrene | 6 |
| Benzo(j,k)fluorene | 6 |
| Benzo(k)fluoranthene | 6 |
| Benzofluoranthene, 3,4- | 6 |
| Chrysene | 6 |
| Fluorene | 11 |
| Mercury | 11 |
| Phenanthrene | 11 |
| Pyrene | 6 |

Average of Gas Migration Potential Value for 3 Hazardous Substances: 11.000

Gas Migration Potential Value From Table 6-7: 11

AIR PATHWAY LIKELIHOOD OF RELEASE
Hanna Furnace Site - 10/06/95

Particulate Migration Potential

PARTICULATE POTENTIAL TO RELEASE

| Source ID | Source Type | Partic. Contain. Value (A) | Partic. Source Type Value (B) | Partic. Migrtn. Potent. Value (C) | Sum (B+C) | Partic. Potential to Rel. Value A(B+C) |
|---|---|---|---|---|---|---|
| Fil./Flue Ash Disp. | Landfill | 10 | 22 | 6 | 28 | 280 |
| Debris Landfill | Landfill | 10 | 22 | 6 | 28 | 280 |
| Drums/OSA | Drums | 10 | 0 | 6 | 6 | 60 |
| Sumps/OSA | Contaminated Soil | 10 | 0 | 6 | 6 | 60 |
| Soil/OSA | Contaminated Soil | 10 | 22 | 6 | 28 | 280 |

Particulate Potential to Release Factor: 280

Documentation for Source Type, Source Fil./Flue Ash Disp.:

The filter cake/flue ash disposal area is a landfill.

Reference: 3

Documentation for Source Type, Source Debris Landfill:

The debris landfill is a landfill.

Reference: 3

Documentation for Source Type, Source Drums/OSA:

Two drums are located north of the OSA area.

Reference: 3 (pg. 3-3)

Documentation for Source Type, Source Sumps/OSA:

There are several sumps throughout the site. These sumps contain runoff from the site, probably mostly rainwater. These sumps also contain sediment. It is the sediment in the sumps that is most likely the source of contamination at the site.

Reference:

Documentation for Source Type, Source Soil/OSA:

Surface soil samples were collected throughout the site. Analytical results indicate the presence of chemicals at concentrations to constitute an observed release. Therefore, an area of observed contamination can be defined.

Reference: 3

Documentation for Particulate Migration Potential:

Values were read from Figure 6-2 of the HRS rule.

Reference:

Source: Fil./Flue Ash Disp.

| Particulate Hazardous Substance |
|---|
| Aluminum |
| Antimony |
| Arsenic |
| Barium |
| Beryllium |
| Cadmium |
| Chromium |
| Cobalt |
| Copper |
| Cyanide |
| DDE |
| Endosulfan (I or II) |
| Iron |
| Lead |
| Magnesium |
| Manganese |
| Mercury |
| Methoxychlor |
| Nickel |
| PCBs |
| Selenium |
| Thallium |
| Vanadium |
| Zinc |

Source: Debris Landfill

| Particulate Hazardous Substance |
|---|
| Aluminum |
| Antimony |
| Arsenic |
| Barium |
| Benz(a)anthracene |
| Benzo(a)pyrene |
| Benzo(j,k)fluorene |
| Benzo(k)fluoranthene |
| Benzofluoranthene, 3,4- |
| Beryllium |
| Cadmium |
| Chromium |
| Chrysene |
| Cobalt |
| Copper |
| Iron |
| Lead |
| Magnesium |
| Manganese |
| Mercury |
| Methoxychlor |
| Nickel |
| PCBs |
| Pyrene |
| Vanadium |
| Zinc |

Source: Drums/OSA

| Particulate Hazardous Substance |
|---|
| Aluminum |
| Antimony |
| Arsenic |
| Barium |
| Beryllium |
| Cadmium |
| Chromium |
| Copper |
| Iron |
| Lead |
| Magnesium |
| Manganese |
| Mercury |
| Nickel |
| Vanadium |
| Zinc |

Source: Sumps/OSA

| Particulate Hazardous Substance |
|---|
| Acenaphthene |
| Acenaphthylene |
| Aluminum |
| Anthracene |
| Arsenic |
| Barium |
| Benz(a)anthracene |
| Benzo(a)pyrene |
| Benzo(g,h,i)perylene |
| Benzo(j,k)fluorene |
| Benzo(k)fluoranthene |
| Benzofluoranthene, 3,4- |
| Beryllium |
| Cadmium |
| Chromium |
| Chrysene |
| Cobalt |
| Dibenzofuran |
| Fluorene |
| Indeno(1,2,3-CD)pyrene |
| Iron |
| Lead |
| Magnesium |
| Manganese |
| Mercury |
| Methyl Napthalene, 2- |
| Nickel |
| Phenanthrene |
| Pyrene |
| Vanadium |
| Zinc |

Source: Soil/OSA

| Particulate Hazardous Substance |
|---|
| Acenaphthene |
| Aluminum |
| Anthracene |
| Antimony |
| Barium |
| Benz(a)anthracene |
| Benzo(a)pyrene |
| Benzo(g,h,i)perylene |
| Benzo(j,k)fluorene |
| Benzo(k)fluoranthene |
| Benzofluoranthene, 3,4- |
| Beryllium |
| Chromium |
| Chrysene |
| Copper |
| Dibenz(a,h)anthracene |
| Fluorene |
| Indeno(1,2,3-CD)pyrene |
| Iron |
| Lead |
| Magnesium |
| Manganese |
| Mercury |
| Nickel |
| Phenanthrene |
| Pyrene |
| Selenium |
| Vanadium |
| Zinc |

AIR PATHWAY WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 1 Fil./Flue Ash Disp.

Source Hazardous Waste Quantity Value: 384.35

| Hazardous Substance | Toxicity Value | Gas Mobility Value | Particulate Mobility Value | Toxicity/ Mobility Value |
|---|---|---|---|---|
| Aluminum | 100 | NA | 2.00E-04 | 2.00E-02 |
| Antimony | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Arsenic | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Barium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Beryllium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Cadmium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Chromium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Cobalt | 1 | NA | 2.00E-04 | 2.00E-04 |
| Copper | 100 | NA | 2.00E-04 | 2.00E-02 |
| Cyanide | 100 | NA | 2.00E-04 | 2.00E-02 |
| DDE | 100 | 2.00E-03 | 2.00E-04 | 2.00E-01 |
| Endosulfan (I or II) | 100 | 2.00E-03 | 2.00E-04 | 2.00E-01 |
| Iron | 100 | NA | 2.00E-04 | 2.00E-02 |
| Lead | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Magnesium | 100 | NA | 2.00E-04 | 2.00E-02 |
| Manganese | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Mercury | 10000 | 2.00E-01 | 2.00E-04 | 2.00E+03 |
| Methoxychlor | 100 | 2.00E-03 | 2.00E-04 | 2.00E-01 |
| Nickel | 100 | NA | 2.00E-04 | 2.00E-02 |
| PCBs | 10000 | 2.00E-02 | 2.00E-04 | 2.00E+02 |
| Selenium | 100 | NA | 2.00E-04 | 2.00E-02 |
| Thallium | 1000 | NA | 2.00E-04 | 2.00E-01 |
| Vanadium | 100 | NA | 2.00E-04 | 2.00E-02 |
| Zinc | 10 | NA | 2.00E-04 | 2.00E-03 |

AIR PATHWAY WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 2 Debris Landfill

Source Hazardous Waste Quantity Value: 92.65

| Hazardous Substance | Toxicity Value | Gas Mobility Value | Particulate Mobility Value | Toxicity/ Mobility Value |
|---|---|---|---|---|
| Aluminum | 100 | NA | 2.00E-04 | 2.00E-02 |
| Antimony | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Arsenic | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Barium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Benz(a)anthracene | 1000 | 2.00E-04 | 2.00E-04 | 2.00E-01 |
| Benzo(a)pyrene | 10000 | 2.00E-04 | 2.00E-04 | 2.00E+00 |
| Benzo(j,k)fluorene | 100 | 2.00E-04 | 2.00E-04 | 2.00E-02 |
| Benzo(k)fluoranthene | 100 | 2.00E-04 | 2.00E-04 | 2.00E-02 |
| Benzofluoranthene, 3,4- | 10000 | 2.00E-03 | 2.00E-04 | 2.00E+01 |
| Beryllium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Cadmium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Chromium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Chrysene | 100 | 2.00E-04 | 2.00E-04 | 2.00E-02 |
| Cobalt | 1 | NA | 2.00E-04 | 2.00E-04 |
| Copper | 100 | NA | 2.00E-04 | 2.00E-02 |
| Iron | 100 | NA | 2.00E-04 | 2.00E-02 |
| Lead | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Magnesium | 100 | NA | 2.00E-04 | 2.00E-02 |
| Manganese | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Mercury | 10000 | 2.00E-01 | 2.00E-04 | 2.00E+03 |
| Methoxychlor | 100 | 2.00E-03 | 2.00E-04 | 2.00E-01 |
| Nickel | 100 | NA | 2.00E-04 | 2.00E-02 |
| PCBs | 10000 | 2.00E-02 | 2.00E-04 | 2.00E+02 |
| Pyrene | 100 | 2.00E-03 | 2.00E-04 | 2.00E-01 |
| Vanadium | 100 | NA | 2.00E-04 | 2.00E-02 |
| Zinc | 10 | NA | 2.00E-04 | 2.00E-03 |

AIR PATHWAY WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 3 Drums/OSA

Source Hazardous Waste Quantity Value: 0.22

| Hazardous Substance | Toxicity Value | Gas Mobility Value | Particulate Mobility Value | Toxicity/ Mobility Value |
|---|---|---|---|---|
| Aluminum | 100 | NA | 2.00E-04 | 2.00E-02 |
| Antimony | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Arsenic | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Barium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Beryllium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Cadmium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Chromium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Copper | 100 | NA | 2.00E-04 | 2.00E-02 |
| Iron | 100 | NA | 2.00E-04 | 2.00E-02 |
| Lead | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Magnesium | 100 | NA | 2.00E-04 | 2.00E-02 |
| Manganese | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Mercury | 10000 | 2.00E-01 | 2.00E-04 | 2.00E+03 |
| Nickel | 100 | NA | 2.00E-04 | 2.00E-02 |
| Vanadium | 100 | NA | 2.00E-04 | 2.00E-02 |
| Zinc | 10 | NA | 2.00E-04 | 2.00E-03 |

AIR PATHWAY WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 4 Sumps/OSA

Source Hazardous Waste Quantity Value: 0.00

| Hazardous Substance | Toxicity Value | Gas Mobility Value | Particulate Mobility Value | Toxicity/ Mobility Value |
|---|---|---|---|---|
| Acenaphthene | 10 | 2.00E-01 | 2.00E-04 | 2.00E+00 |
| Acenaphthylene | 100 | 2.00E-02 | 2.00E-04 | 2.00E+00 |
| Aluminum | 100 | NA | 2.00E-04 | 2.00E-02 |
| Anthracene | 10 | 2.00E-03 | 2.00E-04 | 2.00E-02 |
| Arsenic | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Barium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Benz(a)anthracene | 1000 | 2.00E-04 | 2.00E-04 | 2.00E-01 |
| Benzo(a)pyrene | 10000 | 2.00E-04 | 2.00E-04 | 2.00E+00 |
| Benzo(g,h,i)perylene | 100 | NA | 2.00E-04 | 2.00E-02 |
| Benzo(j,k)fluorene | 100 | 2.00E-04 | 2.00E-04 | 2.00E-02 |
| Benzo(k)fluoranthene | 100 | 2.00E-04 | 2.00E-04 | 2.00E-02 |
| Benzofluoranthene, 3,4- | 10000 | 2.00E-03 | 2.00E-04 | 2.00E+01 |
| Beryllium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Cadmium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Chromium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Chrysene | 100 | 2.00E-04 | 2.00E-04 | 2.00E-02 |
| Cobalt | 1 | NA | 2.00E-04 | 2.00E-04 |
| Dibenzofuran | 100 | 2.00E-02 | 2.00E-04 | 2.00E+00 |
| Fluorene | 100 | 2.00E-01 | 2.00E-04 | 2.00E+01 |
| Indeno(1,2,3-CD)pyrene | 100 | NA | 2.00E-04 | 2.00E-02 |
| Iron | 100 | NA | 2.00E-04 | 2.00E-02 |
| Lead | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Magnesium | 100 | NA | 2.00E-04 | 2.00E-02 |
| Manganese | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Mercury | 10000 | 2.00E-01 | 2.00E-04 | 2.00E+03 |
| Methyl Napthalene, 2- | 100 | 2.00E-01 | 2.00E-04 | 2.00E+01 |
| Nickel | 100 | NA | 2.00E-04 | 2.00E-02 |
| Phenanthrene | 100 | 2.00E-02 | 2.00E-04 | 2.00E+00 |
| Phenol | 1 | 1.00E+00 | NA | 1.00E+00 |
| Pyrene | 100 | 2.00E-03 | 2.00E-04 | 2.00E-01 |
| Vanadium | 100 | NA | 2.00E-04 | 2.00E-02 |
| Zinc | 10 | NA | 2.00E-04 | 2.00E-03 |

AIR PATHWAY WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Source: 5 Soil/OSA

Source Hazardous Waste Quantity Value: 4.41

| Hazardous Substance | Toxicity Value | Gas Mobility Value | Particulate Mobility Value | Toxicity/ Mobility Value |
|---|---|---|---|---|
| Acenaphthene | 10 | 2.00E-01 | 2.00E-04 | 2.00E+00 |
| Aluminum | 100 | NA | 2.00E-04 | 2.00E-02 |
| Anthracene | 10 | 2.00E-03 | 2.00E-04 | 2.00E-02 |
| Antimony | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Barium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Benz(a)anthracene | 1000 | 2.00E-04 | 2.00E-04 | 2.00E-01 |
| Benzo(a)pyrene | 10000 | 2.00E-04 | 2.00E-04 | 2.00E+00 |
| Benzo(g,h,i)perylene | 100 | NA | 2.00E-04 | 2.00E-02 |
| Benzo(j,k)fluorene | 100 | 2.00E-04 | 2.00E-04 | 2.00E-02 |
| Benzo(k)fluoranthene | 100 | 2.00E-04 | 2.00E-04 | 2.00E-02 |
| Benzofluoranthene, 3,4- | 10000 | 2.00E-03 | 2.00E-04 | 2.00E+01 |
| Beryllium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Chromium | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Chrysene | 100 | 2.00E-04 | 2.00E-04 | 2.00E-02 |
| Copper | 100 | NA | 2.00E-04 | 2.00E-02 |
| Dibenz(a,h)anthracene | 100 | NA | 2.00E-04 | 2.00E-02 |
| Fluorene | 100 | 2.00E-01 | 2.00E-04 | 2.00E+01 |
| Indeno(1,2,3-CD)pyrene | 100 | NA | 2.00E-04 | 2.00E-02 |
| Iron | 100 | NA | 2.00E-04 | 2.00E-02 |
| Lead | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Magnesium | 100 | NA | 2.00E-04 | 2.00E-02 |
| Manganese | 10000 | NA | 2.00E-04 | 2.00E+00 |
| Mercury | 10000 | 2.00E-01 | 2.00E-04 | 2.00E+03 |
| Nickel | 100 | NA | 2.00E-04 | 2.00E-02 |
| Phenanthrene | 100 | 2.00E-02 | 2.00E-04 | 2.00E+00 |
| Pyrene | 100 | 2.00E-03 | 2.00E-04 | 2.00E-01 |
| Selenium | 100 | NA | 2.00E-04 | 2.00E-02 |
| Vanadium | 100 | NA | 2.00E-04 | 2.00E-02 |
| Zinc | 10 | NA | 2.00E-04 | 2.00E-03 |

AIR PATHWAY WASTE CHARACTERISTICS
Hanna Furnace Site - 10/06/95

Hazardous Substances Found in an Observed Release

| Sample ID | Observed Release Hazardous Substance | Particulate Toxicity/ Mobility Value | Gas Toxicity/ Mobility Value |
|---|---|---|---|

- N/A and/or data not specified

| | |
|---|---|
| Toxicity/Mobility Value from Source Hazardous Substances: | 2.00E+03 |
| Toxicity/Mobility Value from Observed Release Hazardous Substances: | 0.00E+00 |
| Toxicity/Mobility Factor: | 2.00E+03 |
| Sum of Source Hazardous Waste Quantity Values: | 4.82E+02 |
| Hazardous Waste Quantity Factor: | 100 |
| Waste Characteristics Factor Category: | 18 |

AIR PATHWAY TARGETS
Hanna Furnace Site - 10/06/95

Actual Contamination

| No. | Sample ID | Distance (miles) | Level of Contamination |
|---|---|---|---|

- N/A and/or data not specified

Potential Contamination

| Distance Categories Subject to Potential Contamination | Population | Value |
|---|---|---|
| Onsite | 0.0 | 0.0000 |
| > 0 to 1/4 mile | 500.0 | 13.1000 |
| > 1/4 to 1/2 mile | 2500.0 | 8.8000 |
| > 1/2 to 1 mile | 3000.0 | 2.6000 |
| > 1 to 2 miles | 4000.0 | 2.7000 |
| > 2 to 3 miles | 90000.0 | 12.0000 |
| > 3 to 4 miles | 90000.0 | 7.3000 |
| | Potential Contaminantion Factor: | 47.0000 |

Documentation for Population > 0 to 1/4 mile Distance Category:

Population within a 1-mile radius of the site is 6,000 people, 2-mile radius is >10,000, and 3-mile radius is >100,000.

Reference: 3 (EPA Form, Appendix A)

## Nearest Individual Factor

Level of Contamination: Potential
Distance in miles: > 0 to 1

Nearest Individual Value: 7

Documentation for Nearest Individual:

The closet residential area is located 0.25 miles to the south in the City of Lackawanna.

Reference: 3 (pg. 2-2)

## Resources

Resource Use: YES

Resource Value: 5

Documentation for Resources:

The south part recreation area is located 0.5 miles southeast of the site.

Reference: 3 (pg. 2-2)

Actual Contamination, Sensitive Environments

| Sensitive Environment | Distance (miles) | Sensitive Environment Value |
|---|---|---|
| - N/A and/or data not specified | | |

Actual Contamination, Wetlands

| Distance Category | Wetland Acreage | Wetland Acreage Value |
|---|---|---|
| - N/A and/or data not specified | | |

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Sensitive Environments Actual Contamination Factor: 0.000
(Sum of Sensitive Environments + Wetlands Values)

Potential Contamination, Sensitive Environments

| Sensitive Environment | Distance (miles) | Sensitive Environment Value | Distance Weight | Weighted Value/10 |
|---|---|---|---|---|
| Nature Preserve | 0.500 | 75 | 0.0540 | 0.405 |
| Woodland Bluegrass | 3.000 | 75 | 0.0023 | 0.017 |
| Pink Wintergreen | 3.000 | 75 | 0.0023 | 0.017 |
| Small Skullcap | 3.000 | 75 | 0.0023 | 0.017 |
| Harbinger-of-Spring | 3.000 | 75 | 0.0023 | 0.017 |
| Osprey | 0.500 | 75 | 0.0540 | 0.405 |
| Red-Shouldered Hawk | 0.500 | 75 | 0.0540 | 0.405 |
| Northern Harrier | 0.500 | 75 | 0.0540 | 0.405 |
| Common Tern | 0.500 | 75 | 0.0540 | 0.405 |
| Blandings Turtle | 0.500 | 75 | 0.0540 | 0.405 |
| Peregrine Falcon | 0.500 | 75 | 0.0540 | 0.405 |
| Bald Eagle | 0.500 | 75 | 0.0540 | 0.405 |

Sum of Sensitive Environments Weighted Values/10: 3.309

Potential Contamination, Wetlands

| Distance Category | Wetland Acreage | Wetland Acreage Value | Distance Weight | Weighted Value/10 |
|---|---|---|---|---|
| > 3 to 4 miles | 3.0 | 25.0 | 0.0014 | 0.004 |

Total Wetland Acreage: 3.0

Sum of Wetland Weighted Acreage Values/10: 0.004

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Sensitive Environment Potential Contamination Factor: 3.000

Documentation for Sensitive Environment Nature Preserve:

The Tifft Farm Nature Preserve is located approximately 0.5 miles north of the site.

Reference:

Documentation for Sensitive Environment Woodland Bluegrass:

Endangered plant species within 3-miles of the site include the woodland bluegrass, pink wintergreen, small skullcap, and harbinger-of-spring.

Reference: 3 (pg. 2-4)

Documentation for Sensitive Environment Osprey:

Endangered and threatened species identified at the Tifft Nature Preserve are identied on Table 1 of chapter 2 of the PSA report.

Reference: 3 (Table 1)

Documentation for Sensitive Environment BU-1 Wetland:

NYS classified wetlands BU-1, BU-7, and BU-15 are located within 3 miles of the site and form a part of the Tifft Nature Preserve. It was assumed that these wetlands were 1 acres in size because no other information was available.

Reference: 3 (pg. 2-3)

REFERENCES

Hanna Furnace Site - 10/06/95

1. USEPA HRS Rule

2. HRS Guidance Manual

3. ABB-ES, 1995. Draft Preliminary Assessment Report, Hanna Furnace Site June 1995