### **Remediation Objectives Report**

# Former Griess-Pfleger Tannery Site Waukegan, Illinois

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**Prepared Under Contract to:** 

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#### 1 Introduction

The RETEC Group, Inc. (RETEC) has prepared this report for Commonwealth Edison (ComEd) and Beggs and Cobb Corporation (Beggs and Cobb), collectively referred to as the potentially responsible parties (PRPs). This report presents the remediation objectives developed for the former Griess-Pfleger Tannery (tannery) site in Waukegan, Illinois, which satisfy the requirements of the Tiered Approach to Corrective Action Objectives (TACO) (Illinois Pollution Control Board (IPCB), 2001). The report was prepared under the Illinois Site Remediation Program (IPCB, 1998).

This report consists of seven sections and supporting appendices. Section 1 is the introduction. Section 2 presents a summary of background information on the site. Section 3 presents an initial evaluation of soil and groundwater pathways. Section 4 provides an evaluation of polychlorinated biphenyls (PCBs) in soil. Section 5 presents a more detailed evaluation of direct contact exposures to soil. Section 6 summarizes the proposed remediation objectives for the tannery site. Section 7 provides a list of references used in this report.

Appendix A provides an evaluation of source material. Appendix B presents 2002 groundwater analytical report, and the comparison of soil and groundwater samples to screening values. Appendix C provides supplemental Tier 1 screening values for selected constituents that have been developed by the Illinois Environmental Protection Agency (Illinois EPA). Appendix D provides supplemental Tier 1 screening values that have been calculated by RETEC. Appendix E presents the development of screening values for essential nutrients. Appendix F provides Tier 2 screening values for selected constituents. Appendix G presents the acute action level calculation for arsenic. Appendix H provides details of a Tier 3 evaluation for soils in Area 1B. Appendix I presents a proposed engineered barrier design for the tannery site.

Section 2

#### 2 Background

#### 2.1 Site Location

The former tannery is located at the northeast corner of Sand (also know as Pershing) and Dahringer Roads in Lake County, Waukegan, Illinois. More specifically, the site is located in the northwest corner of the southwest quarter of Section 15, Township 45 North, Range 12 East of the Third Principal Meridian in Lake County. The entire property encompasses approximately 38 acres. Figure 2-1 shows the location of the site relative to the surrounding area and Figure 2-2 is an expanded view of the site itself.

The City of Waukegan has a large industrial base, predominantly situated along Lake Michigan. The former tannery's eastern boundary is immediately bordered by the Elgin Joliet and Eastern (EJ&E) railroad. To the east of the railroad is the former ComEd Waukegan Generating Station, which was acquired by Midwest Generation in 2000. This property encompasses approximately 240 acres. Lake Michigan is located approximately 0.75 miles east of the site. To the north are several industrial buildings. The Illinois Beach State Park is located approximately 1 mile north of the site. To the west are Sand Road, Chicago and Northwestern Railroad, Amstuz Expressway, and various residential and commercial properties, respectively. Beyond the property's southern boundary are Dahringer Road and various vacant and occupied industrial/commercial properties. The property immediately south of Dahringer Road is a former North Shore Gas manufactured gas plant (MGP) site. The property located southeast of the tannery site is the North Shore Sanitary District wastewater treatment plant.

#### 2.2 Site History

The tannery was built in 1917 and operated as a leather tanning facility from 1918 through early 1973. Shortly after the facility closed, a lacquer dust fire occurred which destroyed the interior of several of the main structures. ComEd acquired the property in 1973.

Based on historic information and analytical data, chrome-tanning processes were utilized at the site. The tanning process produced wastes in the form of gaseous reaction products, wastewater, sludge, and solid wastes.

#### 2.3 Current and Potential Future Site Uses

At the present time, ComEd owns the property. ComEd is an Exelon Company. Currently, 4 acres of the site are used to store wood chips. Otherwise, the site is not used. ComEd/Exelon plans to retain ownership of this property for future use associated with the generation, transmission, and distribution of electricity.

#### 2.4 Site Characterization Activities

Six investigations were conducted at the site. A preliminary site investigation was performed by the United States Environmental Protection Agency (USEPA). The other five investigations were performed by Metcalf & Eddy of Chicago, Illinois, which included Phase I investigation; Phase II investigation; Phase IIA investigation; Phase IIB investigations; and grid soil sampling for arsenic and lead.

#### 2.4.1 Initial Investigation

In January of 1989, USEPA's Field Investigation Team performed a preliminary site investigation. Laboratory analyses indicated elevated levels of chromium and lead in soil.

#### 2.4.2 Phase I Remedial Investigation

In May and June of 1993, Metcalf & Eddy performed a Phase I Remedial Investigation (Metcalf & Eddy, 1995). These activities included installation of seven shallow groundwater monitoring wells, collection of 11 sediment samples, 68 soil samples (43 subsurficial, 15 surficial, and 10 monitoring well soil boring samples), two geotechnical samples, nine production waste samples, one cistern water sample, seven groundwater samples, and performance of a magnetometer survey. The Phase I Remedial Investigation results indicated the following:

#### Soil

- Numerous inorganic analytes were identified and elevated levels of arsenic, chromium, and lead were detected in the surface and subsurface soil in various areas of the site.
- Pesticides, PCBs, and base-neutral acid extractable compounds (BNAs), which are predominantly polynuclear aromatic hydrocarbons (PAHs), were detected in the soil sporadically throughout the site.

#### Groundwater

- The groundwater analyses indicated that the BNAs, pesticides/PCBs, and volatile organic compounds (VOCs) were not present in any of the samples.
- · Inorganic analytes were detected in groundwater samples.

#### 2.4.3 Phase II Investigation

During January, February, and April of 1995, Metcalf & Eddy performed additional field activities as part of a Phase II investigation (Metcalf & Eddy, 1997a). The objectives of the Phase II activities were to define the magnitude

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and extent of surface and subsurface impacts, characterize the type of constituents in the subsurface, and determine if off-site areas have been impacted by former tannery operations. To accomplish the Phase II objectives, Metcalf & Eddy performed chromium speciation, installed one exploratory soil boring and five additional monitoring wells (two shallow and three deep), and collected 81 soil samples (51 surface and 30 subsurface), three sediment/surface water samples, two dioxin/furan samples, two asbestos samples, and five groundwater samples.

Groundwater analytical results indicated the presence of only inorganic analytes, including arsenic, chromium (total), lead, and mercury. The groundwater investigation indicated that groundwater containing arsenic exceeding Tier 1 screening values for groundwater concentrations had migrated to the eastern edge of the tannery property boundary. A number of inorganic analytes were also detected in background monitoring wells.

Soil analytical results indicated that asbestos was not detected in either of the two soil samples collected. Detected concentrations of semivolatile organic compounds (SVOCs), mainly PAHs, were identified at various locations throughout the site. PCBs and selected pesticides were also detected in some soil samples. Dioxins and furans were identified in soil samples collected during the Phase II investigation. However, the levels of dioxin/furans identified were not above the USEPA screening levels for protection of human health and the environment. Seventeen soil samples exhibiting elevated levels of chromium were analyzed for Toxicity Characteristic Leaching Procedure (TCLP) metals. The amount of leachable chromium in all of these samples was found to be below regulatory limits. Additionally, these samples were analyzed for hexavalent chromium. It was determined that 99.97% of the chromium is in the trivalent state, the more benign and less mobile form of chromium. Leachable metals were not identified in any of the samples above TCLP regulatory limits, with the exception of mercury at one sampling location.

#### 2.4.4 Phase IIA investigation

Two additional monitoring wells were installed on Waukegan Generating Station property downgradient of the tannery site as part of a Phase IIA investigation (Metcalf & Eddy, 1997b). Previous groundwater analytical results did not indicate the presence of any organic compounds, including pesticides/PCBs. Therefore, sampling and analysis in the Phase IIA investigation was for metals only. Analytical results from these two monitoring wells confirmed that groundwater containing arsenic had migrated under the EJ&E railroad tracks and onto the Waukegan Generating Station property.

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#### 2.4.5 Phase IIB Investigation

A Phase IIB investigation was undertaken to define the extent of the arsenic plume (Metcalf & Eddy, 1997b). Two additional monitoring wells were installed and sampled, and the results indicated that the arsenic plume had been delineated. More specifically, the results indicated that arsenic (exceeding 50 ppb) has migrated approximately 400 feet from the tannery site.

#### 2.4.6 Arsenic and Lead Soil Grid Sampling Program

During the summer of 2000, Metcalf & Eddy performed soil sampling in both the northern and southern areas of the property to evaluate the extent of lead and arsenic impacted soils in these two areas (Metcalf & Eddy, 2000). Soil samples were collected on a 50 by 50 foot grid surveyed across both areas. Approximately 600 soil samples were collected as part of this program. The results of this sampling program were incorporated into drawings that identify the arsenic and lead concentrations in these areas.

#### 2.5 Geologic and Hydrogeologic Conditions

The site and immediate surrounding areas are comprised of made-land soils. Made-land soils have been removed or extensively reworked and are not classified as native soils. Since made-land soils can be formed in any location or under any condition, there are no typical properties of made-land soils. The soil material found at the site is generally silty sand to sand consisting predominantly of fine sands. A very thin layer of organic matter overlying peat and tannery residuals has been discovered in some on-site areas.

The regional topography is relatively flat with glacial moraines and man-made features providing the only relief in the area. Site elevation varies only slightly and is approximately 590 feet above mean sea level (MSL).

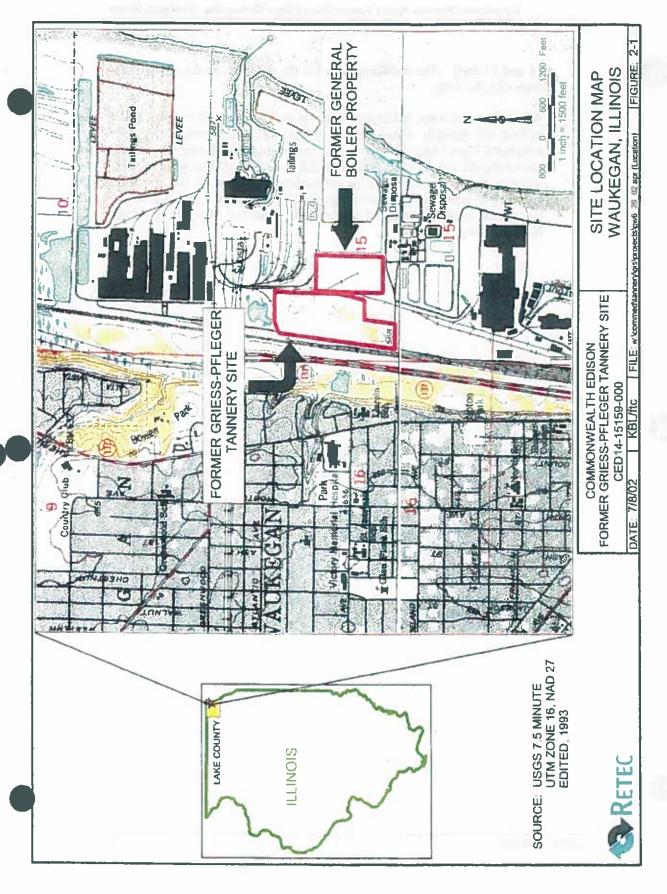
Based on the results of the Phase II site investigation, the site consists of a well graded to poorly graded sand to silty sand with fill and peat. Clay was apparent in two soil borings, but not in significant quantities to justify describing it as a confining layer. Saturated soil was found approximately 3 to 5 feet below grade. Static water conditions indicate that the shallow groundwater flow direction is to the east toward Lake Michigan under an average hydraulic gradient of 0.0016 feet per foot.

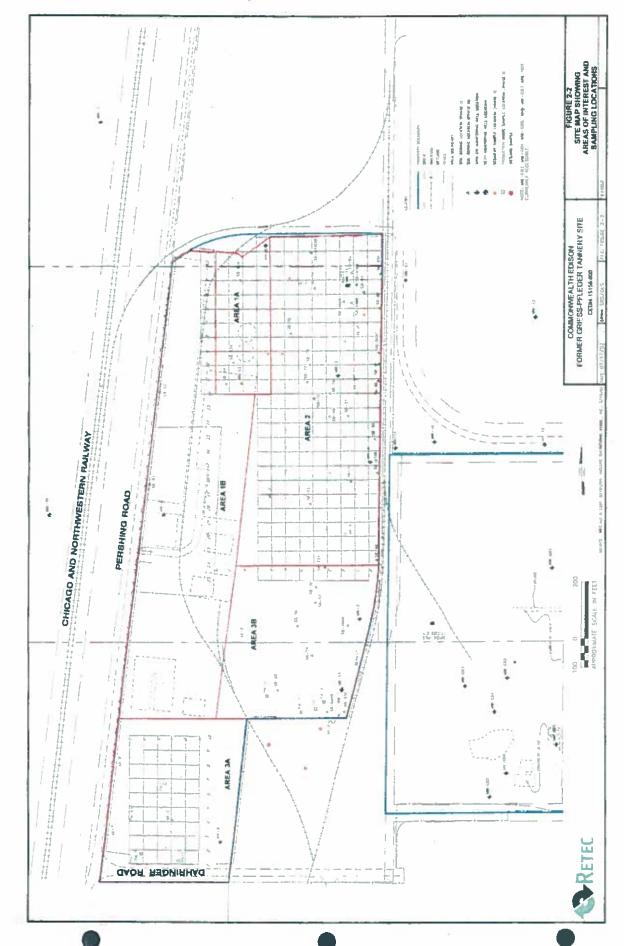
Potable water for residences and businesses is primarily supplied by the City of Waukegan water system, which obtains water from Lake Michigan. However, according to the 1990 U.S. Census, there are approximately 970 persons in Waukegan using private wells. Information obtained from the Illinois State Water Survey listed eight private wells within 1 mile of the site, including two wells used for lawn watering at a country club. The nearest residential well is located approximately 0.6 miles west of the site and was installed in 1980. This residential well is hydraulically upgradient of the site. Two of the eight wells tap gravel beds within the Wedron formation (depth of

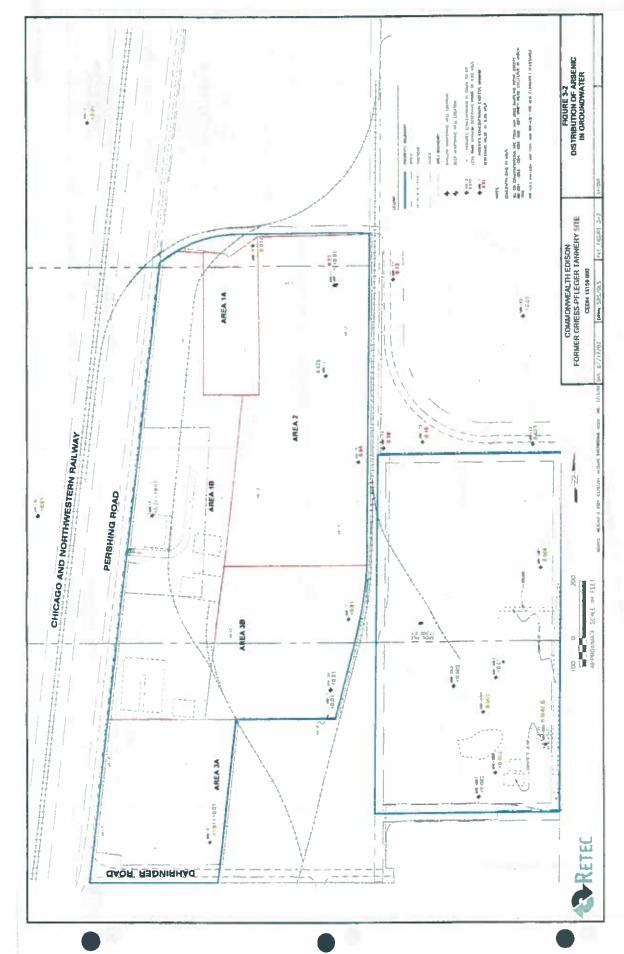
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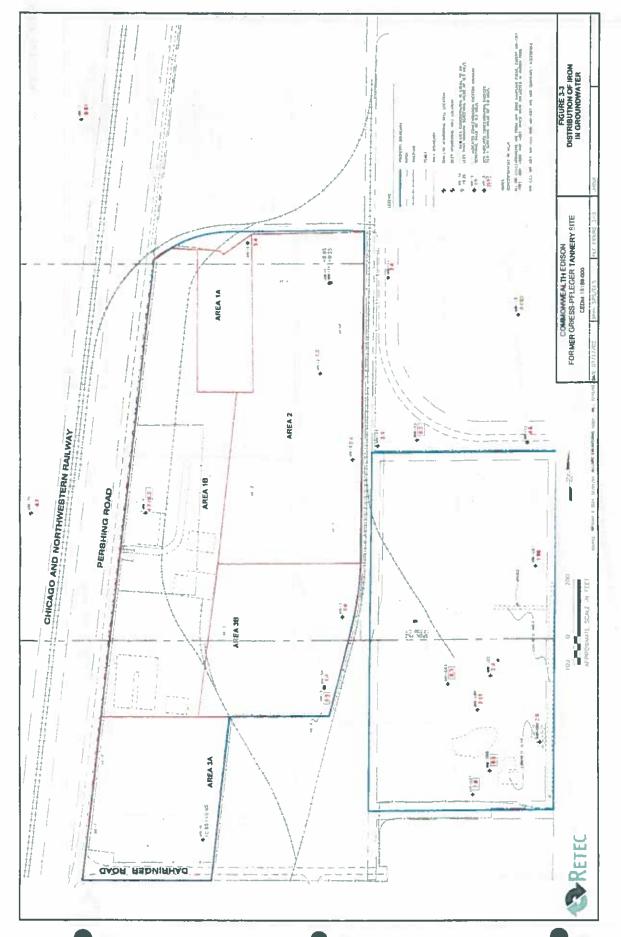
88 and 97 feet). The remaining logs list the dolomite as the groundwater source for the wells.

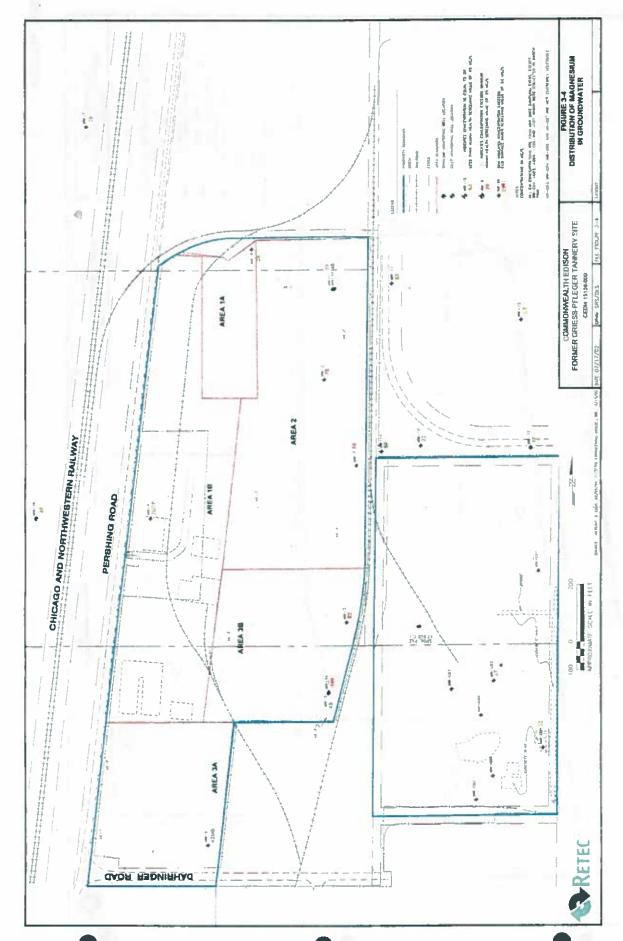
Although groundwater underlying the site is very shallow at 3 to 5 feet below surface and typically would not be suitable for potable use, it has been designated Class I because there are no confining layers existing between the glacial deposit and the dolomite unit (which is the aquifer from which potable water is obtained). It should be emphasized that none of the properties immediately surrounding the site (upgradient, downgradient or cross-gradient) use groundwater and none of the properties between the site and Lake Michigan use groundwater.

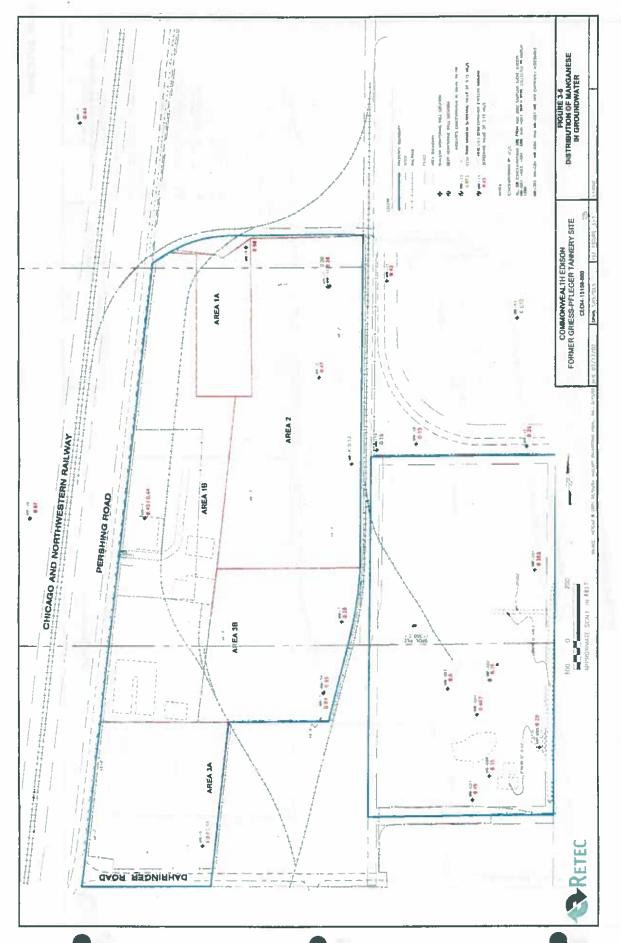


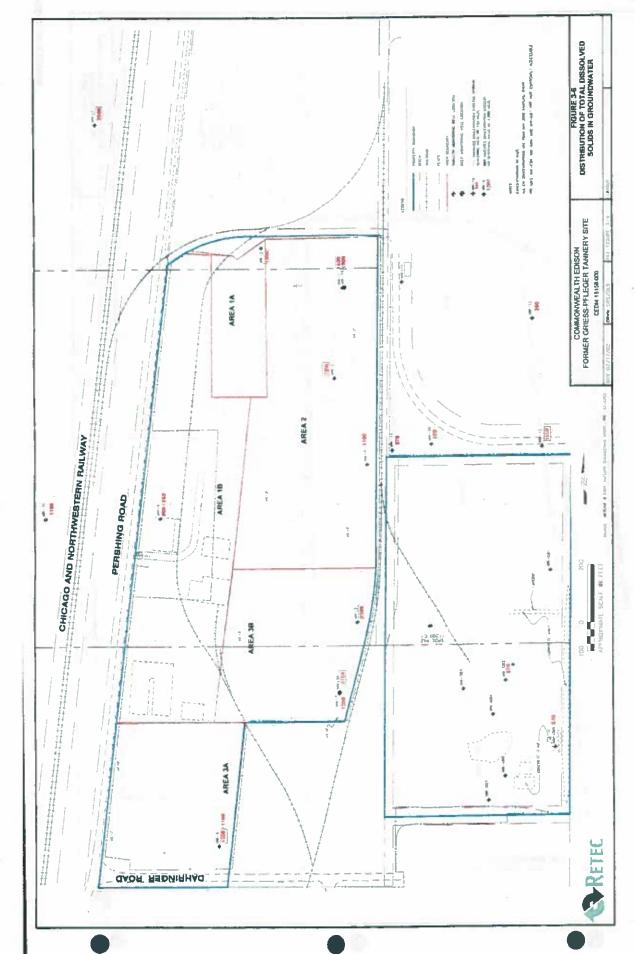


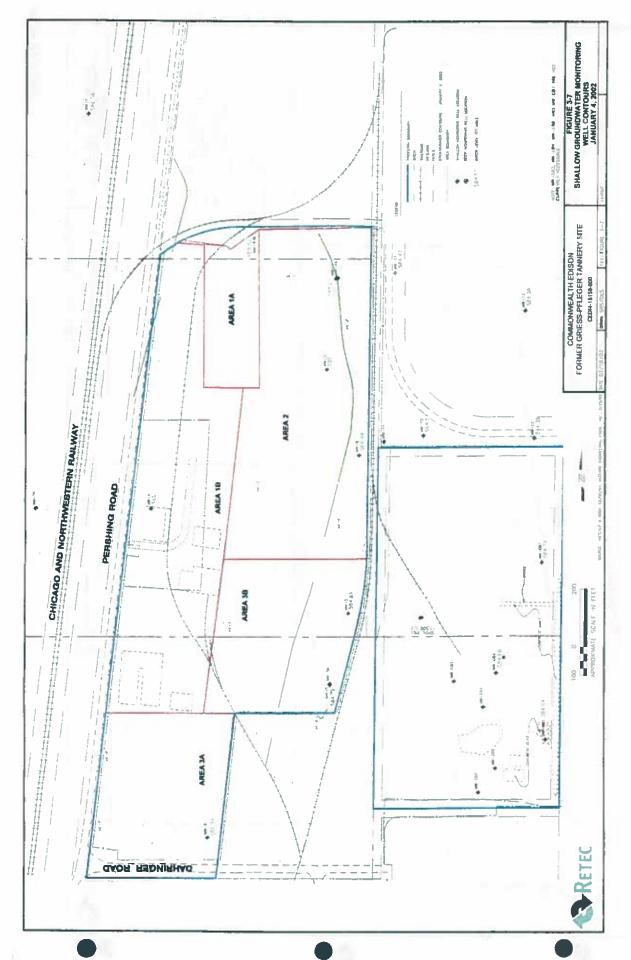


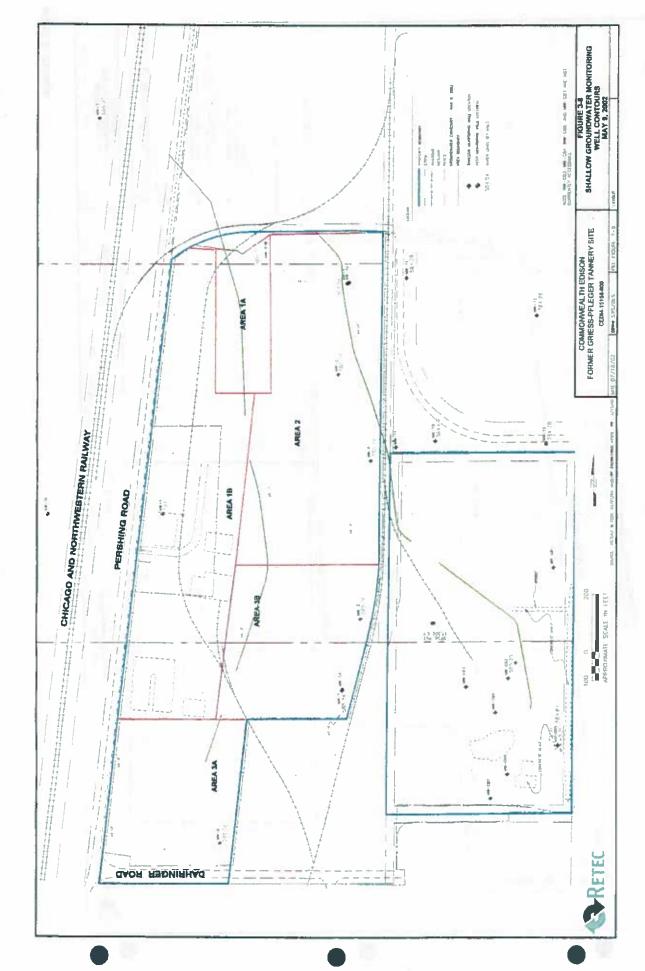


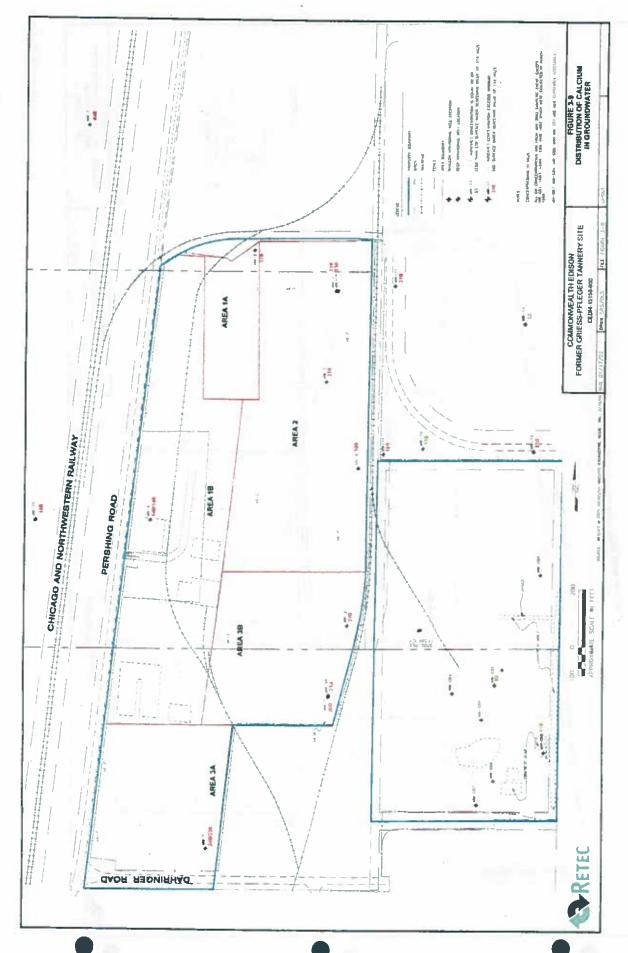


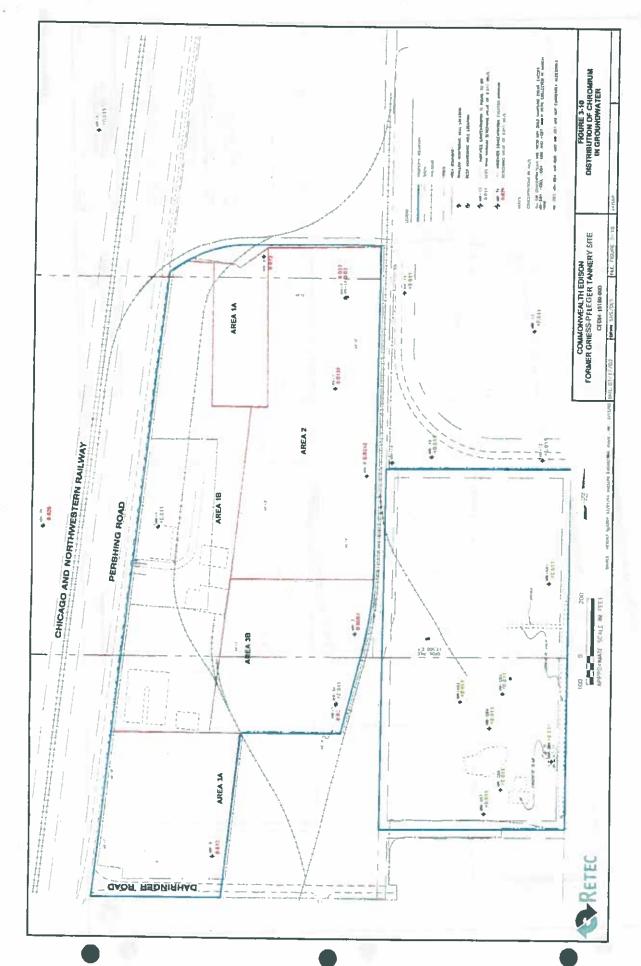


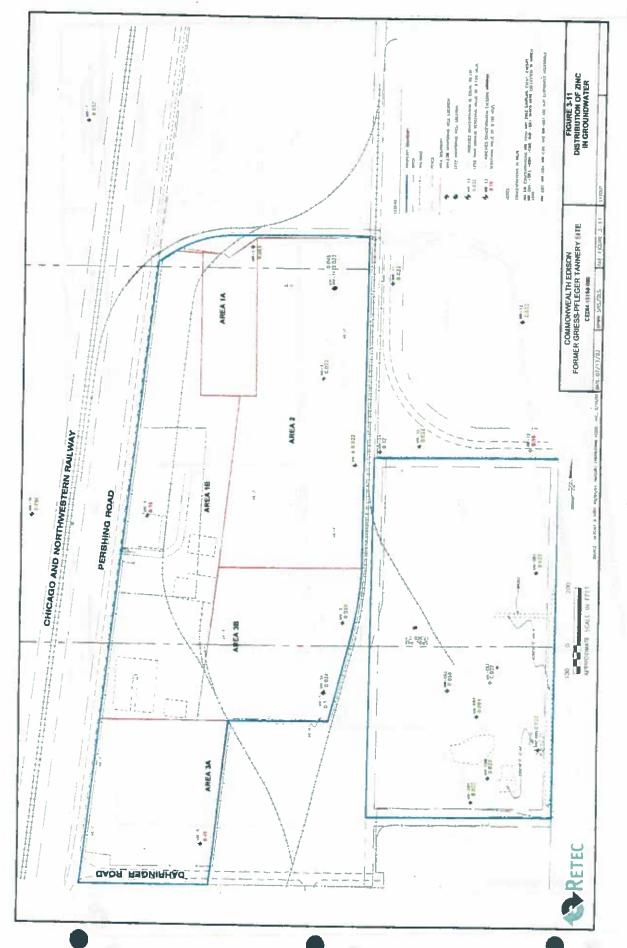












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#### 4 Evaluation of PCBs in Soil

#### 4.1 Overview

Concentrations of PCBs in soil at the tannery site are evaluated separately from other constituents because there are specific regulations that apply to PCBs. These regulations and the evaluation of PCBs in soil at the site are discussed in the following subsections.

# 4.2 Applicable Regulations for Evaluation of PCBs in Soil

According to Section 742.900 of TACO (IPCB, 2001) evaluation of PCBs in soil should address the applicability of 40 CFR 761 (referred to as the PCB Mega-Rule). Under 40 CFR 761.61(a), the USEPA provides a "self-implementing procedure" for characterizing a site, remediating the site, and verifying the remediation. If the self-implementing procedure is followed, remediation can be conducted without prior approval of USEPA. Procedures for characterizing a site, remediating a site, and verifying the remediation can be used under 40 CFR 761.61(c), the "risk-based procedure", but such site-specific procedures must be approved by USEPA prior to the implementation of remediation.

According to the self-implementing procedure under 40 CFR 761.61(a)(4)(i), the action levels for remediation of bulk PCB remediation waste (i.e., soil) are based on land use of the site. Land use is divided into two categories: low occupancy and high occupancy. According to 40 CFR 761.3, a low occupancy area for bulk PCB remediation waste is an area where occupancy for any individual not wearing dermal and respiratory protection is 335 hours or less for a calendar year (about 6.7 hours or less per week). Examples of low occupancy areas include an electrical substation or a location in an industrial facility where a worker spends small amounts of time per week. A high occupancy area, according to 40 CFR 761.3, is an area where occupancy for any individual not wearing dermal and respiratory protection is more than 335 hours for a calendar year (more than 6.7 hours per week). Examples of high occupancy areas include a residence, day care center, school, or a workstation in an industrial facility.

For a low occupancy area, the action level for bulk PCB remediation waste is less than or equal to 25 mg/kg total PCBs. At this concentration, the soil may remain at the site with no further action. At concentrations greater than 25 mg/kg and less than or equal to 50 mg/kg, the soil may remain at the site, but the area must be secured by a fence and marked with signs. Soil with concentrations of total PCBs greater than 50 mg/kg but less than or equal to 100 mg/kg may remain at the site, but must be covered with a soil cover. The soil cover should have a minimum of either 25 cm of clean compacted soil

(i.e., where clean soil is defined as soil with a maximum concentration of 1 mg/kg or less PCB per Aroclor) or 15 cm of asphalt or cement. When a fence is placed on a site, a deed restriction must be placed to ensure that the site remains a low occupancy area. In addition, the fence or cap must be properly maintained to prevent or minimize human exposure, infiltration and erosion. Soil with concentrations of total PCBs greater than 100 mg/kg must be remediated; where remediation typically involves removal and offsite management (i.e., treatment and/or disposal) or onsite treatment.

For a high occupancy area, the action level for bulk PCB remediation waste is less than or equal to 1 mg/kg total PCBs. At this concentration, the soil may remain at the site with no further action. At concentrations greater than 1 mg/kg and less than or equal to 10 mg/kg, the soil may remain at the site, but must be covered with a soil cover meeting the specifications discussed previously. Soil with concentrations of total PCBs greater than 10 mg/kg must be remediated, where remediation was previously discussed.

#### 4.3 Evaluation of PCBs in Soil

#### 4.3.1 Site-Wide Overview

As discussed in more detail below, the remediation of PCB affected soil at the tannery site will be conducted under the risk-based procedure. Under the risk-based procedure, site-specific action levels can be developed. However, remediation of the site, the action levels under the self-implementing procedure for a high occupancy area will be utilized. The use of action levels for a high occupancy area are necessary because it is likely that future uses of the site, while not precisely known at this time, will involve workers being on the site more than 6.7 hours per week.

The PCB data for soil samples are provided in Appendix B. PCBs detected at the tannery site include Aroclor 1248, Aroclor 1254, and Aroclor 1260. Since the PCB Mega-Rule provides action levels for total PCBs rather than specific Aroclors, the results for each Aroclor detected in a sample were summed to determine the total PCB result for that sample. Total PCB results were then classified into the following categories: less than or equal to 1 mg/kg (for no further action in a high occupancy area); 1 to 10 mg/kg (for soil cover requirement in a high occupancy area); and greater than 10 mg/kg (soil requiring remediation in a high occupancy area).

The results of the categorization of soil samples are presented in Figure 4-1 for surface soil samples and Figure 4-2 for subsurface soil samples, and summarized for each area below:

 Area 1A (Northeastern Portion of Former Production Area): four samples with no detected PCBs

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- Area 1B (Main Portion of Former Production Area): one sample with total PCBs between 1 and 10 mg/kg; 16 samples with no detected PCBs
- Area 2 (Wastewater Discharge Area): three samples with total PCBs less than 1 mg/kg; 28 samples with no detected PCBs
- Area 3A (Southern Portion of Production Waste Disposal Area): three samples with total PCBs between 1 and 10 mg/kg; four samples with total PCBs less than 1 mg/kg; 10 samples with no detected PCBs
- Area 3B (Eastern Portion of Production Waste Disposal Area): six samples with total PCBs above 10 mg/kg; 12 samples with total PCBs between 1 and 10 mg/kg; 10 samples with total PCBs less than 1 mg/kg; 11 samples with no detected PCBs

These results indicate that Area 1A (Northeastern Portion of Former Production Area) and Area 2 (Wastewater Discharge Area) require no further action to meet the criteria for a high occupancy area. The results for the other areas are discussed in more detail below.

### 4.3.2 Area 1B: Main Portion of Former Production Area

Area 1B had no surface soil samples with exceedances of the 1 mg/kg action level, where surface soil samples are defined as those collected from 0-1 foot. However, the following subsurface soil sample in Area 1B had a concentration of total PCBs between 1 and 10 mg/kg: SB-33B (2'-3') - 5.1 mg/kg. No PCBs were detected in the surface soil sample, SB-33A (0'-1'), collected at this location. A soil cover is effectively in place and no further action would be needed except an institutional control ensuring that the soil cover remains in place or the soil may be removed.

# 4.3.3 Area 3A: Southern Portion of Production Waste Disposal Area

Area 3A had no surface soil samples with exceedances of the 1 mg/kg action level. The following subsurface soil samples in Area 3A had concentrations of total PCBs between 1 and 10 mg/kg:

- SB-24B (3'-4') 3 mg/kg
- SB-25B (3.5' 4.5') 2.8 mg/kg
- MW-6A (2'-4') 4.9 mg/kg

As discussed in more detail in Section 5, a soil cover and institutional controls are proposed for much of Area 3A. The cover will extend to the southern, eastern, and western boundaries. The northern extent of the soil cover has not been finalized. At a minimum, the soil cover will extend over locations SB-

24, SB-25, and MW-6. By using soil cover and institutional controls, the exceedances of the PCB action level of 1 mg/kg will be addressed.

## 4.3.4 Area 3B: Eastern Portion of Production Waste Disposal Area

Area 3B had six surface soil samples with concentrations of total PCBs exceeding 10 mg/kg:

- SB-10A (0'-1') 56 mg/kg
- SB-15A (0'-1') 30 mg/kg
- SB-56A (0'-1') 116.8 mg/kg
- SB-57A (0'-1') 58.2 mg/kg
- SB-59A (0'-1') 37.6 mg/kg
- SB-105A (0'-1') 82 mg/kg

This area also had three surface soil samples with concentrations falling between 1 and 10 mg/kg:

- SB-19A (0'-1') 1.3 mg/kg
- SB-58A (0'-1') 1.99 mg/kg
- SB-60A (0'-1') 1.45 mg/kg

This area did not have any subsurface soil samples with concentrations of total PCBs greater than 10 mg/kg. However, this area did have seven subsurface soil samples with concentrations of PCBs greater than 1 mg/kg, but less than 10 mg/kg:

- SB-10B (2'-4') 2.1 mg/kg
- SB-14B (2'-4') 1.31 mg/kg
- SB-15B (2'-4') 7.4 mg/kg
- SB-16B (2'-4') 3.4 mg/kg
- SB-17B (2'-4') 2.4 mg/kg
- SB-58B (1'-3') 2.1 mg/kg
- SB-69B/CB (1'-3') 1.08 mg/kg

Remediation of PCBs in Area 3B will involve the removal of soil with concentrations of PCBs exceeding 10 mg/kg and backfilling the excavation with clean soil. As discussed in greater detail in Section 5, after excavation, the PRPs will cover the majority of Area 3B. The cover will extend to the southern, eastern, and western boundaries of Area 3B. The extent of the cover to the north has not been determined. At a minimum, the soil cover will extend over any soil with concentrations of PCBs that are greater than 1 mg/kg, but equal to or less than 10 mg/kg. In addition, an institutional control will be placed on the site to ensure that the soil cover remains in place over soil with concentrations of total PCBs that are greater than 1 mg/kg, but equal to or less than 10 mg/kg.

#### 4.3.5 Additional Considerations

The self-implementing procedure in the PCB Mega-Rule includes sampling requirements for characterizing a site and verifying remediation that are geared to PCB impacts in a small area (on the order of an acre or less). The evaluation presented above indicates that the affected area is several acres in size, an area too large to cost-effectively implement the sampling requirements of the self-implementing procedure. Therefore, the risk-based procedure will be used to characterize the extent of PCB impacts and verify the cleanup. A separate submittal will be provided that presents the proposed confirmatory sampling plan for this project.

As discussed above, a compacted soil cover at least 10 inches thick can be placed over surface soil with concentrations of total PCBs between 1 and 10 mg/kg. Soil with total PCB concentrations exceeding 10 mg/kg will be removed. The compacted soil cover will be constructed of relatively permeable soil that will allow rainfall to percolate to the water table. If an impermeable cover were placed on the affected areas (which will be several acres in total), stormwater management would become a significant issue.

The use of a permeable cover will be acceptable from the perspective of protecting groundwater from PCBs leaching from unsaturated soil. The absence of detected values of PCBs in all of the groundwater samples indicates that PCBs are not leaching from the soil into the groundwater. This is particularly relevant in the case of groundwater samples from monitoring wells MW-3 and MW-5, which are downgradient from the area with the highest concentrations of PCBs in soil. While leaching of PCBs to groundwater is currently not significant, leaching will be even less significant after the soil with the highest PCB concentrations is removed. Consequently, implementing a soil cover with relatively permeable soil will not alter the fact that leaching of PCBs is insignificant at this site and the soil cover will address the only remaining risk issue--potential direct contact exposures to PCBs in soil.

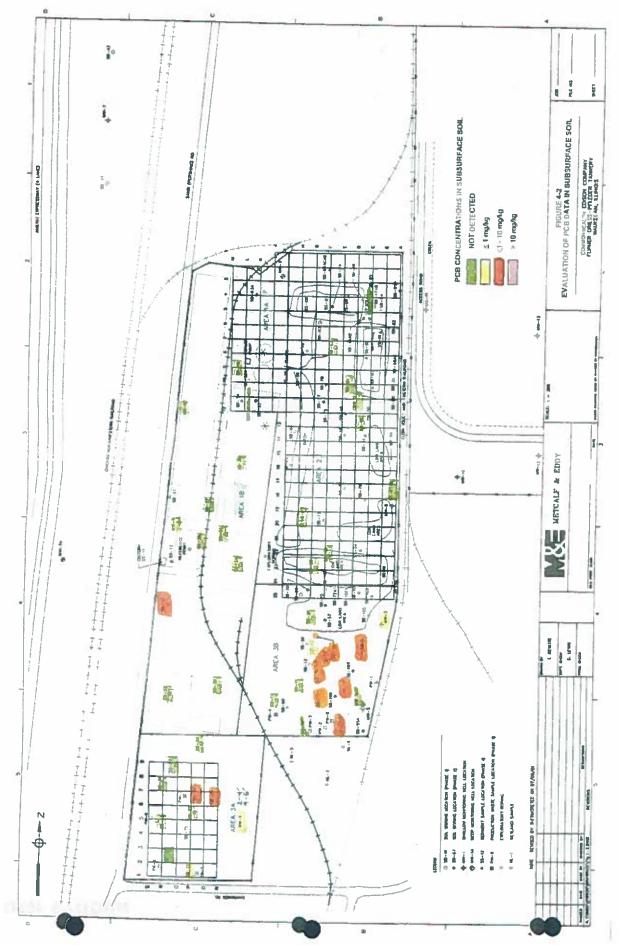
For those areas of the property with a soil cover, it will be necessary to have an institutional control ensuring that the soil cover remains in place. To facilitate redevelopment of the property and also ensure that the soil cover remains in place, the following procedure is proposed. A soil management plan will be developed that will address the various aspects of soil management during excavation and construction. The plan will include a surveyed site map identifying the areas on the site where a soil cover is in place. Prior to placing this cover, the area will be graded as necessary and then covered with a permeable geotextile material. The geotextile material is intended to demarcate the depth where the clean soil cover ends and potentially impacted soil begins. If excavation occurs below the depth of the permeable geotextile, then this excavation must follow the soil management procedures outlined in the plan.

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One part of the soil management plan will describe the safety precautions that must be followed to protect workers. Another part of the plan will describe how excavated soil is to be managed. This will include procedures to segregate soil excavated from below the geotextile liner, test this soil for PCBs (and other constituents, as necessary), and dispose the soil in accordance with the results of the testing. Another part of the plan will outline the procedures that must be followed to ensure that the soil cover has been re-established. At the simplest level, this will simply be a procedure for ensuring that the permeable geotextile liner and a minimum of 10 inches of clean soil cover have been placed over the excavated soil. If buildings, structures, or pavement are placed over parts of the area, these will be incorporated as part of the engineered barrier. This soil management plan will be developed and submitted to Illinois EPA and the USEPA for their approval prior to its implementation.

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# 5 Additional Evaluation of Direct Contact Exposures to Soil

#### 5.1 Overview

Sections 3 and 4 presented an initial evaluation of a number of potential exposure pathways, including direct contact exposure to soil (i.e., ingestion, dermal contact, etc.); the groundwater component of the groundwater ingestion exposure route and the soil component of the groundwater ingestion exposure route; and the groundwater to surface water pathway. Of these potential exposure pathways, only direct contact exposure pathways warranted further evaluation.

Section 3 presented the initial evaluation of soil pathways for all constituents except PCBs in soil. The following direct contact with soil pathways (i.e., ingestion, dermal contact, and inhalation of constituents emitted from the soil) were evaluated:

- Ingestion of soil by an industrial/commercial worker: There were exceedances of Tier 1 screening values for the industrial/commercial worker for at least one constituent in each area of interest.
- Inhalation of constituents emitted from soil by the industrial/commercial worker: There was an exceedance of the Tier 1 screening value for the industrial/commercial worker for arsenic in surface soil in Area 1A and Area 2, and subsurface soil in Area 2. There were no exceedances of Tier 1 screening values for any constituents in any other areas.
- Ingestion of soil by a construction worker: There were exceedances of the Tier 1 screening value for the construction worker in surface soil in Area 1A (arsenic and lead), Area 2 (arsenic, lead, and mercury), Area 3A (arsenic and lead), and Area 3B (arsenic and lead).
- Inhalation of constituents emitted from soil by a construction worker: There were no exceedances of Tier 1 screening values for this pathway for any constituents.

Section 4 presented the evaluation of PCBs in soil. The concentrations of total PCBs in surface and subsurface soil were compared to action levels under the PCB Mega-Rule for a high occupancy area. The concentrations of total PCBs in two areas, Area 1A (Northeastern Portion of the Former Production Area) and Area 2 (Wastewater Discharge Area), were below 1 mg/kg, so no additional evaluation is necessary in these areas. There were exceedances of action levels in the other three areas. The results of the comparison and the proposed additional actions are summarized below.

- Area 1B (Main Portion of Former Production Area): There was an
  exceedance of the PCB action level of 1 mg/kg in one subsurface soil
  sample but not in the surface soil sample collected above it. A soil
  cover is effectively in place, so no further action is needed except an
  institutional control ensuring that the soil cover remains in place or the
  soil may be removed.
- Area 3A (Southern Portion of Production Waste Disposal Area): There were three subsurface soil samples with exceedances of the PCB action level of 1 mg/kg (SB-24, SB-25, and MW-6). As discussed in detail later in this section, a soil cover and institutional controls are proposed for much of Area 3A. The cover will extend to the southern, eastern, and western boundaries. The northern extent of the soil cover has not been finalized. At a minimum, the soil cover will extend over locations SB-24, SB-25, and MW-6. By using soil cover and institutional controls, the exceedances of the PCB action level of 1 mg/kg will be addressed.
- Area 3B (Eastern Portion of Production Waste Disposal Area): There were surface soil samples with concentrations of PCBs exceeding the action level of 10 mg/kg, where removal of the soil is necessary. There were also surface and subsurface soil samples with concentrations between 1 mg/kg and 10 mg/kg, where a soil cover is needed. Therefore, remediation of PCBs in Area 3B will involve the removal of soil with concentrations of PCBs exceeding 10 mg/kg, backfilling the excavation with clean soil and ensuring through an institutional control that a compacted 10-inch soil cover remains in place over soil with concentrations of total PCBs that are greater than 1 mg/kg, but equal to or less than 10 mg/kg. The PRPs will cover the majority of Area 3B. The cover will extend to the southern, eastern, and western boundaries of Area 3B. The extent of the cover to the north has not been determined.

The following sections provide additional evaluations of direct contact exposures to soil in each area of interest. Areas 1A, 2, 3A, and 3B are grouped together in Section 5.2, while Area 1B is discussed separately in Section 5.3.

### 5.2 Areas 1A, 2, 3A, and 3B

### 5.2.1 Summary of Initial Evaluation

## 5.2.1.1 Area 1A: Northeastern Portion of Former Production Area

Area 1A includes part of the grid sampling performed for arsenic and lead in the northeastern part of the site. In Area 1A, there were exceedances of Tier 1

screening values for the ingestion pathway for an industrial/commercial worker for benzo(b)fluoranthene, benzo(a)pyrene, dibenz(a,h,)anthracene, DDT, dieldrin, arsenic, and lead in soil samples. Arsenic exceeded the Tier 1 screening value for the inhalation pathway for the industrial/commercial worker. There were exceedances of the Tier 1 screening values for the ingestion pathway for the construction worker for arsenic and lead. No constituents exceeded Tier 1 screening values for the inhalation pathway for the construction worker.

The locations of surface and subsurface soil samples with exceedances of PAHs or pesticides are provided in Figures 5-1 and 5-2, respectively. Figures 5-3 and 5-4 present the results of arsenic and lead data, respectively, in the gridded area in the northeastern part of the site. The gridded area covers all of Area 1A, most of Area 2 and a small part of Area 3B, and provides results for samples collected over a 0 to 3 foot interval. Figures 5-5 and 5-6 provide information on arsenic and lead concentrations in subsurface soil, respectively, where subsurface soil samples are samples collected from a sampling interval that starts at least 1 foot below the surface.

Both surface soil samples analyzed for PAHs (SB-39A and SB-63A) had exceedances of Tier 1 screening values for ingestion by an industrial/commercial worker for at least one PAH. Two subsurface soil samples were analyzed for PAHs (SB-39B and SB-40B) and one (SB-39B) had an exceedance for benzo(a) pyrene.

One of the two surface soil samples analyzed for pesticides in the Phase I investigation (SB-39A) had exceedances of Tier 1 screening values for ingestion by an industrial/commercial worker for DDT and dieldrin. There were no exceedances of the Tier 1 screening values for these constituents for the industrial/commercial worker in the subsurface soil sample collected at this location. Three surface soil samples (SB-52A, SB-53A, and SB-54A) were collected around SB-39A during the Phase II investigation to delineate the extent of exceedances and there were no exceedances of the Tier 1 screening values for these constituents for the industrial/commercial worker in these samples.

There were 48 surface soil samples out of 84 grid samples that had exceedances of the Tier 1 screening value for ingestion by an industrial/commercial worker for arsenic (13 mg/kg). Of these, two exceeded the Tier 1 screening value for inhalation by an industrial/commercial worker for arsenic (1,200 mg/kg), and 33 exceeded the Tier 1 screening value for ingestion by a construction worker for arsenic (61 mg/kg). Both subsurface soil samples analyzed for arsenic had exceedances of the Tier 1 screening value for ingestion by an industrial/commercial worker and one of the two exceeded the Tier 1 screening value for ingestion by a construction worker.

There were 28 surface soil samples out of the 84 grid samples that had exceedances of the Tier 1 screening values for ingestion by an industrial/commercial worker and ingestion by a construction worker for lead (both Tier 1 screening values are 400 mg/kg). Neither subsurface soil sample analyzed for lead exceeded the Tier 1 screening values for ingestion by an industrial/commercial worker or ingestion by a construction worker.

No PCBs were detected in surface or subsurface soil samples collected from this area.

### 5.2.1.2 Area 2: Wastewater Discharge Area

Area 2 includes much of the grid sampling performed for arsenic and lead in the northeastern part of the site. In Area 2, there were exceedances of Tier 1 screening values for ingestion by an industrial/commercial worker for benzo(a)pyrene, arsenic, and lead in soil samples. In addition, arsenic in soil exceeded the Tier 1 screening value for inhalation by an industrial/commercial worker. There were also exceedances of Tier 1 screening values for ingestion by a construction worker for arsenic, lead, and mercury in soil samples. No constituents exceeded their Tier 1 screening values for the inhalation by a construction worker.

The locations of surface and subsurface soil samples are provided in Figures 5-1 and 5-2, respectively, along with the results of benzo(a)pyrene. Figures 5-3 and 5-4 present the results of arsenic and lead data, respectively, in the gridded area in the northeastern part of the site. The gridded area covers all of Area 1A, most of Area 2 and a small part of Area 3B, and provides results for samples collected over a 0 to 3 foot interval. Figures 5-5 and 5-6 provide information on arsenic and lead concentrations in subsurface soil, respectively, where subsurface soil samples are samples collected from a sampling interval that starts at least 1 foot below the surface.

In surface soil, benzo(a)pyrene exceeded the Tier 1 screening value of 0.8 mg/kg for ingestion by an industrial/commercial worker in two of 21 samples: SS-09(0-1') and SS-10(0-1'). In subsurface soil, benzo(a)pyrene exceeded the Tier 1 screening value in one out of 10 samples: MW-2B(4-6').

There were 248 surface soil grid samples out of 397 that had exceedances of the Tier 1 screening value for ingestion by an industrial/commercial worker for arsenic (13 mg/kg). Of these, 29 exceeded the Tier 1 screening value for inhalation by an industrial/commercial worker for arsenic (1,200 mg/kg), and 149 exceeded the Tier 1 screening value for ingestion by a construction worker for arsenic (61 mg/kg). In subsurface soil, 21 out of 30 samples analyzed for arsenic had exceedances of the Tier 1 screening value for ingestion by an industrial/commercial worker, four exceeded the Tier 1 screening value for inhalation by an industrial/commercial worker, and 12 exceeded the Tier 1 screening value for ingestion by a construction worker,

There were 336 surface soil grid samples out of 397 that had exceedances of the Tier 1 screening values for ingestion by an industrial/commercial worker and ingestion by a construction worker for lead (both Tier 1 screening values are 400 mg/kg). Six out of 12 subsurface soil samples analyzed for lead exceeded the Tier 1 screening values for ingestion by an industrial/commercial worker or ingestion by a construction worker.

One out of 12 subsurface soil samples analyzed for mercury exceeded the Tier 1 screening value for ingestion by a construction worker: MW-2(6-8').

PCBs were not detected at concentrations above the action level of 1 mg/kg in the 21 surface or 10 subsurface soil samples from Area 2.

## 5.2.1.3 Area 3A: Southern Portion of Production Waste Disposal Area

Area 3A includes the grid sampling performed for arsenic and lead in the southwestern part of the site. In Area 3A, there were exceedances of Tier 1 screening values for ingestion by an industrial/commercial worker for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, arsenic, and lead in soil samples. There were also exceedances of Tier 1 screening values for ingestion by a construction worker for arsenic and lead. No constituents exceeded their Tier 1 screening values for the inhalation pathway by an industrial/commercial worker or a construction worker.

The locations of surface and subsurface soil samples are provided in Figures 5-1 and 5-2, respectively, along with the results for PAHs. Figures 5-7 and 5-8 present the results of arsenic and lead data, respectively, in the gridded area in the southwestern part of the site. This gridded area is entirely contained within Area 3A and provides results for samples collected over a 0 to 3 foot interval. Figures 5-5 and 5-6 provide subsurface soil concentrations for arsenic and lead, respectively, where subsurface soil samples are samples collected from a sampling interval that starts at least 1 foot below the surface.

In surface soil, no PAHs exceeded their Tier 1 screening value for industrial/commercial worker or construction worker in any of six samples. In subsurface soil, benzo(a)anthracene and benzo(b)fluoranthene exceeded the Tier 1 screening value of 8 mg/kg for ingestion by an industrial/commercial worker only in subsurface soil sample SB-26B(3-4'). Similarly, benzo(a)pyrene exceeded the Tier 1 screening value of 0.8 mg/kg for ingestion by an industrial/commercial worker in two out of 11 samples: SB-26B(3-4') and SB-28B(1-2').

There were 49 surface soil grid samples out of 94 that had exceedances of the Tier 1 screening value for ingestion by an industrial/commercial worker for arsenic (13 mg/kg). Of these, five exceeded the Tier 1 screening value for ingestion by a construction worker for arsenic (61 mg/kg). In subsurface soil, five out of 12 samples analyzed for arsenic had exceedances of the Tier 1

screening value for ingestion by an industrial/commercial worker and one sample exceeded the Tier 1 screening value for ingestion by a construction worker.

There were 70 surface soil grid samples out of 94 that had exceedances of the Tier 1 screening values for ingestion by an industrial/commercial worker and ingestion by a construction worker for lead (both Tier 1 screening values are 400 mg/kg). Three out of 12 subsurface soil samples analyzed for lead exceeded the Tier 1 screening values for ingestion by an industrial/commercial worker or ingestion by a construction worker.

PCBs were not detected at concentrations above the action level of 1 mg/kg in the six surface soil samples from Area 3A; however, three of the 11 subsurface soil samples had detections between 1 and 10 mg/kg: SB-24B(3-4'), SB-25B(3.5-4.5'), and MW-6A(2-4'). Additional characterization will be needed of surface soil in the vicinity of sample locations SB-25 and MW-6 to determine the vertical extent of PCB impacted soil. If the results of this additional soil sampling show that PCB concentrations in surface soil are less than 1 mg/kg, a soil cover is effectively in place and no further action would be needed.

## 5.2.1.4 Area 3B: Eastern Portion of Production Waste Disposal Area

Area 3B includes a small portion of the grid sampling performed for arsenic and lead in the northeastern part of the site. In Area 3B, there were exceedances of Tier 1 screening values for ingestion by an industrial/commercial worker for benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, aldrin, dieldrin, heptachlor epoxide, arsenic, and lead in soil samples. There were also exceedances of the Tier 1 screening value for ingestion by a construction worker for arsenic and lead in soil samples. No constituents exceeded their Tier 1 screening values for inhalation by an industrial/commercial worker or a construction worker. There were exceedances of the PCB action level of 1 mg/kg in surface and subsurface soil.

Figure 5-9 presents the location of surface soil samples in Area 3B and whether or not there were exceedances at each sample. Figure 5-10 presents the same information for subsurface soil samples. In surface soil, PAHs exceeded the Tier 1 screening values for ingestion by an industrial/commercial worker in four of 13 samples: SB-29B (0-1'), SB-12A (0-2'), SB-15A (0-1'), and SB-60A (0-1'). In subsurface soil, PAHs did not exceed the Tier 1 screening values in any of the 15 samples.

Only two of the 10 surface soil samples analyzed for pesticides had exceedances of Tier 1 screening values for ingestion by an industrial/commercial worker. Sample SB-10A (0-1') had an exceedance for dieldrin, and sample SB-15A (0-1') had exceedances for aldrin and heptachlor

epoxide. None of the 15 subsurface soil samples analyzed for pesticides had exceedances of the Tier 1 screening values.

There were seven out of 29 surface soil samples that had exceedances of the Tier 1 screening value for ingestion by an industrial/commercial worker for arsenic (13 mg/kg). In subsurface soil, three out of 15 samples analyzed for arsenic had exceedances of the Tier 1 screening value for ingestion by an industrial/commercial worker.

There were 13 out of 29 surface soil samples that had exceedances of the Tier 1 screening values for ingestion by an industrial/commercial worker and ingestion by a construction worker for lead (both Tier 1 screening values are 400 mg/kg). Four out of 15 subsurface soil samples analyzed for lead exceeded the Tier 1 screening values for ingestion by an industrial/commercial worker or ingestion by a construction worker.

The concentrations of total PCBs exceeded the action level of 1 mg/kg in 10 out of 24 surface and seven out of 15 subsurface soil samples in Area 3B. Of these, six surface samples exceeded a concentration of 10 mg/kg.

## 5.2.2 Proposed Remediation Objectives for Direct Contact Pathways

Section 5.2.1 summarizes, in detail, the exceedances of Tier 1 screening values for direct contact pathways. The exceedances of the PCB action level of 1 mg/kg are also summarized. At the request of the Illinois EPA, an action level was developed for arsenic to address potential effects from acute exposures. This action level is 800 mg/kg and the calculation for this action level is provided in Appendix G. A number of soil samples in Areas 1A and 2 have arsenic concentrations that exceed this acute action level.

To address the exceedances of the acute arsenic action level of 800 mg/kg in Areas 1A and 2, it is proposed that all soil with concentrations exceeding this level will be removed and disposed of appropriately off-site. It should be noted that removal of all arsenic exceeding the acute action level of 800 mg/kg will remove the soil with the highest concentrations of arsenic. Based on the grid sampling data, this will reduce the average concentration of arsenic from 166.5 to 91.1 mg/kg in Area 1A (a 45 percent reduction) and from 283.3 to 78.7 mg/kg in Area 2 (a 72 percent reduction). This will significantly reduce the mass of arsenic potentially available to leach into groundwater.

To address the exceedances of the PCB action level of 10 mg/kg in Area 3B, it is proposed that all soil exceeding this action level will be removed and disposed of appropriately off-site.

To address the exceedances of Tier 1 screening value for direct contact pathway and the PCB action level of 1 mg/kg, an engineered barrier with

institutional controls is proposed for Areas 1A, 2, 3A, and 3B. The proposed minimum extent of soil cover for the site is presented in Figure 5-11.

A confirmatory soil sampling program will be developed to determine how much soil exceeds the PCB action level of 10 mg/kg and needs to be removed. In addition, the sampling program will identify the extent of soil cover along the western sides of Areas 1A, 2, and 3B, and the northern side of Area 3A. The grid sampling in Areas 1A and 2 have sufficiently delineated the location of arsenic concentrations exceeding the acute action level of 800 mg/kg.

It is proposed that the engineered barrier will consist of clean material of 10-inch thick gravel and 6 inch topsoil placed over a permeable geotextile liner. The specifications for this engineered barrier are presented in Appendix I. The proposed engineered barrier must be approved by the Illinois EPA since it is less than 3 feet of soil cover according to Section 742.1105 of TACO.

The proposed engineered barrier will address all direct contact exposure routes for an industrial/commercial worker. It will prevent incidental ingestion of, dermal contact with, and inhalation of particulates emitted from soil beneath the cover. None of the constituents of interest (various PAHs, pesticides, arsenic, lead, and mercury) are considered to volatilize to a significant extent; therefore, volatilization from soil is not a pathway that must be addressed. However, an engineered barrier will reduce what little volatilization may occur.

Institutional controls will be needed in addition to the engineered barrier. An institutional control will be required to ensure that the engineered barrier is maintained. Since soil will be left in place with concentrations of arsenic, lead, or mercury that exceed Tier 1 screening values for ingestion by the construction worker, an institutional control will be imposed on the site requiring that safety precautions be taken when performing excavation work under the engineered barrier and a requirement to restore the cover after such activity.

To summarize, the proposed remediation objectives for direct contact exposure to soil will be as follows for all constituents:

- Direct contact exposures to an industrial/commercial worker:
  - o Ingestion pathway:

For all constituents except those that exceed Tier 1 screening values for ingestion —Tier 1 screening values.

For those constituents that exceed Tier 1 screening values for ingestion--Pathway exclusion through an engineered barrier and an institutional control where a 10-inch thick layer of

gravel and 6 inches of top soil placed over a permeable geotextile liner, are placed over soil exceeding Tier 1 screening values and the PCB action level of 1 mg/kg.

#### o. Inhalation pathway:

For all constituents --Tier 1 screening values for inhalation. It should be noted that removal of soil with arsenic concentrations that exceed 800 mg/kg will eliminate exceedances of the inhalation pathway for arsenic, since the Tier 1 industrial/commercial worker inhalation screening value for arsenic is 1,200 mg/kg.

#### Direct contact exposures to a construction worker:

#### o Ingestion pathway:

For all constituents except arsenic, lead, and mercury (mercury exceeds Tier 1 screening value in Area 2)—Tier 1 screening values for ingestion.

For arsenic, lead, and mercury-Pathway exclusion through an institutional control that requires safety precautions be taken during excavation activity to address potential exposures to construction workers.

#### o Inhalation pathway:

For all constituents-Tier 1 screening values for inhalation.

If plans to redevelop this part of the site are finalized before the site is remediated, then the engineered barrier may be modified to include building or pavement (e.g., parking lots or roads), as appropriate. In other words, if a part of the area is designated for a building or pavement, then these structures will become the engineered barrier and will not be covered with clean soil, except as is necessary to prepare the foundation for the building or the base for the pavement. During construction of the structures, appropriate health and safety precautions will be taken.

## 5.3 Area 1B: Main Portion of Former Production Area

### 5.3.1 Summary of Initial Evaluation

In Area 1B, there were exceedances of Tier 1 screening values for the ingestion pathway for an industrial/commercial worker for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene,

dibenz(a,h,)anthracene, and arsenic in soil samples. No constituents exceeded Tier 1 screening values for the inhalation pathway for the industrial/commercial worker, the ingestion pathway for the construction worker, or the inhalation pathway for the construction worker.

The locations of surface and subsurface soil samples with exceedances are provided in Figures 5-1 and 5-2, respectively. Five of the six surface soil samples had exceedances of Tier 1 screening values for one or more PAHs. Three of the 10 subsurface soil samples had exceedances of Tier 1 screening values for one or more PAHs or arsenic.

The concentrations of total PCBs exceeded the action level of 1 mg/kg in the subsurface soil sample collected at SB-33 (see Figure 4-2), which also had exceedances of Tier 1 screening levels for PAHs. PCBs were not detected in any of the six surface soil samples analyzed.

## 5.3.2 Proposed Remediation Objectives for Direct Contact Pathways

The initial evaluation identified exceedances of the Tier 1 screening values for the industrial/commercial worker for the ingestion pathway for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and arsenic, and the action level of 1 mg/kg for PCBs. These exceedances will be addressed as follows:

- For all constituents except PCBs that exceed Tier 1 screening values, the exceedances will be addressed through a Tier 3 risk evaluation. This Tier 3 evaluation is presented in Appendix H and discussed below.
- For PCBs, the exceedance will be addressed by either removal, or pathway exclusion through the use of an existing soil cover with an institutional control ensuring the cover is maintained.

The proposed remediation objectives for direct contact exposure to soil will be as follows for all constituents, except PCBs:

- Direct contact exposures to an industrial/commercial worker:
  - o Ingestion pathway:

For those constituents that exceeded Tier 1 screening values for ingestion—Tier 3 evaluation. Tier 3 risk evaluation was completed for a current maintenance worker and a future outdoor worker for a central tendency exposure (CTE) scenario and a reasonable maximum exposure (RME) scenario. The exposure parameters for the maintenance worker reflect actual worker patterns at the site. The exposure parameters for the

future outdoor worker are based on the assumption that the area could be used for any industrial purpose. Therefore, the exposure parameters were conservatively selected to allow for any future industrial use of the area. The Tier 3 evaluation is presented in Appendix H.

The results of the Tier 3 evaluation indicate that all surface and subsurface soil CTE and RME noncancer hazard indices are below an acceptable chronic threshold level of 1, indicating no potential for adverse noncancer effects to either the maintenance or outdoor worker.

When evaluating carcinogenic risks, an acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup> is consistent with the National Oil and Hazardous Substance Pollution Contingency Plan (1990) and with Illinois regulations (Section 742.900; Subpart I of TACO). According to the Illinois EPA, a site with carcinogenic risks less than 10<sup>-6</sup> generally should be considered a no-action site. For sites with carcinogenic risks greater than 10<sup>-6</sup>, further risk evaluation of the site is required. For sites with a carcinogenic risk greater than 10<sup>4</sup>, corrective action is normally required (personal communication with Connie Sullinger of Illinois EPA, April 9, 2002). All surface and subsurface soil RME cancer risks are above Illinois EPA no-action level of 10<sup>-6</sup>, but fall within the carcinogenic risk range of 10<sup>-6</sup> to 10<sup>-4</sup>, where additional site evaluation is required. The CTE cancer risk calculations provide that additional evaluation. cancer risks are all below the Illinois EPA no-action level of 10<sup>-6</sup> (personal communication with Connie Sullinger of Illinois EPA, April 9, 2002).

As discussed above, the RME and CTE assumptions were conservative to allow for unrestricted industrial use. While it is possible that Area 1B will be used in the future, the majority of the site is expected to be covered with buildings or surface cover (pavement, gravel, etc.), which would limit direct contact. This, along with the results of the Tier 3 risk evaluation, indicates little or no potential for adverse effects to either the maintenance or outdoor worker.

#### o Inhalation pathway:

For all constituents--Tier 1 screening values for inhalation. Although no constituents exceeded Tier 1 screening values for inhalation, the inhalation pathway was incorporated into the Tier 3 risk evaluation for those constituents which exceeded Tier 1 screening values for ingestion. The Tier 3 evaluation is

presented in Appendix H. This allowed cumulative risks and hazard indices associated with all relevant direct contact pathways to be evaluated. As discussed above, the Tier 3 risk evaluation indicated little or no potential for adverse effects to either the maintenance or outdoor workers. The inhalation pathways represented less than one percent of the total risks and hazard indices calculated.

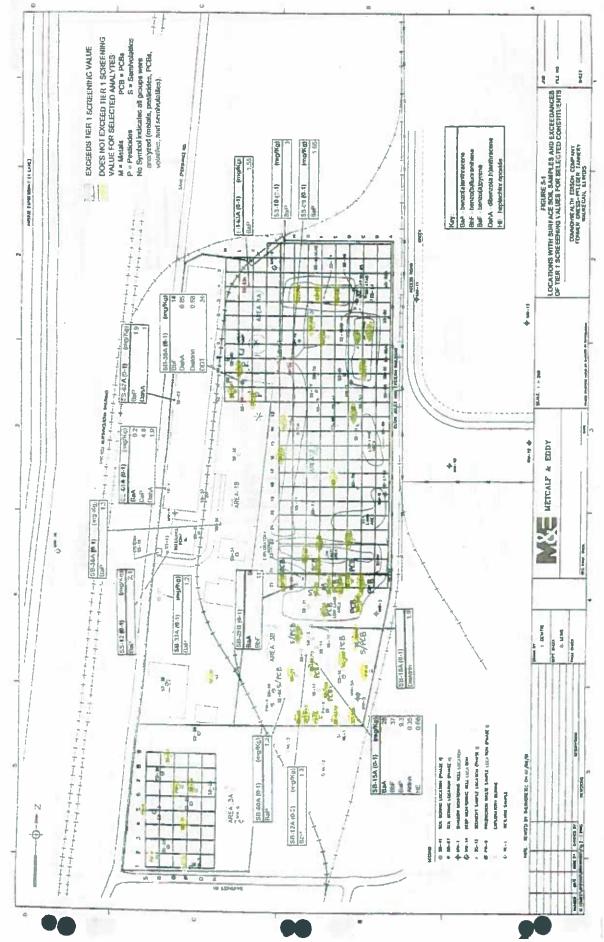
- Direct contact exposures to a construction worker.
  - o Ingestion pathway:

For all constituents-Tier 1 screening values for ingestion

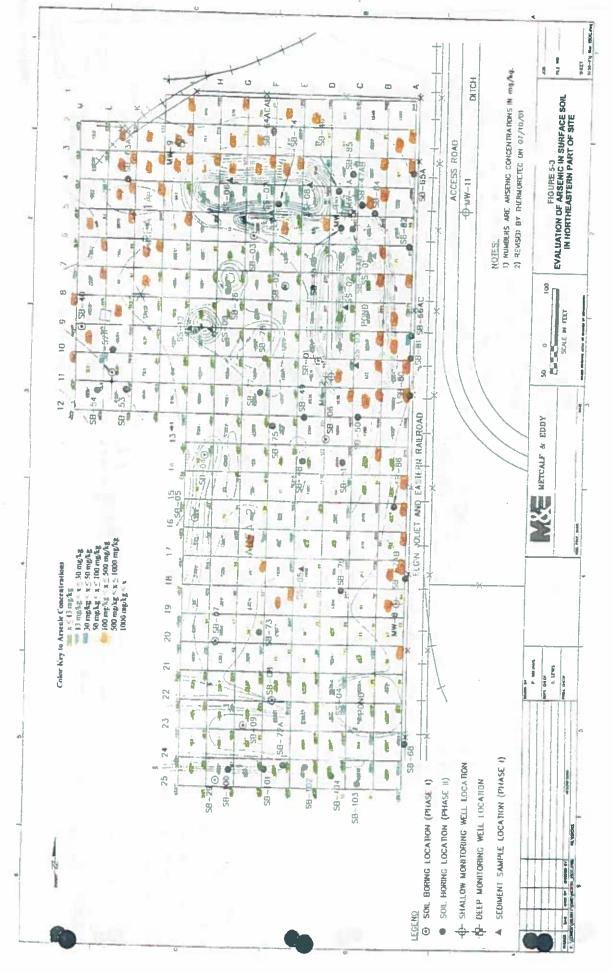
o Inhalation pathway:

For all constituents-Tier 1 screening values for inhalation

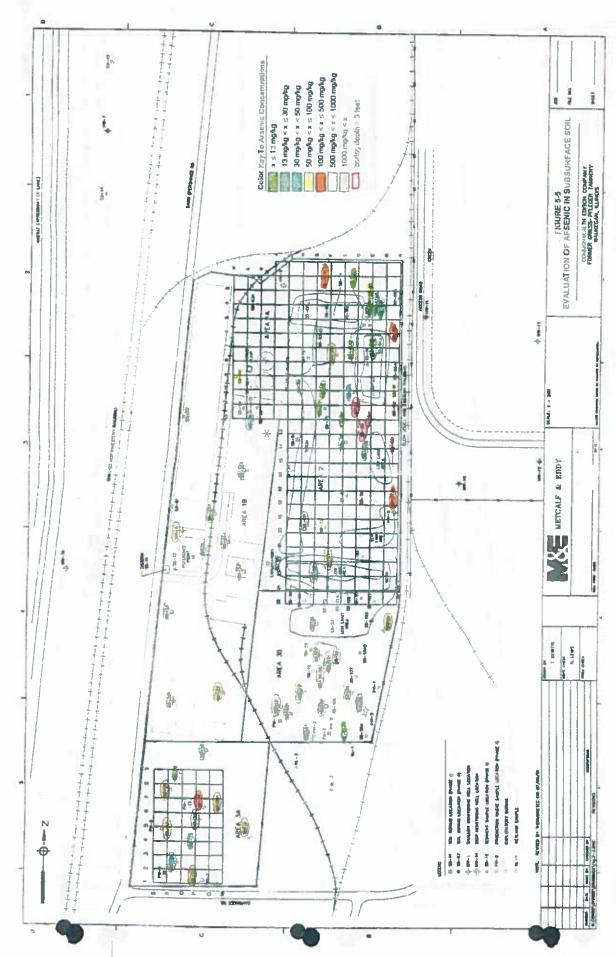
For PCBs, the proposed remediation objective is pathway exclusion through a soil cover or removal. As indicated earlier, there were no PCB concentrations greater than 10 mg/kg in Area 1B. There was one subsurface soil sample which exceeded 1 mg/kg, but the corresponding surface soil sample was not detected for PCBs. Therefore, a soil cover is effectively in place.



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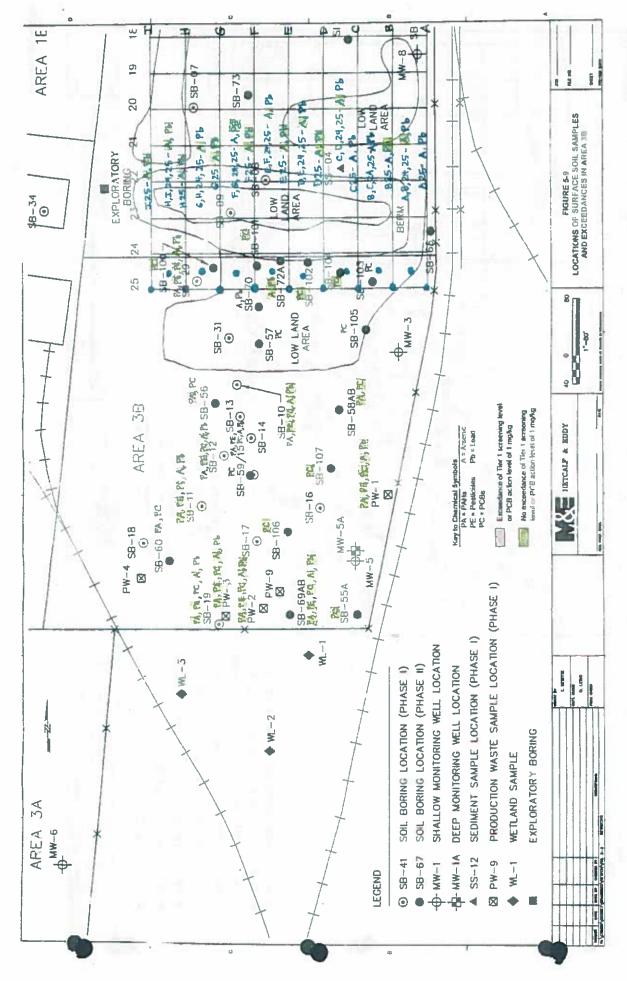


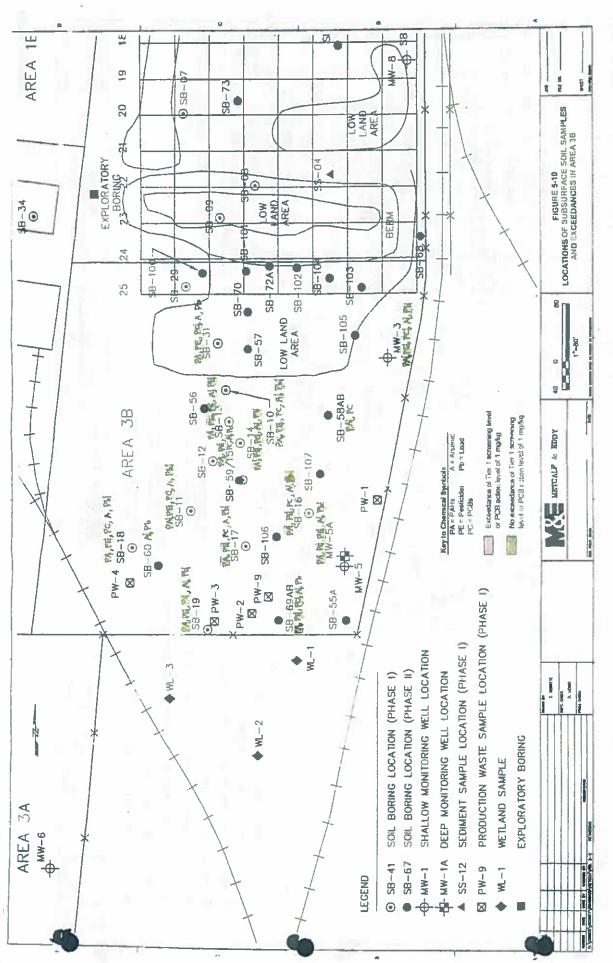
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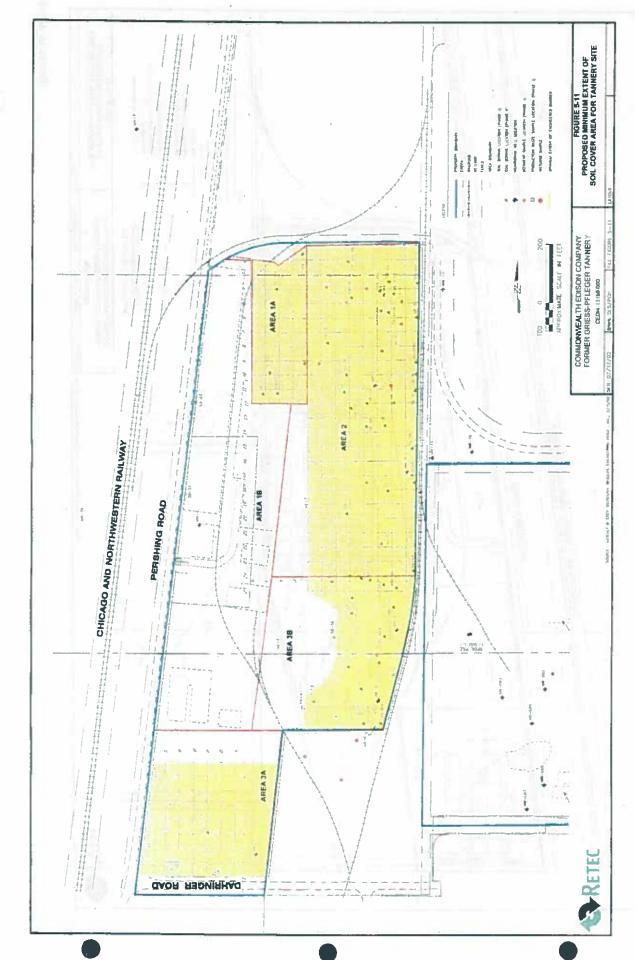
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## 6 Summary of Remediation Objectives

#### 6.1 Introduction

This document presented an evaluation of soil and groundwater exposure pathways for the tannery site. The purpose of this evaluation was to determine remediation objectives for the site. The following pathways were evaluated:

- Direct contact exposures with soil pathways (incidental ingestion and inhalation for industrial/commercial workers and construction workers)
- Groundwater pathway
  - o the groundwater component of the groundwater ingestion exposure route
  - the soil component of the groundwater ingestion exposure route
- Groundwater to surface water pathway

In addition, the presence of PCBs in soil was evaluated utilizing the procedures provided in the PCB Mega-Rule.

A summary of the results of the evaluation of each pathway and the selection of remediation objectives are provided in the following subsections. A summary of the evaluation of source material is also provided.

### 6.2 Summary of Source Material Evaluation

The data for the tannery site were evaluated to determine if there is any source material on the site as defined under Section 742.305 of TACO (IPCB, 2001). The only source materials currently on the site were materials associated with four samples that exceeded the toxicity characteristic of TCLP.

The first type of source material was the contents of a rusted 5-gallon pail. The sample associated with this material, PW-4, exceeded the TCLP regulatory limit for lead. The material from this rusted pail was subsequently removed and disposed off-site in an appropriate manner.

The second type of source material was gray, white, and pink hide material with a slight odor. The sample associated with this material, PW-9, exceeded the TCLP limit for chromium. As discussed in detail in the Phase II Remedial Investigation Report (Metcalf & Eddy, 1995), this material would not be classified as a hazardous waste because it meets the requirements of the

chromium waste exclusion. However, this material is considered a source material under TACO. The material associated with PW-9 will be removed. In addition, the surface of the site will be surveyed and any material that is similar to this material (i.e., gray, white, and pink hide material with a slight odor) will be identified and then removed.

The third type of source material was soil at soil boring SB-69. The samples associated with this soil, SB-69A/CA and SB-69B/CB, exceeded the TCLP limit for mercury. The soil from this location will be removed. These samples are located very close to PW-9.

### 6.3 Exposures with Soil Pathways

The selection of remediation objectives for Areas 1A, 2, 3A, and 3B is provided in Section 6.3.1. Area 1B is discussed separately in Section 6.3.2. A summary of remediation objectives for soil is presented in Table 6-1.

## 6.3.1 Proposed Remediation Objectives for Direct Contact Pathways for Areas 1A, 2, 3A, and 3B

Tier 1 screening value exceedances for Areas 1A, 2, 3A, and 3B will be addressed by pathway exclusion through the use of an engineered barrier with institutional controls that:

- · Ensure the engineered barrier is maintained
- Require safety precautions be taken during excavation activity to address potential exposures to construction workers

It is proposed that the engineered barrier will consist of clean material of 10-inch thick gravel and 6 inch topsoil placed over a permeable geotextile liner. The specifications for this engineered barrier are presented in Appendix I. The proposed minimum extent of the engineered barrier for the site is presented in Figure 5-11.

A confirmatory sampling program will be developed to determine how much soil exceeds the PCB action level of 10 mg/kg and needs to be removed. In addition, the sampling program will identify the extent of soil cover along the western sides of Areas 1A, 2, and 3B, and the northern side of Area 3A. The grid sampling in Areas 1A and 2 have sufficiently delineated the location of arsenic concentrations exceeding the acute action level of 800 mg/kg.

Institutional controls will be needed in addition to the engineered barrier. An institutional control will be required to ensure that the engineered barrier is maintained. Since soil will be left in place with concentrations of arsenic, lead, or mercury that exceed Tier 1 screening values for ingestion by the construction worker, an institutional control will be imposed on the site requiring that safety precautions be taken when performing excavation work

6-2

under the engineered barrier and a requirement to restore the cover after such activity.

To summarize, the proposed remediation objectives for direct contact exposure to soil will be as follows for all constituents:

- Direct contact exposures to an industrial/commercial worker:
  - o Ingestion pathway:

For all constituents except those that exceed Tier 1 screening values for ingestion—Tier 1 screening values.

For those constituents that exceed Tier 1 screening values for ingestion--Pathway exclusion through an engineered barrier and institutional control where a soil cover is placed over soil exceeding Tier 1 screening values and the PCB action level of 1 mg/kg.

#### o Inhalation pathway:

For all constituents —Tier 1 screening values for inhalation. It should be noted that removal of soil with arsenic concentrations that exceeds 800 mg/kg will eliminate exceedances of the inhalation pathway for arsenic, since the Tier 1 industrial/commercial worker inhalation screening value for arsenic is 1,200 mg/kg.

- Direct contact exposures to a construction worker:
  - o Ingestion pathway:

For all constituents except arsenic, lead and mercury (mercury exceeds Tier 1 screening value in Area 2)--Tier 1 screening values for ingestion.

For arsenic, lead, and mercury-Pathway exclusion through an institutional control that requires safety precautions be taken during excavation activity to address potential exposures to construction workers.

Inhalation pathway:

For all constituents-Tier I screening values for inhalation.

If plans to redevelop this part of the site are finalized before the site is remediated, then the engineered barrier may be modified to include building or pavement (e.g., parking lots or roads), as appropriate. In other words, if a

part of the area is designated for a building or pavement, then these structures will become the engineered barrier and will not be covered with clean soil, except as is necessary to prepare the foundation for the building or the base for the pavement. During construction of the structures, appropriate health and safety precautions will be taken.

### 6.3.2 Proposed Remediation Objectives for Area 1B

In Area 1B, there were exceedances of Tier 1 screening values for the pathway an industrial/commercial worker ingestion for benzo(b)fluoranthene, benzo(a)pyrene, benzo(a)anthracene, dibenz(a,h,)anthracene, and arsenic in soil samples. No constituents exceeded Tier 1 screening values for the inhalation pathway for the industrial/commercial worker, the ingestion pathway for the construction worker, or the inhalation pathway for the construction worker. The concentration of total PCBs exceeded the action level of 1 mg/kg in one subsurface soil sample. PCBs were not detected in any of the surface soil samples analyzed.

These exceedances will be addressed as follows:

- For all constituents except PCBs that exceed Tier 1 screening values, the exceedances will be addressed through a Tier 3 risk evaluation. This Tier 3 evaluation is presented in detail in Appendix H.
- For PCBs, the exceedance will be addressed by pathway exclusion through the use of an existing soil cover with an institutional control ensuring the cover is maintained

The remediation objectives for direct contact exposures to soil in Area 1B are as follows for all constituents, except PCBs:

- Direct contact exposures to an industrial/commercial worker:
  - o Ingestion pathway:

For those constituents that exceed Tier 1 screening values for ingestion—Tier 3 evaluation. A Tier 3 risk evaluation was completed for a current maintenance worker and a future outdoor worker for a CTE scenario and a RME scenario. The exposure parameters for the maintenance worker reflect actual work patterns at the site. The exposure parameters for the future outdoor worker are based on the assumption that the area could be used for any institutional purpose. Therefore, the exposure parameters were conservatively selected to allow any future institutional use of the area.

6-4

The results of the Tier 3 evaluation indicate that all surface and subsurface soil CTE and RME noncancer hazard indices are below an acceptable chronic threshold level of 1, indicating no potential for adverse noncancer effects to either the maintenance or outdoor worker. In addition, all surface and subsurface soil RME cancer risks are above Illinois EPA no-action level of 10<sup>-6</sup>, but fall within the carcinogenic risk range of 10<sup>-6</sup> to 10<sup>-4</sup>, where additional site evaluation is required. The CTE cancer risk calculations provide that additional evaluation. The CTE cancer risks are below the Illinois EPA no-action level of 10<sup>-6</sup> (personal communication with Connie Sullinger of Illinois EPA, April 9, 2002).

As discussed above, the RME and CTE assumptions were conservative to allow for unrestricted industrial use. Additionally, through expected redevelopments, the majority of the site (including Area 1B) is expected to be covered with buildings or surface cover (pavement, gravel etc.) which would limit direct contact. This, along with the results of the Tier 3 risk evaluation, indicates little or no potential for adverse effects to either the maintenance or outdoor worker.

#### o Inhalation pathway:

For all constituents--Tier 1 screening values for inhalation. Although no constituents exceeded the Tier 1 screening values for inhalation, the inhalation pathway was incorporated as part of Tier 3 risk evaluation for those constituents that exceeded Tier 1 screening values for ingestion.

The Tier 3 risk evaluation indicated little or no potential for adverse effects to either the maintenance or outdoor workers. The inhalation pathways represented less than one percent of the total risks and hazard indices calculated.

- Direct contact exposures to a construction worker:
  - o Ingestion pathway:

For all constituents--Tier 1 screening values for ingestion

Inhalation pathway:

For all constituents--Tier 1 screening values for inhalation

For PCBs, the proposed remediation objective is pathway exclusion through a soil cover. As indicated earlier, there were no PCB concentrations greater than 10 mg/kg. There was one subsurface soil sample which exceeded 1 mg/kg, but

the corresponding surface soil sample was not detected for PCBs. Therefore, a soil cover is effectively in place or soil may be removed.

### 6.4 Groundwater Ingestion Exposures

Groundwater ingestion exposures were evaluated for the groundwater component of the groundwater ingestion exposure route and the soil component of the groundwater ingestion exposure route.

## 6.4.1 Groundwater Component of the Groundwater Ingestion Exposure Route

The groundwater component of the groundwater ingestion exposure route was evaluated by first eliminating from consideration any constituents that were not detected, which eliminated all organic constituents (VOCs, SVOCs, pesticides, and PCBs) as well as beryllium, cobalt, copper, nickel, thallium, and vanadium. For the constituents that remained, the measured groundwater concentrations were compared to Tier 1 screening values for the groundwater component of the groundwater ingestion exposure route for Class I groundwater. All but arsenic, iron, magnesium, manganese, and TDS were present in groundwater below Tier 1 screening values. These exceedances will be addressed through an institutional control that will prevent groundwater from being used as a source of drinking water. The remediation objectives for the groundwater component of the groundwater ingestion exposure route are summarized in Table 6-2 for constituents that were detected in groundwater.

The extent of off-site migration of arsenic, iron, magnesium, manganese, and TDS was evaluated using equation R26 of TACO. The R26 models the steady state concentration of a dissolved constituent along the center-line of the groundwater plume of some distance from the source. The results of the groundwater modeling indicated that arsenic and manganese concentrations will not exceed their Tier 1 screening values at approximately 750 and 1,000 feet, respectively, downgradient from the source. For the remaining constituents, the concentrations of iron, magnesium and TDS will not exceed their Tier 1 screening values at less than 500 feet from the source. Therefore, the extent of the institutional control required for the groundwater should not extend more than 1,000 feet downgradient of the source.

## 6.4.2 Soil Component of the Groundwater Ingestion Exposure Route

The remediation objectives for the soil component of the groundwater ingestion exposure route are Tier 1 screening values for Class I groundwater for all constituents except methylene chloride, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, carbazole, pentachlorophenol, beta-BHC, DDT, dieldrin, antimony, arsenic, barium, lead, mercury, selenium, and silver. For methylene chloride, benzo(a)anthracene, benzo(b)fluoranthene,

benzo(a)pyrene, carbazole, beta-BHC, and DDT, the remediation objectives for the soil component of the groundwater ingestion exposure route are Tier 2 screening values. For pentachlorophenol, dieldrin, antimony, barium, lead, mercury, selenium, and silver, the remediation objectives are pathway exclusion under Tier 3 through a qualitative analysis which demonstrated that leaching from soil to groundwater is not significant for these constituents. For arsenic, the remediation objectives are pathway exclusion through an institutional control that prevents groundwater from being used as a source of drinking water. The remediation objectives for the soil component of the groundwater ingestion exposure route are summarized in Table 6-1.

### 6.5 Groundwater to Surface Water Pathway

The groundwater to surface water pathway was evaluated by first eliminating from consideration any constituents that were not detected, which eliminated all organic constituents (VOCs, SVOCs, pesticides, and PCBs) as well as beryllium, cobalt, copper, nickel, thallium, and vanadium. For the constituents that remained, the measured groundwater concentrations were compared to human health and ecological surface water quality standards. All but arsenic, calcium, chromium, iron, magnesium, manganese, mercury, zinc, and TDS were present below surface water quality standards. Mercury was detected in only two of 24 groundwater samples and both detects were at the detection limits. Therefore, mercury is not believed to be present in groundwater at significant concentrations. Arsenic, calcium, chromium, iron, magnesium, manganese, zinc, and TDS were further investigated through a Tier 2 fate and transport analysis used to predict the concentrations of these constituents in groundwater at Lake Michigan, the nearest surface water body.

The migration of arsenic, calcium, chromium, iron, magnesium, manganese, zinc, and TDS was modeled using equation R26 of TACO. This equation models the steady state concentration of dissolved constituents along the center-line of the groundwater plume at distance from the source. The results of this modeling indicated that the steady state concentrations of arsenic, calcium, chromium, iron, magnesium, manganese, zinc, and TDS will be significantly below the minimum surface water quality standard, at a distance of 3,100 feet from the respective sources where groundwater is discharging to Lake Michigan water. Therefore, the remediation objectives are surface water quality standards for all constituents including arsenic, calcium, chromium, iron, magnesium, manganese, zinc, and TDS as determined by a Tier 2 quantitative fate and transport analysis. The remediation objectives for the groundwater to surface water pathway are summarized in Table 6-2.

Table 6-1 Summary of Remediation Objectives for Soil

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Mechanism for Pothway Exclusion			Soc. Expressed barrier (soil cover) and institutional controls; GW Incomessi controls to receive our extractor in a few and		Carry parent or grounded in page 10 page 10			CORP. HET STEM OVERHEIDEN BEDOONES HEN OF TO PERSONAL TOT	echenie filik to incapiana art sala.	GW. Problems compts to prevent promovers use for soil	Industrial advantage of the property on	Call Contract the state from the same and a second successful to the same	Carlo Deliver (See Carlo) and Property Carlos.	contonent of ground-ser Ingestion		Solt. Environment huming (and count) and built alternal contracts	GWF Institutional controls to convent organideater use for soil	concorneri of organidadas Incasticas				Scall Engineered bands fand transfundinglik demakennen	Carlo best freed (maketh in lanced (m. ordenter) as by said		Control of Control of Control	
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Table 6-2 Summary of Remediation Objectives for Groundwater

	Mechanism for Pathway Exclusion			GW: pathway exclusion through an institutional	control (elther an ordinance or ELLIC) to prevent	groundwater use;	GW-SW: Tier 2 quantitative fate and transport	slayers		
GW - SW Remediation	Objective	SWGS-Tier 2	SWOS-Tler 2	SWOS-Tier 2	SWGS-Tier 2	SWOS-Tier 2	SWGS-Tier 2	SWGS-Tler 1	SWOS-Tier 2	SWITHE
	GW Remediation Objective	PE4C/Tier 1	PE-IC/Tie/ 1	PE-IC/Tier 1	PE-IC/Tier 1	PE-IC/Tier 1	は 一般の	一 大概以問 新	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
Exceed Ther 1 Groundwater/Surface Water Values	R26 Modeling - SW [c]					None				100 ST 10
	RZ6 Modeling - GW [b]	750 ft	1000 ft	₩ <300 W	<500 ft	4,00€>	一時 日本 一方子	年期 不上有 在	明 特	24 T
	GW to \$WD9	Arsenic	Colcium	Chromlum	lron	Magnesium	Manganese	Mercury [a]	Total Dissolved Solids	Zlove
	Ingestion - Class 1	Arsenic	fron	Magnesum	Manganese	Total Dissolved Solids	一般の ではあります			

Notes:

[a] Not beferred to be present in groundwater at significant concentrations

[b] Not beferred to be present in groundwater at significant concentrations

[c] R28 modeled results and be identificated conformations in the Michigan)

[c] R28 modeled results for nearest groundwater surface weter neceptor (Lake Michigan)

PE-LCTIer 1: Pathway exclusion through an institution and conformation (where an ordinance or ELUC) to prevent groundwater use at locations where Tier 1 screening values are exceeded

SWCS-Tier 1: Suffices weter quality standard through Tier 2 melytals

SWCS-Tier 1: Pathway explain standard through Tier 2 melytals

ELUC = Environmental land use confrol

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August 8, 2002

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## Appendix A

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# Source Material Evaluation

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#### 1.0 Overview

This appendix presents an evaluation of data for the tannery site to determine if source material, as defined under TACO, exists on the site. The determination of source material is based on the criteria set forth in Section 742.305 of TACO (IPCB, 2001). The criteria require examinations of the following:

- Soil attenuation capacity (Section 742.305(a) of TACO)
- Soil saturation limit (Section 742.305(b) of TACO)
- Characteristics of reactivity for hazardous waste (Section 742.305(c) of TACO)
- pH (Section 742.305(d) of TACO)
- Characteristics of inorganic chemical toxicity for hazardous waste (Section 742.305(e) of TACO)

### 2.0 Soil Attenuation Capacity

To be classified as source material based on the soil attenuation capacity criterion, either the sum of the concentrations of all organic constituents of interest, or the TPH, must exceed the attenuation capacity of the native soil. The attenuation capacity is defined by the fraction of natural organic carbon (foc) in the soil.

The average organic carbon content in soil was determined to be 5.13% (Metcalf & Eddy, 1998). As a very conservative measure of the sum of organic constituents, the maximum detected concentration of each organic constituent was summed. These results are presented in Table 1. The total is 419 mg/kg, which is well below 51,300 mg/kg.

No TPH analysis was performed on samples from the site so a comparison of TPH concentrations to the attenuation capacity of the soil could not be done. No samples were analyzed for TPH because organic constituents were not present on the site at elevated concentrations, as the above evaluation indicates.

#### 3.0 Soil Saturation Limit

To be classified as source material based on the soil saturation limit criterion, the concentrations of organic chemicals whose melting points are less than 30°C must exceed their soil saturation limits (Csat). Generic, non-site specific values for Csat for each applicable chemical can be obtained from the values listed in Section 742 Appendix A, Table A of TACO.

Table 1 provides values of Csat for constituents with melting points below 30°C. The maximum detected concentration of each constituent is below its Csat value.

#### 4.0 Reactivity

To be classified as source material based on the reactivity criterion, the material must exhibit the characteristics of reactivity for hazardous waste as determined under 35 IAC Section 721.123. No samples were analyzed for reactivity, so this evaluation cannot be performed. However, no samples were analyzed for reactivity because no materials on the site appeared to be reactive.

Several soil samples were analyzed for cyanide and the maximum concentration of total cyanide was 1.23 mg/kg, well below a concentration that would exhibit reactive characteristics.

### 5.0 pH

To be classified as source material based on the pH criterion, the material must exhibit a pH less than or equal to 2.0 or greater than or equal to 12.5. Fifty soil samples were analyzed for pH. The results are provided in Table 2. The pH values ranged from 5.5 to 9.0, indicating that the soil is not a source material by this criterion.

### 6.0 Inorganic Chemical Toxicity

To be classified as source material based on the inorganic chemical toxicity criterion, the material must exhibit the characteristics of toxicity for hazardous waste as determined under 35 IAC 721.124 for arsenic, barium, cadmium, chromium, lead, mercury, selenium, or silver.

In the Phase I investigation, nine "production waste" samples (PW-1 through PW-9) were collected and subjected to TCLP analysis for metals. The results were provided in Table 6-5 of that report (Metcalf & Eddy, 1995). A copy of that table is included. Sample PW-4, which was taken from a rusted 5-gallon pail, exceeded the TCLP criterion for lead. The material from this rusted pail was subsequently removed and disposed offsite in an appropriate manner. Sample PW-5 had an exceedance for chromium. This material was resampled in the Phase II investigation and was below the criterion. The TCLP results from the Phase II investigation were provided on one page of Table 4-2 and all of Table 4-5 in the Phase II Remedial Investigation Report (Metcalf & Eddy, 1997). Copies of these tables are attached. Sample PW-9 from the Phase I investigation had an exceedance for chromium. This material was resampled in the Phase II investigation and this also had an exceedance for chromium. As discussed in detail in the Phase II Remedial Investigation Report (Metcalf & Eddy, 1997), this material would not be classified as a hazardous waste because it meets the requirements of the chromium waste exclusion. However, this material would be considered a source material under TACO. The material associated with PW-9 will be removed. In addition, the surface of the site will be surveyed and any material that is similar to this material (i.e., it is a gray, white and pink hide material with a slight odor) will be identified and subsequently removed.

In the Phase II investigation, 17 soil samples were subjected to TCLP analysis (see Table 4-2 (Continued)). In 15 of the samples, there were no exceedances of the TCLP criteria. In samples SB-69A/CA and SB-69B/CB there were exceedances for mercury. Since this soil is considered source material under TACO, it will be removed. These samples are located very close to PW-9.

In the Phase II investigation, two soil samples with elevated arsenic concentrations (one from the location with the highest concentration of arsenic measured on the site) were subjected to TCLP analysis. The results are provided in Table 4-5. Neither sample failed the TCLP criterion of 5 mg/L for arsenic.

During the grid sampling, several samples were collected and subjected to TCLP testing for arsenic and lead. The result of this testing is presented in Table 3. None of the samples exceeded the TCLP criterion for either arsenic or lead.

#### 7.0 References

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Table 1 Maximum Detected Concentration of Organic Constituents in Soil and Evaluation of Soil Saturation Limit

Constituent of Interest	CAS No. Value	Maximum Detected Concentration	Soil Saturation Limit (Csat)	Does Max. Det. Conc. Exceed Csat?
VOCs	ONO IND. VAIDE	(mg/kg)	(mg/kg)	
Acetone	67641	0.31	100000	NC
2-Butanone	78933	0.02	100000	INC.
Carbon disulfide	75150	0.022	720	NO
Methylene Chloride	75092	0.022	2400	NO
Toluene	108883	0.008	650	NO
Trichloroethene	79016	0.014	1300	NC NC
SVOCs	70010	0.014	1000	140
PAHs				
Acenaphthene	83329	1.8		
Acenaphthylene	208968	0.48		
Anthracene	120127	15		
Benzo(a)anthracene	56553	28		
Benzo(b)fluoranthene	205992	37		
Benzo(k)fluroanthene	207089	10		5.0
Benzo(a)pyrene	50328	9.9		
Benzo(g,h,l)perylene	191242	6.1		
Carbazole	86748	2	111	
Chrysene	218019	30		
Dibenzo(a.h)anthracene	53703	1.9		
Dibenzofuran	132649	1.9		
Fluoranthene	206440	71		
Fluorene	86737	2.2		
Indeno(1,2,3-c,d)pyrene	193395	6.8		
2-Methylnaphthalene	91576	3.5		
Naphthalene	91203	1.8		
Phenanthrene	85018	67		
Pyrene	129000	45	88	
Other SVOCs			7%	
Bls(2-ethylhexyt)phthalate	117817	24	31000	- NO
Di-n-butyl phthalate	84742	0.83	2300	NC
Pentachiorophenol	87865	1.2		
Pesticides	55			
Aldrin	309002	0.35		
beta-BHC	319857	0.038		
alpha-Chlordane	57749	0.37		
gamma-Chiordane	57749	0.25	1	
DDD	72548	8		
DDE	72559	5.4		
TOO	50293	34		
Dieldrin	60571	1.9		
Endrin	72208	0.05	ì	
Endosulfan	115297	0.017		
-leptachlor	76448	0.043		
Heptachlor apoxide	1024573	0.68		
Methoxychior	72435	0.078		
Total		419		

Table 2 Results of pH Analysis of Soil Samples

	,		
Sample		Sample	
Number	pH Result	Number	pH Result
1	5.5	26	7.8
2	5.8	27	7.9
3	6	28	7.9
4	6.2	29	7.9
5	6.6	30	7.9
6	6.8	31	8.1
7		32	8.1
8		33	8.1
9	7.4	34	8.1
10		35	8.1
11		36	8.1
12		37	8.1
13		38	8.2
14		39	8.2
15		40	8.2
16		41	8.3
17		42	8.3
18		43	8.3
19		44	8.4
20		45	8.4
21		46	8.4
22		47	8.5
23		48	8.6
24		49	8.6
25		50	9
Summary	Statistics		
Minimum			5.5
Median			7.8
Mean			7.77
Maximum			9

Table 3 Results of TCLP Testing of Grid Samples

#### A. Arsenic

Sample ID	Soil Concentration mg/kg	TCLP Result	TCLP Criterion mg/L
C,D,12,13	5980	1.52	5
C,D,13,14	2590	0.563	5
F,G,5,6	2560	0.745	5
A4	2550	0.305	5
D,E,12,13	2380	< 0.005	5
B,C,15,16	2170	0.327	5
C12	4650	1.57	5
B15	4080	0.887	5

### B. Lead

	D. Lead	1.5			
	Sample ID	Soil Concentration mg/kg	тс	LP Result	TCLP Criterion mg/L
	C,D,18,19	7740	I	0.099	5
	H,I,14,15	3500		0.036	5
	H,I,13,14	2500	<	0.005	5
	H,I,10,11	2100	<	0.005	5
	I19	2100	<	0.005	5
	F,G,14,15	2000	<	0.005	5
N	H,I,12,13	1980	<	0.005	5
1	B23	2100	<	0.0075	5
	D,E,23,24	1950	<	0.0075	5
	C,D,21,22	1910		0.0488	5

PRODUCTION WASTE TCLP RESULTS
FORMER GREISS—PFLEGER TANNERY
COMMONWEALTH EDISON COMPANY
WAUKEGAN, ILLINOIS TABLE 6-5

	PW~1	PW-2	PW-3	PW-4	PW-5	PW-0	PW-7	PW-B	PW-9	Regulatory
										Lhmits
				٠						
ICLP METALS										
						77				
ARSENIC	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	5.0
JARUM	0.647	0.272	0.229	0.731	2.03	13.1	0,325	1,16	0.145	100.0
SADMIUM	<0.005	0.176	<0.00>	0.046	<0.005	<0.005	<0.005	0.314	<0.005	1.0
CHROMIN	0.017	0.075	<0.010	0.260	. 900	<0.010	<0.010	0.071	24.2	5.0
LEAD	<0.050	<0.050	<0,050	-6.89	0.054	<0.050	<0.050	0.756	<0.050	5.0
MERCURY.	0.0003	0.0002	<0.0002	0.004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.2
SELFNIUM	<0.075	<0.375	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	1.0
Saves	<0.010	<0.050	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	<0.010	5,0

- Mercury value reported from enalysis outside of methods holding time. All units mgR

- indicates exceedance of regulatory limits.

From Remedial Investigation Report-Phase I for the Forman Griess-Pfleger Tannery Site, Prepared by Metralf & Eddy, 1995.

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TABLE 4-2 inued)
SOIL ANALYTIME RESULTS
FORMER GRIESS-PFLEGER TANNERY
COMMONWEALTH EDISON COMPANY
WAUKEGAN, ILLINOIS

Sample 1D Number	SB-60B	SB-64A/CA	SB-64CB	SB-66A/CA	SB-67A/CA	SB-67B/CB	SB-69A/CA	SB-69B/CB	SB-70A	Regulatory
IEA Sample ID Number	950188014	950182012	950182013	950182016	950182016	950182017	950182019	950182020	950188001	Limit
TCLP INORG, COMPOUNDS										
Arsenic	<0.1	<0.1	40.1	40.1	~0.1	<0.1	<0.1	<0.1	<0.1	5.0
Barium	0.33	0.60	0.72	0.86	0.76	0.87	1.1	0.70	0.040	100.0
Cadmium	0:030	<0.005	<0.005	<0.005	<0.005	<0.005	0.0088	<0.005	0.042	1.0
Chromium	0.050	0.37	0.24	990.0	0.076	0.045	0.015	0.012	0.097	5.0
Lead	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	5.0
Mercury	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	/50	86.0	<0.002	0.2
Selenium	<0.1	<0.1	<0.1	<0.1	<0.1	<b>*0.1</b>	<0.1	<0.1	0.1	1.0
Silver	0.033	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	5.0

Sample 1D Number	SB-71A	58-718	SB-72A	SB-73A	SB-73B	SB-74A	SB-75A	SB-76A	PW-5	Regulatory
IEA Sample ID Number	950188002	950188003	950188004	950188006	950188007	950188008	950188009	950188010	950188005	Limit
TCLP INORG. COMPOUNDS										
Arsenic	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	5.0
Barium	0.20	0.14	0.18	0.14	0.2	0.35	0.26	0.44	0.15	100.0
Cadmium	<0.005	<0.005	<0.005	<0.005	<0,005	<0.005	<0.005	<0.005	<0.005	1.0
Chromium	0.24	0.27	0.28	0.19	0.24	0.42	0.30	0.65	09.0	5.0
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	2.0
Mercury	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.2
Selenium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.0
Silver	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	2.0

Sample ID Number	6-Md	Regulatory
IEA Sample ID Number	950188011	Clark
TCLP INORG. COMPOUNDS		
Arsenic	<0.1	5.0
Barium	0,093	100.0
Cadmium	<0.005	1.0
Chromium	1.0	5.0
Lead	<0.05	5.0
Mercury	<0.0002	0.2
Selenium	<0.1	1.0
Silver	0.033	5.0

Units are in mg/L (ppm)

Reference: From Phase II Remedial Investigation Report, Former Griess Pileger Tannery Site, Prepared by Metcalf and Eddy, 1997

,	_	_		
	SB-48B	950153009		g
	SB-48A	950153008		SS
	SB-47B	950153007 95		t
	SB-45A SB-45B SB-46A SB-46B SB-47A SB-47B SB-48A	50153005 950153006		46
	SB-46B	950153005	i	13
	SB-46A	950153005 9		17
	SB-45B	950153004		12
	SB-45A	950153003		24
	SB-44B	950153002		0
	SB-44A	950153001		AROO
	Sample ID Number	EA Sample ID Number	INORG. COMPD - Arsenic Only	Arsenic

Units are in mg/kg (ppm)

Regualtory	Limit		5.0	
SB-44A	950153010		9'0	
Sample ID Number	IEA Sample ID Number	NORG. COMPD - Arsenic Only	TCLP Arsenic	

Units are in mg/L (ppm)

							!			
Sample ID Number	SB-49A	SB-49B	SB-50A SB-50B	SB-50B	SB-51A	SB-51B	SB-51A SB-51B SB-77A	SB-77B	SB-78A	SB-78B
IEA Sample ID Number	950153010	950153011	950153012	950153014	10153014 950153015 98	950153016	950248015	950248016	950248017	950248018
VORG. COMPD - Arsenic Only										
Arsenic	18	9.5	3.5	10000	. 16	25	8.5	8.5	13	7.8

Units are in mg/kg (ppm)

Regualtory	Limit		5.0	
SB-50B	950153011		2.2	
Sample ID Number	IEA Sample ID Number	INORG. COMPD - Argenic Only	TCLP Arsenic	

Units are in mg/L (ppm)

Sample ID Number	SB-79A	SB-79B	SB-80A	SB-808	SB-81A	SB-81B	SB-79B   SB-80A   SB-80B   SB-81A   SB-81B   SB-82A	SB-62B	SB-83A	SB-83B
IEA Sample ID Number	950248013	950248014	950248019	950246020	950153001	950153002	002 950153003	950153004	950153005	950153006
INORG. COMPD - Arsenic Only										
Arsenic	23	780	1600	710	48	52	180	240	57	ន

Units are in mg/kg (ppm)

SB-86B	950153012		4800
SB-86A	950153011		21
SB-85B	950153010		20
SB-85/	950153009		210
SB-84B	950153008		19
SB-84A	950153007		7.1
Sample 10 Number	IEA Sample ID Number	INORG. COMPD - Arsenic Only	Arsenic

Units are in mg/kg (ppm)

From Phone II Romedual Investigation Report, Formon Grisas-Pflogen Janvery Sills, Prepared by Metcaffet Eddy, 1997.

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# Appendix B

Site Data and Comparison to Screening Values, and 2002 Groundwater Analytical Report

### Overview

This appendix provides site data for constituents evaluated in more detail based on the results of the initial evaluation and the requirements for a risk assessment. Tables 1 through 10 provide a comparison of soil data to Tier 1 screening values for direct contact pathways for nonresidential receptors (i.e., industrial/commercial workers via ingestion, industrial/commercial workers via inhalation, construction workers via ingestion, and construction workers via inhalation). The comparison is by area, beginning with Area 1A for surface soil (Table 1) and subsurface soil (Table 2), and then proceeding to Area 1B (Tables 3 and 4), Area 2 (Tables 5 and 6), Area 3A (Tables 7 and 8), and Area 3B (Tables 9 and 10). A comparison of total PCBs to the action level of 1 mg/kg is also provided in these tables.

Tables 11 through 20 provide a comparison of soil data to Tier 1 or Tier 2 screening values for the soil component of the groundwater ingestion exposure route. Once again, the comparison is by area, beginning with Area 1A for surface soil (Table 11) and subsurface soil (Table 12), and then proceeding to Area 1B (Tables 13 and 14), Area 2 (Tables 15 and 16), Area 3A (Tables 17 and 18), and Area 3B (Tables 19 and 20).

Table 21 presents the Tier 1 and Tier 2 screening values used in the comparison, as well as the action level for total PCBs.

Table 22 presents groundwater data.

### **Notes for Data and Comparison Tables**

ND - Not Detected

NA - Not Analylzed

Estimated value – organic constituents

Estimated value – inorganic constituents

/I - Exceedance of the Tier 1 ingestion soil screening value for the industrial/commerical worker

/N - Exceedance of the Tier 1 inhalation soil screening value for the industrial/commerical worker

C - Exceedance of the Tier 1 ingestion soil screening value for the construction worker

/GW - Exceedance of the Tier 1 screening value for the soil component of the groundwater ingestion route

/P Exceedance of the PCB action level of 1 mg/kg

E772002 9-25 AM

Table 1

Phase   Phas	IEA Sar	EA Sample ID Number	2	950153017	950153018	850153020	ő	950182011	ž	
Inchigation   Inchigation   Investigation   Investigation   Investigation   Investigation   Investigation   Investigation   Investigation   Investigation   Investigation   In-Place   In	_	Depth Phase UPhase II	Phase I	Phase H	Phase #	G-1 Phase II	e e	Phase B		
Soli Type   Surface   Su	-	Sample Type	Investigation	Investigation	Investigation	Investigation		combined and	Investigation	Investigation
CAS No.   Area 1A   Area		Soli Type	Surface	Surface	Surface	Surface		Surface	Surface	Surface
100   100		Area CAS No.		Area 1A	Area 1A	Area 1A	•	Area 1A	Area 1A	Arra 1A
1100   11   12   13   1   1   13   1   1   1   1   1	e/Kg)									
1,13   1,13	ilhracene	56553	-					1.5		
19399		218019						1,7	T i	
1,200   1   1   1   1   1   1   1   1   1	noranthene	205992						1.8		
13024   0.1 1   1   1   1   1   1   1   1   1   1	normathene	207089					_	1.235	111	
193795   1	yene	50328			8					
31702   0.85	3-cd)pyrene	193395	-					1.1		
139902   C 0.12   C 0.003   C 0.003   C 0.003   C 0.003     107471   C 0.12   C 0.003   C 0.003   C 0.003     50791   0.68	h)anthracene	53703	0.85				٧	0.33		
134646   102477   < 0.12   < 0.004   < 0.008   < 0.009   < 0.0017	Compounds (m	e/Ke								
1346   1074573   C 0.112   C 0.005   C 0.005   C 0.005   C 0.005   C 0.005     13650   C 22		309002			< 0.008			7100,0		
133505   2.2   NA   NA   NA   C 0.015   0.15   0.003     133505   2.2   NA   NA   NA   C 0.003     133505   2.2   NA   NA   NA   NA   C 0.003     133505   2.2   NA   NA   NA   NA   C 0.003     1340505   2.2   NA   NA   NA   NA   C 0.003     1440307   1.5   1.5   1.5   1.5   1.5   1.5     144020   1.2   1.2   1.2   1.2   1.2     144020   1.2   1.2   1.2   1.2   1.2     144020   1.2   1.2   1.2   1.2   1.2     144020   1.2   1.2   1.2   1.2   1.2     144020   1.2   1.2   1.2   1.2   1.2   1.2   1.2     144020   1.2	Epoxide	1024573	v	Ī	> 0.008			71001		
133650   C 22		11/509	99.0	٧			٧	7,001		
1336361 < 2.2		\$0293	z		0.04	0.15		0.00		
134650 < 22   NA   NA   NA   NA   C 0.003     134650 < 22   NA   NA   NA   NA   C 0.003     134650 < 22   NA   NA   NA   NA   C 0.003     134650 < 22   NA   NA   NA   NA   C 0.003     134600 < 23   NA   NA   NA   C 0.003     134600 < 23   NA   NA   NA   NA   C 0.003     134600 < 23   NA   NA   NA   C 0.003     134600	rke)						L			
1346561 < 22	248	13366	v	NA	YN.	NA		0.033		
135G S < 22   NA NA NA NA NA SAN SAN SAN SAN SAN SAN	254	1336363	v	NA	NA NA	Ϋ́		0.003		
Cheromium   NED NA NA NA NA NA NA NA NA CAND	260	1336063	v	NA NA	NA NA	YX		0.003		
Compounds (REKE) 7440150 < 3.6			£	NA	XX.	NA	٧	QN		
140100 < 3.6	Compounds (									
7440197 85.1 7440419 1.2 7440419 1.2 7440419 1.2 7450626 8.12 7450620 1.2 7450620 1.2 7440620 1.2 7440620 1.2 7440620 1.2 7440620 2.2 7440620 2.2 7440620 0.3 7440620 0.3 744		7440360								-
1440417 85.1 140  7440417 0.57 22  7440417 1.2 22  16.08531 4.12 23  7439676 1.6 5  7439676 1.5 5  7440229 < 0.38  7440224 < 0.57  7440224 < 0.57  7440224 < 0.57		7440382	15.9							
1440417 0.57 7440419 1.2 7440419 1.2 7440439 1.2 7440439 1.2 743923 2.12 743921 1.2 7440201 1.23 7440224 0.57 7440224 0.57		7440393						140		
1400439   1.2   2.2   36000   1400430   1.2   36000   1.2   36000   1.2   36000   1.2   36000   1.2   36000   1.2   36000   1.2   3   36000		7440417	_							
16045031		7440439					21	ដ		
16540209 7430021 212 480 //IC 475 //IC 7430978 12.5 5 7440224 0.57 5		16065831						36000		
212 440 IUC 475 IUC 123 5 5 6 6 7 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7	t Chromium	18540299								
1.6 \$ \$   1.25   \$   \$   \$   \$   \$   \$   \$   \$   \$		7430921						Н	П	341
c 0.38 < 2.5 < 2.5 < 2.5 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0 < 2.0		7439976					7	\$		
< 0.38 < 2.5 < 2.5 < 0.57 < 2.0		7440020								8
0.57		7782492	v				v	22		
		7440224					v	20		

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Comparison of Surface Soli Dafa in Area 1A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinols

Sample ID Number	7	M2	1,2,3	J,K,2,3	K1-23	L,M,2,3	55
IEA Sampie ID Number					į		
Dhase (Phase I)							
Sample Type	Ē	Investigation	Investigation	Investigation	fnvestgation	Investigation	Investigation
In-Place/Removed		In-Place	in-Place	In-Place	In-Place	In-Place	e de la co
Soil Type		Surface	Surface	Surface	Surface	Surface	SPELIF
Area	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A
CAS No.							
nthracene		11		I			
Benzo(b)(Inorranhene 201992	-						
Benzo(k) Buorzethene 207019	_						
Benzo(a)pyrene 50328							
Indeno(1,2,3-cd)pyrene 193395							
Dibenzo(a,h)anturscene 53703							
Pestdelde Compaunds (mg/Kg)							
Heptachfor Epoxide 1024573						-	
4,4:DDT 50293	-						
PCBs (mg/Kg)							
Araclor - 1248 1336363	_						
Aroclor - 1254 1336363	_						
Inorganic Compounds (mg/Kg)							
Antimony 7440360	5		- 1	_	- 1	ļ	L
	2 < 7	۰ گ	200 /J/C	110 /1/C	119 ///	7	7/0 (17)
	•						
Cadmium 7440439	•						
Chromium 16065831	_			1			-
Hexavalent Chromium 18540299			- 1	- 1	1		-
Lead 7438921	53	36	S82 AVC	1200 AAC	88	38	OM VINC
Mercury 7439976	60	_					
	0						
-	8						
Silver 7440224	4						
			20	JAC	300		3

Comparison of Surface Soll Data In Area 1A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

()						
L,M,3,A	Investigation In-Place Surface Area 1A			J 61	56	V
K,L,3,4	Investigation In-Place Surface Area 1A			130 A/C	011	MC
7,45,4	Investigation In-Place Surface Area 1A			298 INC	246 AVC	///C
4,c,L,1	Investigation In-Place Surface Area 1A			295 INC	565 IUC	INC
EW	Investigation In-Place Surface Area 1A			60 93	*	
១	Investigation In-Place Surface Area 1A			3	245	
ā	Investigation In-Place Surface Area 1A			373 AVC	S73 AVC	/IVC
Sample ID Number IEA Sample ID Number Depth	Phase Uphase II Sample Type In-Place/Removed Soll Type Area	\$6553 218819 205952 207089 \$07081 \$05198	mg/Kg) 309002 1024573 60571 50293 1336563 1336563 1336563		18055831 18340289 7438921 7438976 7440020 7782492 7440224	
EASI	<b>.</b>	CPAHI (mg/kg)  Berze(Jinthracene Chrysene Berze(Jiltoranthene Berze(Jiltoranthene Berzet(Jiltoranthene Berzet(Jiltoranthene Berzet(Jiltoranthene Indeno(1,2,3-ez)pyrene Diberze(2,b)zultracene	Welticke Compounds (mg/Kg) Aldrin Heptachlor Eponde Hebtachlor Eponde Hebtachlor Eponde Hebtachlor Eponde Hebtachlor Elster Hebtachlor 1248 Arvelor - 1249 Arvelor - 1260 Tona PCB	I Boorgaale Coerpounds (mg/Kg) Antimony Arstnic Bankum Beryllium Cedenium	Catomium Hezavalent Caronium Lead Mercuny Nickel Selenium Silver	

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Comparison of Surface Soil Data in Area 1A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery
Commonwealth Edison Company
Waukegan, Illinois

IEA Sample ID Number				-			
Phase UPhase II							
Sample Type	Investigation	Investigation	Investigation	investigation in-Place	investigation in-Place	investigation In-Place	Investigation in-Place
Soil Type	Surface	Surface	Surface	Surface	Surface	Surface	Surface
Area	Area 1A	Area 1A	Ares 1A	Area 1A	Area 1A	Arts 1A	Area 1A
CAS No.							
CPAHs (mg/Kg) Rennolabushmene 56553		Ì					
Benzo(b)Ruoranthene 205992							
**							
						=	
pyrene							
Diberezo(a,h)anthracene 53703			_				
mes/Kei							
Septachlor Epoxide 1024573							
60571							
50293							
PCBs (mg/Kg)							
133කිය							
1336363							
norganic Compounds (mg/Kg)					1		
7440360		I			ш	П	200 036
7440382	374 AMC	150 AVC	5		2007	777	ı
7440393							
2440430							
1808581							
Herareles Chemins 18540299			Ĭ				
	397	459 AVC	777	4.6	859 /IVC	754	454 AVC
7439976						_	
7440020							
7782492							
1							

Comparison of Surface Soll Data in Area 1A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tamery Commonwealth Edison Company Waukegan, Illinois

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face Soil Data in Area 1A to Tier 1 Screening Values for Direct Confact 3er Tannery ison Company

EA Sample ID Number	Number					
Shase	Depth Phase VPhase II Sample Type	Invastigation	Investigation	Investigation	Investigation	Investigation
In-Place/Removed Soll Type Area	Soll Type Area	Surface Surface Area 1A	Surface Surface Area 1A	Surface Area 1A	Surface Area 1A	Surface Area 1A
CPAHs (mg/Kg)	CAS No.				s.	
Benzo(a)asthracene	56553	ľ				
Benzolbilianathese	205992					
Benzo(k)fluoranthene	207049					
Велго(а)рутеле	\$0328					
Indeno(1,2,3-cd)pyrene	193395					
Dibenzo(a,h)anthracene	53700	25				
Pesticide Compounds (mg/Kg)						
	309002					
Replachlor Epoxide	1024573					
	17209					
4,4'-DDT	\$0293					
PCBs (mg/Kg)						
Aroclar - 1248	133061					
Aroclar - 1254	1336363					
Araclor - 1260	1336963					
Fotal PCBs						
norganic Compounds (mg/Kg)	l _					
Antimony	7440360		1	ı	ł	:
Arsenic	7440312	437 /INC	262 AMC	69 AIAC	160 /10	3
Barium	7440393					
Berytlium	7440417					_
Cadmium	7440439					
Chromium	16065831					-
Hexavalent Chromium	18540299					
	7439921	398	411 /IVC	381	121	185
Mercury	7439978					
	7440020					
Selenium	7782492					
	4440					

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Comparison of Surface Soil Data in Area 1A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company

Commonwealth Edison Company Waukegan, Illinois	

1,1,6,7

_		·					,
2	Investigation In-Place Surface Area 1A				110 AVC	86	AVC
ž	Investigation In-Place Surface Area 1A				2	250	v
5	investigation In-Place Surface Area 1A	# # # # # # # # # # # # # # # # # # #			=	433 <i>I</i> IIC	JVC
T T T T T T T T T T T T T T T T T T T	Investigation In-Place Surface Area 1A			1	2	F	v III
	Investigation In-Place Surface Area 1A			1.01	\$	95	V
	Investigation In-Place Surface Area 1A			1 1	- Tar	470 AJC	WC
	investigation In-Place Surface Area 1A	1	= =	6		451 AAC	/I/C
IEA Sample ID Number	Depth Phase VPhase K Sample Type In-Place/Removed Soil Type CAS No.	cee 56553 216019 cee 20592 cee 20792 yrnc 193393 siene 53703	66 1024573 66 1024573 66571 66571 66571	,	<b>6</b> 5	7439921 7439976 7440020 7782492	
=	*	CPA His (mg/kg)  Chysene Chysene Berzo(b)fluoranthene Berzo(c)fluoranthene Berzo(c)fluoranthene Berzo(c)fluoranthene Indeno(1,2,3-cd)pyrne Indeno(1,2,3-cd)pyrne	reucher Lempour Adrin Heptachlor Epoxide Dieldrin A-DDT (CBs (mg/Kg)	Arockor - 1254  Arockor - 1260  Total PCBs  In organic Compounds (myKg)  Antimosy	Servium Sedraium Invoncium Sezavalent Caromium	sead Mercury Wekel Sebraium Silver	

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Comparison of Surface Soll Data in Area 1A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery
Commonwealth Edison Company
Waukegan, Illinois

Investigation investigation investigation investigation in-place in-place in-place Surface Surface Surface Area 1A Area 1A
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50128

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Comparison of Surface Soil Data in Area 1A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

Phase   Phas	Sample ID Number	5	84	6'8'f'i	J,K,8,8	K,L,8,9	L,M,S,B	65
In-Pic.org Removed   In-Pic.org   In-Pic.o	Depth Phase UPhase II		10000	•	2	:		
Soli Type   Surface   Su	In-PlaceRemoved		In-Place	Investigation In-Place	Investigation In-Place	Investigation	Investigation	Investigation
Carlo   Carl	Soll Type		Surface	Surface	Surface	Surface	Surface	Surface
Process   18653   Process   18653   Process	Area CAS No.		Area 1A	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A
Normaldener   20592								
Normathen								
Incoration					. *			
Inconditions   20738   20428								
977572 53323 541  24-64/parter 193355 5703  A Epenide 1024573  A Epeni	hene							
2.2-cdpyrme 193395  Apudintecte 193395  A Exercide 102473  S02902  A Exercide 102473  S0293  A Exercide 103473  S0293  S0								
Appendincence   13703								
Compound (mg/kg) 30002  M Eposide 1024573  60571  60571  60571  60571  1248  1136563  1124  1136563  1124  1136563  1124  1136563  1124  1136563  1124  1136563  1124  1136563  1124  1136563  1124  1136563  1124  1124  1136563  1124  1124  1124  1125  1	ň							
1024273   1024273   1024273   1024273   1024273   1024273   1024273   1024273   1024273   1024273   1024273   1024273   1024273   1024224   1024	Pesticide Compounds (mg/Kg)							
# Epocate   1024573								
1346   13563   13563   13563   13563   13563   13563   13563   13663	-							
1354   13563   13563   13563   13563   13563   13563   13563   13563   13563   13563   13563   13563   13633								
13464   134643   13	i							
1345.65   1356	PCBs (mg/Kg)							
1354 133615								
1350 13555 136 136 136 136 136 136 136 136 136 136								
E Compound (arg/kg) 7440382 7440382 7440383 11 409 f/fC < 12 14 f/f 140 f/fC < 5.9 < 11 7440433 11 640383 11 6403 f/fC < 5.9 (11 7440439 11 70 879 f/fC < 533 f/fC < 59 7782492 7782492 7782492		53						
Compounds (mg/NS) 11 440382 11440382 11440393 11 440393 11 440393 11 6 69  6 12  14  6  6  11  140  6  6  11  140  6  6  11  140  6  6  11  140028 11 6 6 6 6 6 6 6 6 6 6 6 6 6 6  6  6  6	Total PCBs							
744036 11 409 AVC < 12 14 A A A A A A A A A A A A A A A A A A	Compounds (mg/3/g)							
7440322 7440393 7440393 7440393 84 Chromium 16540289 84 Chromium 16540289 7782492 7782492 7782492								
1440393 1440417 1440417 143645289 14 1440224 1440224 1440224 1440224 1440224 1460218 1440224				< 12	L	Ł	- 22	=
1440417 1440229 14 Chromium 16540299 14 Chromium 16540299 14 40020 17 1540020 17 154					ŀ	н	}	:
1440439  14 Chronium 18686331  14 Chronium 185086331  14 440020  17 8249224  17 8249224  17 8249224  17 8240224  17 8240224	Ŷ							
n 15045831 at Chornium 18540259 1439978 7439978 7440020 77152492 7440224 MC MC MC MC MC								
## Chromium 18540299 70 829 AVC 533 AVC 55 43 601 70 829 AVC 743021 7440020 AVC			1					
7439921 91 70 879 AVC 533 AVC 85 43 601 7439670 77440020 7782492 7440224 AVC AVC AVC AVC								
7439978 7440020 7782492 7440224			5	1	E	**	•	П
7440020 7782482 7440224				1	1	3	}	н
m 7782492 7440224								
7440224 AC AC AC	9							
עוכ עוכ	7	89						
			28/	300	UK	UN		300

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Comparison of Surface Soil Data in Area 1A to Tier 1 Screening Values for Direct Contact Former Gress-Pfleger Tannery
Commonwealth Edison Company
Waukegan, Illinois

Sample ID Number (EA Sample ID Number	Ke	3	GIN	06'6'(')	J,K,9,10	K,L,9,10	D1'8'W'
Phase (Phase (Phase ii Sample Type in-PlaceRemoved Soil Type	Investigation In-Place Surface Area 1A						
	1						
Gernos(s) (20 con 10	H			<u> </u>			
mg/Kg)							
PCBs (mp/kg) Aroclor - 124 Aroclor - 124 Aroclor - 125 Aroclor - 125 Aroclor - 126 1336363 Teal PCBs			1				
empounds (mg/Kg)	22	14 7	12	n n	£7	62	140 AJC
um 16 Jent Chromium 16 Y	315	<b>8</b>	142	SSS AIC	2	<b>28</b>	
Silver 7440224				WC			UNC

Comparison of Surface Soil Data in Area 1A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

_					T	_			_				Т	_	_			Т					I		Г	Г	_	_							_	7
M\$0		Investigation	Surface	Area 1A																					364 ///						189					
230	•	Investigation	Surface	Area 1A																					32 Л			•			33					-
λ g		Investigation	Surface	Area 1A																					9						86					
515		Investigation In-Place	Surface	Area 1A																				1	=						\$72 AVC					900
IEA Sample ID Number	Mese UPhase II	Sample Type In-Place/Removed	Soll Type	Area CAS No.		56553	218019	205992	207089	50328	193395	53703	/Kg		1024573	12509	50293		1336363	1336363	1336363		i_	7440360	7440382 <	7440393	7440417	7440439	16065631	18540299	7438921	7438976	7440020	7782492	7440224	
JEA San	a.	45			CPAHs (mg/Kg)	Berzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Denzo(k)fluoranthene	Вепто(в)рутеть	Indeno(1,2,3-ed)pyrene	Dibeazo(a,h)anthracene	Pesticide Compounds (mg/Kg)	Aldrin	Heptachlor Epoxide	Dicidm	4,4'-DDT	PCBs (mg/Kg)	Aroclor - 1248	Aroclor - 1254	Aroclor - 1260	Total PCBs	Inorganic Compounds (mg/Kg)	Antimony	Arsenic	Barium	Berytlium	Cadmium	Стотици	Hexavalent Chromium	Lead	Mercary	Nickel	Setenium	Silver	

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Comparison of Surface Soil Data in Area 1A to Tier 1 Screening Values for Direct Contact Former Griess-Pileger Tannery
Commonwealth Edison Company
Waukegan, illinois

Sample ID Number	11,01,1,	J,K,10,11	K,L,10,11	L,M,10,11	131	K11	55	M41
Part								
Phase UPhase II								
Sample Type	Ě	Investigation						
In-Place/Removed		In-Place	In-Place	In-Place	In-Place	h-Place	In-Place	In-Place
Soll Type		Surface .	Surface	Surface	Surface	Surface	Surface	Surface
Avea CAS No.	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A
					,			
nthracene								
Benzo(k)fluoranthene 207089								
Benzo(a)pyrene 50328								
Indexo(1,2,3-cd)pyrene 193395								
Dibenzo(a,h)anthracene 53703								
Pesticide Compounds (mg/Kg)								
Aldrin 309002								
Heptschlor Epoxide 1024573				- 22				
Dieldrin 60571								
4.4.DDT 50293								
PCBs (mg/Kg)								
Aroctor - 1260 1336363								
Total PCBs								
Campounds (mg/Kg)								
ń.								
Arsenic 7440382	86	£;	9	6.7	< S.5	> 5.6	> 5.9	< 5.8
Barium 7440393								
Beryllium 7440417							_	
Cadmium 7440439								
Chromium 16065831								
Hexavalent Chromium 18540299								
Lead . 7439921	82	148	110	3	R	2	33	n
Mercury 7439976								
Nickel 7440020								
Selenium 7782492								
5ilver 7440224								

Comparison of Surface Soil Data in Area 1A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, illinois

Death	# <del>f</del>							
Phase (Phase i							-	
Sample Type	<u>ξ</u>	investigation						
In-Place/Removed		In-Place	in-Place	In-Place	In-Place	In-Place	In-Place	N-Piace
ed & ripe		Saume	STRIPTE	Surrace		Surrace	Series	Sucrece
Area	Area 1A	Area 1A	Area 1A	Arra 1A	Artes 1A	Area 1A	Area 1A	Area 1A
CAS No.						1		
							_	
nthracene	2							
	0							
	22							
Benzo(k)fluoranthene 207089	\$							
Benzo(a)pyrene 50328	23							
_	52							
Dibenzo(a.h)anthracene 53703	101							
le Compounds (mg/Kg)								
Aldrin 309002	g							
Heptachlor Epoxide 1024573	2							
Dieldrin 60571	<u> </u>							
4,4'-DDT 50293	23							
	22							
Aroclor - 1254 1336363	23							
Aroclor - 1260 1336363	33							
Toul PCBs								
Inorgenic Compounds (mg/Kg)								
Antimony 7440360	95							
Arsenic 7440382	14 /1	× 5.5	Z4 /I	< 5.9	< 55	> 5.6	9 >	< 5.7
Barium 7440393	8							
Beryllium 7440417	17							
Cadmium 7440339	39							
Chromium 16065831								_
Chromium	œ.							
Lead 7439921	110	7.3	8	Ľ	× 4.4	5,5	11	4.6
ILY.								
Nickel 7440020	0.				•			
Selenium 7782492	22							
CHANGE TARGET								

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Comparison of Subsurface Soil Data in Area 1A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

IEA Cample	A					
adules val	EA SEMPRE ID NUMBER				-	950153019
	Depth	24		7	_	7
Phas	Phase I/Phase II	Phase	_	Phase I	_	Phase II
v	Sample Type	Investigation	Ş	Investigation	_	Investigation
In-Plac	In-Place/Removed	In-Place	_	In-Place		In-Place
	Soll Type	Subsurface	S	Subsurface	-	Subsurface
	Area	Area 1A	*	Area 1A	_	Area 1A
)	CAS No.				-	
CPAlls (mg/Kg)		17	L		-	
Benzo(a)anthracene	\$6553	4.7	_	0.62 J	_	
Chrysene	218019	 E.	_	0.46		
Benzo(b)fluoranthene	208992	7		=	-	
Benzo(k) fluoranthene	207089	23	_	0.39 J		
Benzo(a)pyrene	50328	2.1 A	v	=	_	
Indeno(1,2,3-cd)pyrene	193395	160	v	=		
Dibenzo(a,h)anthracene	53703	0.22	ν	3	_	
Pesticide Composands (mg/Kg)	3		L		H	
Aldrin	309002	< 0.0024	v	0.0029	V	0.003
Heptachlor Epoxide	1024573	< 0.0024		0.0029	V	0.008
Dieldrin	1/209	< 0.0047	v	0.0056	٧	910'0
4,4".DDT	50293	0.084		0.0056		0.033
PCBs (mg/Kg)					H	
Aroctor - 1248	1336363	_	v	0.056		٧V
Aroclor - 1254	1336363		v	0.056		Y.
Aroclor - 1260	1336363	•	v	0.056		¥
Total PCBs		S		2		Ϋ́
Inorganic Compounds (mg/Kg	_					
Antimony	7440360 <	3.8		7.5	7	
Arsenic	7440382	37.9 A		65.8 A	JC.	
Barium	7440393	39		229		
Beryllium	7440417	0.28	v	0.34	_	
Cadmium	7440439	< 0.83		15.8		
Chromium	16065831	278		816		
Hexavalent Chromium	18540299				_	
Lead	7439921	47.6		230	_	
Mercury	7439976	2.7	_	25.6	-	
Nickel	7440020	6.9		29.1	_	
Sclenium	7782492	0.63	٧	0.48 84		
Silver	7440224	90	٧	0.71	-	

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Comparison of Surface Soll Data in Area 1B to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery
Commonwealth Edison Company
Waukegan, Illinois

Sample ID Number	Number	¥0£-85	_	SB-33A	-	SB-36A	_	55-12	-	SB-61A		SB-62A	
Ol aidure val	Nampar		_		-	21	-		_	20029L058		600281068	
	Person	-	_	2	_	=	-	2	_	3	_	2	
Phase	Phase UPhase II	Phase	_	Phase I	-	Phase	_	Phase I	_	Phase II		Phase II	
Sam	Sample Type	Sovestigation	_	nvestigation	_	Investigation		Investigation	_	Investigation	_	nvestigation	
In-PlaceRemoved	ремоше	In-Place	_	InPlace	-	In-Place	-	in-Place	-	In-Place	_	In-Place	
w	Soll Type	Surface		Surface	-	Surface	_	Surface	_	Surface	_	Surface	
	Area	Area 1B		Arra 18	_	Area 1B		Area 18	_	Area 18		Area 1B	
	CAS No.		_		-		_		_		_		
CPAHs (mg/Kg)			L		┝		┝		┝		L		
Benzo(a)anthracene	36321	< 0.82	_	1.2	-	5.6	_	3.4	L	9.2 A	_	2.9	
Chrysene	218019	< 0.82		=	_	2.5	-	2.8	L	139	_	-	
Benzo(b)fluoranthene	202992	< 0.17		2.4		2.4	•	3,6		<b>#</b> 3		2.7	
Senzo(k)fluoranthene	207089	< 0.62	_	0.76	_	0.92		7		33	_	1.6	
Всп20(в)рупаве	50328	< 0.82		1.2 //	H	13 11		L1 A	┝	4.8 //	L	1.9 /1	
Indepo(1,2,3-cd)pyrene	> 360061	< 0.82	L	6.73	H	9.11	۲	l	┝	6.8	L	2.6	
Dibenzo(s,h)anthracene	53703	< 0.82	_	0.13	_	0.2 J	<u>v</u>	7	L,	n ei	L	1 18	
Perteide Compounds (mg/Kg)			L		H		H		┝		L		
Aldrin	309002 <	< 0.0023	٧	0.0019	<u>v</u>	0.0011	v	0.0029	V	0.0017	٧	0.0017	
Heptachlor Epoxide	1024573	0.023	_	0.015	_	0.0079	ν		٧	0.0017	٧	0.0017	
Dieldrin	S05711 <	< 0.0045	_	9100	V	Ī	٧		٧	0.0017	٧	0.0017	
4,4°.DDT	50293 <	< 0.0045		0.066	-	0.023	V	0.0055	_	0.21	_	0.03	
PCBs (ug/Kg)		1	L		H		┝		┞		L		
Aroclor - 1248	1336363 <		V	0.037	٧	-	V		V	0.033	٧	0.033	
Aroclor - 1254	1336363	Ī	٧	0.037	V	-	Ÿ	_	ν	0.033	٧	0.033	
Aructor - 1260	1336363	< 0.045	٧	0.037	v	0.035	v	0.055	٧	0.003	٧	0.003	
Total PCBs		£		ę	_	£	_	2	_	2		2	
Inorganic Compounds (mg/Kg)			┞		H		┝		┝		L		
Antimony	7440360	> 3.6	٧	2.9	٧		V			٧×		Ϋ́	4
Arsenic	7440382	12.1	_	4.4		0.77	_	6.4	_	9	_	'n	
Barium	7440393	18.3	-	869	-	10.4	-	30.9	-	220	_	92	
Beryllium	7440417	1.2		0.27	V		v		_	Y.	_	¥X	
Cadmium	7440439			1.2	<u>.v</u>		v		_	4.7		1.4	
Chromium	16065831	14.2		705	_	75.1	_	2600	_	001	1	160	
Hexavalent Chromism	18540299		_		-		_		-	NA		MA	
Lead	7439921	72	_	45.7	-	16.2	_	93.6	_	220	_	07.1	
Mereuny	7439976	v	_	0.00	_	0.14	-	1.7	_	96'0	_	0.092	
Nickel	7440020		_	16.7		3.5	_	2	_	ž	_	NA NA	
Selenium	7782492	7	v	0.31	v	0.29	_	0.62	V		٧	1.7	
Silver	7440224	< 0.57	v	0.47	٧	0.44	·	0.7	v	16'0	V	Ξ	
				И		v		ν		_v		v	

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Comparison of Subsurface Soil Data in Area 1B to Tier 1 Screening Values for Direct Contact Former Gless-Pileger Tannery Commonwealth Edison Company Waukegan, Illinois

Comparison of Si Former Griess-Pf Commonwealth E Waukegan, Illinoi

edmuN OI ejdmeS	nber SB-30B	80	SB-32B	128	<b>V</b> )	SB-33B	o)	SB-34B	SB-35B		SB-36B	S	SB-37B	Σ.	58-388		MW-4A	
	Deoth 2-4		2.2			2.2		9.4	6.6		2.3						2	
Phace (III)		. 3	Dhata	. 5	_	Phase 1	0	Dhaeal	Ohnee		Dharen D	_	Shring	ā	Dhace !	_	1	
Amen Same	1	- Color	Interestination	a septem			- I	and a second	The state of	1		- Part	Total Section	9				-
Service Character (G. pl			and all			in Disease	-	The Party of the P	The Court of the C		HINESON AND A	-	in Diego	1	in Diese		Supanos.	=
Soft Total	V	1	Subsurface	1	v	Solbourface	, see	Substitutes	Culterafice		Cubendana	4	Cohempton	- Service	Cubernston	Ü	E. Periodo	•
	-	9	Area 18	9	} <	Area 1B	₹ ₹	Anea 18	Area 18	3	Area 18	₹	Area 18	Ž	Area 18	, «	Area 18	•
CAS No.																		
CPAHs (mg/Kg)	_				L		L			H		L				L		L
athracene		_	< 0.79	Ī	v	0.85	v	0.36			3,6		9	v	0.4	v	75.0	
Chrysene		÷	< 0.79			0.85	v	0.36	c 0.42		3,4				0.4	v	76.0	
luoranthene	205992 < 0.74		of.00 >	6		17 M	v	0.36	< 0.42	_	53	_	4.5	v	0.4	v	0.37	
Benzo(k)fluoranthene 20	207019 < 0.74	·	< 0.79	6			v	0.36	< 0.42		<u></u>		7	v	0.4	v	037	v
Benzo(a)pyrene 5	50328 < 0.74	_	< 0.79	6		1/ 6.6	v			L	1.7 A		0.23		0.4	v	0.37	v
pyrene				6		5.5	v		< 0.42	_	L	_	7		0.4	_v	0.37	v
	53703 < 0.74		< 0.79	6		7	v			_	0.13		-	v	0.4	v	0.37	v
Pesticide Compounds (mg/Kg)										$\dagger$						L		L
	309002 < 0.0021		< 0.0021		v	0.0023	v	0.0019	< 0.0023	٧	0.0011	v	6100.0	v v	0.0021	v	0.002	٧
Heptachlor Epoxide 102	1024573 < 0.0021	12	0.009	2		0.	v	0.0019	< 0.0023		0.036				0.0021	v	0.002	y
			Ī			0.18		0.0038	< 0.0044	V	0,0036	_		ö v	1900		0.0039	v
	50293 0.033		< 0.0041	41	0	0.16		0.0038	< 0.0044		0.064		0.4		0.0041	v	0.0039	ν
			1							-		L				L		
			< 0.04I	=		3.2		0.038	< 0.044	٧	0.036		0.037	_	0.041	v	0.039	v
		j	A 0.04	=		6.1	v	0.038	< 0.044	v	0.036	v	7.00.0	0 v	101	v	0.039	v
98	1335551 < 0.0		< 0.041		v	0.045	,	8000	A 0.044	V	0.036		0.037		0.041	ν	0.039	v
Total PCBs	ę	_	웃	_		5.1 /P		문	S.	_	ę		ð		£		2	
Isorganic Compounds (mg/Kg)			(0.4.0)				L			H	11							L
Antimony 744	7440360 < 3.2		> 33		v	2.9	v	m	> 3.5	V	2.9	v	2.9	v	3.2	v	3.1	v
			8.7	_		5.9		0.4	40.6	v	1.8		2.6	_	0.63		0,64	
Barium 744	7440393 1.8		41.9	•		229		77	61.1	Γ	21.9	_	41.8		2.6		4.6	
		_	9.0		v	0.22		0.23	1.7	٧	0.22		0.36		22.0	v	0.24	
	7440439 < 0.71	_	< 0.7	2		1.4	v	0.66	1.5	٧	0,63		2	v	0.71	v	9.08	v
_		_	77	7		<b>10</b>		32	19.1	-	303		291		43		46.7	
Hexavalent Chromium 1854	6540299									_								
Lead 743			17,4			133		1.7	28	_	24.2		ដ		ร		6.1	
	v	9	0.0	-		0.39		90'0	0.12	_	0.33				0.06	v	90.0	
	7440020 11.3	_	7.8	_		6.6	v	7	15.5	_	9.4		9.1	v	9:1		74	
un un		_	0.7		v	0.76		632	0.54	V.	6,0	v			24		0.61	v
Silver 744	7440224 < 0.5		20			0.47		0.48	> 0.56	×		v			0.52	v	0.49	v
						3			5		٧							

ubsurface Soil Data in Area 18 to Tier 1 Screening Values for Direct Contact Teger Tannery Edison Company s

	Sample to number; MW-45	MW-48		_	SECTO
	The latest of the			_	201020
	Depth				7
£	Phase IrPhase II	Phase			Phase II
	Sample Type	vestigation	5	뜯	Investigation
14-14 14-14	In-PlaceRemoved	In-Place			In-Place
	Soll Type	Subsurface	8	<i>u</i> ,	Subsurface
	Area	Area 1B			Area 1B
	CAS No.				
CPAHs (mg/Kg)				L	
Велго(в)лифивесте	56553	200		v	65
Chrysene	218019	0.74	-	٧	0.33
Benzo(b)fluoranthene	205992	0.74	_	v	0.33
Benzo(k)fluoranthene	207089	0.93		٧	0.33
Benzo(a)pyrene	50328	0.93		٧	0,33
Indeno(1,2,3-ed)pyrene	193395	0.93		٧	0,33
Diberto(a,h)anthracene	53703	0.93		v	0.33
Pesticide Compounds (mg/Kg)	Ke			L	
Aldrin	309002	0.0024		v	0.0017
Heptachlor Epoxide	1024573	0.0024		v	0.0017
Dieldrin	17209	0.0047		v	0.0017
4,4*.DDT	50293	0.0047		٧	0.0033
PCBs (mg/Kg)				L	
Aroclor - 1248	13366	0.047		v	0.033
Aroclor - 1254	13306	0.047		ν	0.033
Aroclor - 1260	1336363	0.047		v	0.033
Total PCBs		£	Ī		ě
Inorganic Compounds (mg/Kg)	/Kg			L	
Antimony	7440360	3.8		_	ž
Arsenic	7440382	5.4		_	1.9
Barium	7440393	9.19		Ÿ	4
Beryllium	7440417	1.7			٧×
Cadmium	7440439	0,82		٧	9.0
Chronium	16065831	65.2			5.8
Hexavalent Chromium	18540299				NA NA
Lead	7439921	15.5			1.8
Mercury	7439976			٧	0.094
Nichel	7440020	_		_	NA
Selenium	7782492			_	12
Cilean	7440224	0.6		v	90.0

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Comparison of Surface Soil Data in Area 2 to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

										_					
IEA Sample ID Number	ID Number			;			į		•						
	Depth	ě		2			ī		70		•	2-0		J	
Pha	Phase UPhase II	Phase		Phase		۵.	Phase i		Phase		룬	Phase I		Phase	
S	Sample Type	Investigation	_	Investigation	uo	Enve	nvestigation	_	Investigation	5	ILVBE	nvestigation	=	nvestigation	E
in-Plac	In-Place/Removed	In-Place		In-Place	_	두	In-Place		In-Place		르	In-Place		In-Place	
	Soll Tyme	Surface	_	Surface		w	Surface		Surface		Sur	Surface		Surface	
,	Ama	Area 2		Area 2		•	Area 2		Area 2		¥	Area 2		Area 2	
	CAS NO.		t		1		l	†		†	١				
CPARE (MEKE)									,				1		
Benzo(s)anthracene	\$6353		V			_	_	V	9,	<u>v</u>	0.69		v	639	
Chrysene	216019 <	Ī	V	Ì	Ī	0	- 12	V	1.6	v	0.69			0.38	
Benzo(b) fluoranthene	202992		V	0.69		,	2.1	V	1.6	V	0.69		_	0,42	
Benzo(k)fluoranthene	> 020702	29.0	V	0.69			_	V	1.6	_	0.69			0.19	
Вепар(в)рутеле	\$002	0.16	٧	0.69		0	0.68	V	1.6	v	0.69			0.21	
Indeno(1.2.3-collovrene	> 362161		٧		1	0	1 23	V	1.6	v			v	66.0	
Dibearo(a blanchmoene	> 60763		V		Ì	_	1.7	٧	9.1				v	660	
Pesticide Compounds (mg/Kg								H							
Aldrin	309002 <	0.0034	V	0.0049	Ť	> 00	0,0046	ν	0.0044	V	0.0037	7	٧	0.0026	
Heptachlor Epoxide	1024573	0.013	V	0.0049	Ť	2	0.0046	V	0.0044		0.015		v	0.0026	
Dieldrin	11209	0.056	V				0.0019	ν	0.0085	V	0.007	2		0.091	
4,4*DDT	\$0293	0.022	V	0.0094		ď	0.036	٧	0.0085	V	0.0072	2		0.036	
PCBs (mg/Kg)		**		1						l			L		
Aroctor - 1248	>1336363		٧	Ī		ď	0.049	٧	0.085	V	0.072	~4	v	0.051	
Aroclar - 1254	1336363 <		V	Ī	İ	9	0.019	٧	0.085	v		~	v	0.051	
Arrefor - 1260	1336363	0.067	V	Ü	Ì		6800	V	0.085	_		P4	v	0.051	
Total PCBs		2		2		_	2		Ş		2			2	-
Inorganic Compounds (mg/Kg)	9		H	i				-							
Antimony	7440360 <	5.3	v	7.5	•	· ·	7.1	×	en 60	V	5.7		×	Ţ	
Arsenic	7440382	14.8		9.6	_	1	17.1 /1		93	_	16.9	U (		171	
Barium	7440393	XX		863			327		307		123			5.26	
Beryllium	7440417	0.53	ν	Ī	Ì	v	24	V	0.51	٧		_		0.34	
Cadmium	7440439	22	V	1.7			21		1.5		22.6			9.	
Chromium	16065831	21600		65100		4	<b>(</b> S100		57700		69300	0		17300	
Hexavalent Chromium	16540299														
Lead	7439921	1150 //	UNC.	206	UVC	7	2250 AJC	C	1620	₩C	1960	JUNC		276 /	3
Mercury	7439976	3.6	r	6.1			18.1	V	0.13	1	2		L	4.6	
Nichel	7440020	6.6		R.9		-	5'01		7.6		13			9.4	
Selenium	7782492	0.89	_	-		0 ~	0.75	V	1.7	V			v	=	
														-	

Comparison of Surface Soil Data in Area 2 to Tier 1 Screening Values for Direct Contact Former Griess-Pflegor Tannery Commonwealth Edison Company Waukegan, Illinois

Physic   Physic   Physic   Phase   P	POLITICA CALL	Cample ID Minha	2	_			_				_		-	
Phase   Phas		Depth	2			1-0		0-1		2		3		3
Sample Type   Invarigation   Invarigation   Invarigation   Invarigation   In-Place   I	Phs	se UPhase II	Phase		á	1380	_	Phase		Phased	_	Phase	_	Phase
In-Place   In-Place   In-Place   In-Place   In-Place   In-Place   In-Place   Surface	Sample Type	Investigation	_	IIIV63	thatton		investigation	-	Investigation		Investigation	-	Investigation	
Soil Type   Surface   Su	In-Pla	caRemoved	In-Place		Ė	Place	_	In-Place	_	n-Place	_	In-Place		In-Place
CAS No.		Soil Type	Surface	_	Š	Inface		Surface		Surface	_	Surface	_	Surface
Section   CASS No.   Section   Sec		Area	Ana 2	_	₹	182		Area 2		Area 2	_	Area 2	_	Area 2
\$ \$6553 < 2.3		CAS No.		_							_		_	
110   110	CPAHs (mg/Kg)			r			L		H		┝		ŀ	
218019   c   2.3   c   2   c   1.9   c   5.8   c   3   c   2     205020   c   2.3   c   2   c   1.9   c   5.8   c   3   c     207030   c   2.3   c   2   c   1.9   c   5.8   c   3   c     207030   c   2.3   c   2   c   1.9   c   5.8   c   3   c     193755   c   2.3   c   2   c   1.9   c   5.8   c   3   c     193755   c   2.3   c   2   c   1.9   c   5.8   c   3   c     102475   c   c   c   c   c   c   c   c   c	Benzo(a)anthracene	\$6553 <	ដ	Ÿ	170	•	٧	1.9	٧	5.8	y	n	٧	2.7
20592  c	Chrysene	218019	ว	<u>v</u>			v	1.9	٧	5.8	٧	m	V	2.7
100009   2.3   2.2   2.19   2.38   2.3   2.5	Вепго(b) (поглафене	205992 <	23	v			v	61	V	5.1	V	m	v	2.7
193356   2.3   C   2   C   1.9   C   5.8   C   3   C	Benzo(k) fluoranthene	207089 <	2.3	V			v	1.9	٧	5.8	V	2	٧	2.7
syntene         193395   4 23         4 23         4 19         4 33         4 33         4 33         4 33         4 35         5 3         4 35         5 3         4 35         5 3         4 35         5 3         4 35         5 3         4 35         5 3         4 35         5 3         4 35         5 3         4 35         5 3         4 35         5 3         4 35         5 3         4 35         5 3         4 3         4 3         4 4 3         4 3         4 4 3         4 3         4 4 3         4 3         4 4 3         4 3         4 4 3         4 3         4 4 3 <th< td=""><td>Benzo(a)pyrene</td><td>50328 &lt;</td><td>12</td><td>v</td><td></td><td>••</td><td>v</td><td>1.9</td><td>v</td><td>5.8</td><td>٧</td><td>6</td><td>v</td><td>2.7</td></th<>	Benzo(a)pyrene	50328 <	12	v		••	v	1.9	v	5.8	٧	6	v	2.7
Section   Strong	Indeno(1,2,3-ed)pyrene	> 565561	ถ	V	rı		v	61	٧	5.8	v	0	٧	2.7
Section   Sect	Dibenzo(a,h)anthracene	> 53703 <	23	V			v	1.9	V	5.8	٧	n	٧	2.7
No. Founds   196072   0.0065   0.00643   0.0025   0.00066   0.00088   0.00	Pesticide Compounds (mg/)	L					L		-		H		H	
Nov Eposide   1024573   0.0065   0.00653   0.00125   0.0013   0.	Aldrin	309002	0.0065	٧		243	٧	0.0025	٧	0.0066	٧	0.0038	v	0.0062
6057  < 0.013	Heptachlor Epoxide	1024573 <	0.0065	٧		343	v	0.0025		0.013	٧	0.0038	٧	0.0062
Name	Dieldrin	> 1/209	0.013	V	0.0	550	٧	0.0049	v	0.013	٧	0.012	V	0.012
1316563   1316563   0.113   0.0033   0.0049   0.013   0.012   0.1154   1316563   0.113   0.0033   0.0049   0.013   0.012   0.013   0.013   0.012   0.013   0.013   0.012   0.013   0.013   0.013   0.012   0.013   0.013   0.012   0.013   0.013   0.012   0.013   0.013   0.012   0.013   0.013   0.013   0.013   0.012   0.013   0.014   0	(4:DDT	50293 <	0.013	V	0.0	183	v	0,0049	V	0.013	٧	0.012	٧	0,012
131656  < 0.13	PCBs (mg/Kg)			-			L		-		-			
	Aroclor - 1248	1336363 <	0.13	Υ.		8	v	9000	٧	0.13	٧	0.12	٧	0.12
CEBS 133555 < 0.13 < 0.049 < 0.13 < 0.12 < 0.12 < 0.12 CEBS	tractor - 1254	133660 <	0.13	V		5	v	900	٧	0.13	٧	0.12	٧	0.12
CEBs	Araclor - 1260	> 6969661	0.13	٧	0.0	2	٧	900	V	0.13	٧	0.12	V.	0.12
Component (mp/kg)	Total PCBs		NO ON		Z	D		æ		ND ON		ND	_	Q
my         7440360          10         < 6.6         < 11.2         < 10.3         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10         < 10	Inorganic Compounds (mg/	l_		۲	١		L		H				_	ľ
144039	Antimony	7440360 <	2	<u>v</u>	ı	9	v	1.2	٧	107	٧	2	٧	9.6
1440393	Arsenic	7440382	5		13			7.8	1	67	-	6.1	_	4.2
mm         7440417         c 0.76         c 0.5         c 0.62         c 0.78         c 0.76         c 0.5         c 0.78         c 0.76	Barium	7440393	413		ñ	20		372	_	151	_	339	-	598
mm         7440439         22         1.5         1.8         2.3         2.2         2.2         4.350	Beryllium	7440417 <	97.0	v		2	٧	0.62	٧	0.71	V	92.0	V	0.73
ium         180655331         40300         30400         47800         47800         41600         41500           fleat Chromium         7439376         165         70C         146         70C         176         70C           y         7430376         59         18         43         24,9         18.1         8.6           m         7450376         1.1         < 0.7	Cadmium	7440439	77	٧		8	٧	1.8	٧	53	٧	77	٧	2.1
	Chromium	18065831	40300		ğ	20		47800		48400		43600		48400
7439921 1050 7UC 1460 7UC 868 7UC 1416 7UC 1750 7UC 743976 5.9 8.8 4.3 24.9 18.1 7704020 10 5.9 8.9 15.5 9.6 7402020 1.1 < 0.7 < 0.88 < 1.1 < 1.1 < 1.1 < 1.6 < 1.6 < 1.7 < 0.88 < 1.1 < 1.6 < 1.7 < 0.88 < 1.1 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 < 1.7 <	Hexavalent Chromium	18540299					-							
y         7439876         5.9         8.8         4.5         24.9         18.1           y         744020         10         5.9         8.9         15.5         9.6           mn         7782492         4.1         < 0.7         < 0.8         < 1.1         < 1.1         < 1.1         < 1.1         < 1.5         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.6         < 1.7         < 1.7         < 1.7         < 1.7         < 1.7	Lead	7430921		ړ	*		H		_				_	1310 AAC
7440220 10 5.9 8.9 15.5 9.6 cm 77402345 6.1.1 c 1.1 c	Mercury	7439976	5.9	r		eni	H	4.5	-	24.9	H	1371	H	4,6
m 7782492	Nickel	7440020	9	_	ĸi	0;	_	8.9		15.5		9.6	-	1.7
7440224< 1.6 < 1.1 < 1.3 < 1.6 <	Selenium	7782492	==	v		Ľ	v	0.88	V		V	7	V	-
	Silver	7440224	9.1	~		_	v	13	٧	91	٧	9.1	٧	1.5

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Comparison of Surface Soil Data in Area 2 to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery
Commonwealth Edison Company
Waukegan, Illinois

Comparison of St Former Griess-Pf Commonwealth E Waukegan, Illinok

Phase   Phas	Phisse   P	Sample ID Number	25-07	80-88	80	80-88	_	28-10	SB-44A	SB-45A	SB-66A	SB-47A	
Prize (Phose of Prize   Priz	Phase   Phas	Danth	3	20		2	_	-	D-1	0.1	-	1-0	
Fig.   Processing   Processin	Sample Type	Phase Mhase il	Phase	Phas		Phase		Phase	Dhase II	Phase	Phase II	Phase II	
In-Place    In-Place/Removed   In-Place   Surface   Surf	Sample Type	Investigation	Comp	lumd .	Combined		investigation	Investigation	Investigation	investigation	Investigation	=	
Soil Type	Soil Type   Surface   Su	In-Place/Removed	In-Place	11411	20	In-Place		In-Place	in-Place	In-Place	In-Place	In-Place	
CAS No.   Area   Area	Area	Soil Type	Surface	Surfa	-	Surface	_	Surface	Surface	Surface	Surface	Surface	
Part	Part	Area	Area 2	Ane	12	Area 2		Area 2					
December   15635  c   1.1   c   2.2   2.45   64   64   64   64   64   64   64	Description   19553   Compounded (mg/Kg)   Compou						-						1
Maintenance   1653	Description						_						
Normathene   207019   Color    Normaldere   205892   1.1	nthracene				2.85	_	6.4						
1000   10000   10000   10000   10000   10000   10000   10000   10000	1,121-cd)pyrane		==			2.55		4.8					
1,1,1	1,000   1,00		==			3.65	_	4,4					
1,21,-d)pyrase   503214   1.1   < 2.2   1.65	1,13,4-60pyrese	41	Ξ			1.095		1.6					
1,21-cdpyrate   191395   1,1   < 2.2   < 1   < 144	1,2,1-o/lpyrene		==		-		H						
Section   Strong   Continue   Continue   Strong   Strong	Section   STOD    Country   Countr	)pyrene 193395			Ľ	-	F	<u>~</u>					
Second compounds (mg/kg)   Second colored co	Section   Sect				<u> </u>	-	V	9:1				-	
1900   1900	100mm   100m	Pesticide Compounds (mg/Kg)					-						L
1935/15   0,0002   0,0002   0,0007   0,0015   0,0005   0,0005   0,0005   0,0005   0,0005   0,0005   0,0005   0,0005   0,0012   0,0012   0,0005   0,0005   0,0012   0,0012   0,0005   0,0005   0,012   0,0012   0,0005   0,0005   0,012   0,0012   0,0005   0,0005   0,012   0,0012   0,0005   0,0	1935/35   0,0062   0,0005   0,0007   0,015		Ö	Ī		0.0021	V	0.0035					
1315G  C   0.012   C   0.0042   C   0.0068   C   0.0068	S0271   C 0.012   C 0.0023   C 0.0063     S0272   C 0.012   C 0.0042   C 0.0063     S0273   C 0.012   C 0.0042   C 0.0063     S0274   C 0.012   C 0.0042   C 0.0063     S0275   C 0.012   C 0.0063     S0275   C 0.0063		•	_		0.007	-	0.015					
135G S  C 0.12   C 0.12   C 0.042   C 0.068    133605   0.12   0.012   0.0042   0.0068     133605   0.12   0.12   0.012   0.0042   0.0068     133605   0.12   0.012   0.0042   0.0068     133605   0.12   0.012   0.0042   0.0068     133605   0.12   0.012   0.0042   0.0068     134005   0.12   0.012   0.0042   0.0068     13605   0.12   0.012   0.0042   0.0068     13605   0.12   0.012   0.0042   0.0068     13605   0.12   0.12   0.0042   0.0068     13605   0.12   0.12   0.0042   0.0068     13605   0.12   0.12   0.0068     13605   0.12   0.14   0.15   0.0068     13605   0.12   0.14   0.15   0.0068     13605   0.12   0.14   0.15   0.0068     13605   0.12   0.14   0.15   0.0068     13605   0.12   0.14   0.15   0.0068     13605   0.12   0.14   0.0068     13605   0.12   0.0068   0.0068     13605   0.0068   0.0068   0.0068     13605		_				v	0.0068						
133636   Coli	1335G5  < 0.12		Ī				v	0.0068					
133654	13505  < 0.12	CBs (mg/kg)					_						L
13565  < 0,12	13565  < 0.12				٧	0.042	٧	990'0					
1336.05  < 0,12	1336.61   0.12   0.012   0.0043   0.0083   0.0084   0.0				٧		v	0.068					
CEBs	CCBs         ND         < ND         ND         ND           alt Componends (nug/Kg)         7440350         9.7         < 9.3				<u>v</u>		v	0.068					
my         7440156         9.7         < 9.3         < 3.3         < 5.4         MC         4600 MNC         24 M         17           1         744015         6.7         6.7         10.5         72.7         AC         4600 MNC         24 M         17           1         744015         2.1         5.2         10.5         10.5         4600 MNC         24 M         17           mm         7440417         0.71         < 0.7	my         440360         9.7         9.3         5.4           my         7440360         9.7         9.3         5.4           my         7440312         6.7         8.45         10.5         72.7         72.7           m         7440417         0.73         < 0.25	Total PCBs	Q.		V		_	£					
my         7440360 < 9,7         < 9,3         < 3,3         < 5,4         6         6         6         7         8.85         10.5         72.7         ACC         4600         AINC         24         AI         37           1         7440417         6.77         6.73         6.025         72.7         ACC         4600         AINC         24         AI         37           mm         7440417         2.1         4.900         2.0359         60000         ACC         AI         AI         AI           leat Chromium         16605837         2.150         1445         AI	my 7440224   1-3   1-4   1-3   1-4   1-3   1-4	morganic Compounds (mg/Re)				L	-						
1440182   6.7   8.45   10.5   72.7 AC   44600 ANNC   24 A   17   17   17   17   17   17   17	1440182				<u>v</u> .	3.3	v						╝
1440192   218   318   216.5   88.5   88.5   1440119   216.5	mm         7440193         218         388         216.5         88.5           mm         7440417         0,73         < 0,7		6.7	8.85	Ī	10.5			4600 /J/N/C		17 U	₩ 9 <del>9</del>	
mm         7440417         < 0.73         < 0.2         < 0.41           mm         7440419         2.1         < 2	mm         7440417         < 0.71         < 0.7         < 0.25         < 0.41           mm         7440419         2.1         < 2			384		216.5	L	\$85					L
mm         7440419 (255837)         2.1          2         1.95         1.7           lum         16658371         2.1500         44900         20359         60000           deat Chromium         16540209         5.1         6.1         1.45         1/C         1135         1/C         1900         1/C           y         7439921         5.1         6.1         4.45         31.8         1.67           y         7440020         5         8.35         21.3         16.7           m         7782424         1.5         < 1.5         < 0.59         < 0.53	mm         7440419 (2015)         2.1         2.2         1.95         1.7           lear Chromium         16565831         21500         44900         20350         60000           y         7438921         5.6         R/C         1445         R/C         1135         R/C         1500         R/C           m         77824822         1.5         6.1         4.45         0.38         c.0.59         0.38         c.0.53				<u>*</u>	270	V	0.41					
leat Chromium         18065531         21500         44900         20359         60000           leat Chromium         7439621         556 / // / / / / / / / / / / / / / / / /	16065831   21500   44900   20159   60000   20159   2				_	1.95		1.7					
18540209   1445 / 1/C   1135 / 1/C   1900 / 1900	18540209   1445 N/C   1145 N/C   1135 N/C   1900 N/C   1445 N/C   1445 N/C   1900 N/C   1445 N/C   1900 N/C   1445 N/C   1900 N/C   1440020   5 8.35   21.3   16.7   16.		21500	44900	_	20350	_	00009					
y 743921 556 ftC 1445 ftC 1135 ftC 1900 ftC y 743976 5.1 6.1 4.45 1.2 13.8 13.8 7440220 5 8.35 21.3 16.7 mm 7782422 1 < 0.99 0.38 < 0.38 7440224 1.5 < 1.5 < 0.53	y         743921         556         R/C         1445         R/C         1135         R/C         13900         R/C           y         7439676         5.1         6.1         4.45         R/C         31.8           y         7440020         5         8.35         21.3         16.7           mm         7746224         1.5         < 0.59	Chomium											
y 7439978 5.1 6.1 4.45 31.8 11.8 11.8 11.8 11.8 11.8 11.8 11.8	y 743976 5.1 6.1 4.45 31.8 744022 5 5 5.3 21.3 16.7 7782452 1 < 0.99 0.38 < 0.38 7440224 1.5 < 1.5 < 0.53 < 0.67		ı	1445	ı	ı	-	1					
m 7782492   1	m 7782492		5.1	6.1		4.45	-	31.5					
m 7782492 < 1 < 0.99 0.38 < 0.58   7440224 < 1.5 < 1.5 < 0.53 < 0.67	m 7782492 < 1 < 0.99			135	_	21.3	_	16.7					
7440224 < 1.5  < 1.5  < 0.53  < 0.87	7440224 < 1.5 < 1.5 < 0.53 < 0.87	6				0.38	v	0.54					
			1.5	ı	4	0.53	¥	0.87					╛

Table 5

Phase Whase III			3	3	3	6	<u> </u>
	Se II Phase II	Phase II	Phase II	Phase II	Phase II	Phase II	_ 1
In-Place/Removed	ace/Removed in-Place	Investigation	Investigation In-Place	Investigation In-Place	In-Place	investigation in-Place	ē
Soil		Surface	Surface	Surface	Surface	Surface	
CAS No.	Arra Arra A	7887	Area 2	70897	Area 2	Area z	
nthracene	56553				c 0.33	950	
	216019				c 0.33	× 0,33	
	205992				< 0.33		
hone	207089				< 0.33	< 0.33	
Benzo(a)pyrene 5	50328				< 0.33	< 0.33	
ndeno(1,2,3-cd)pyrene 19	93395				< 0.33	c 033	
Dibenzo(a,h)anthracene 5	53703				< 0.33	< 0.33	
Pesticide Compounds (mg/Kg)							
	309002				< 0.0017	< 0.0017	
Heperchlor Epoxide 102	024573				< 0.0017	< 0.0017	
	17209				< 0.0033	_	
	50293				0.0093	0.013	
PCBs (mg/Kg)							
	336363				< 0.033	< 0.033	
	3366	-			< 0.033	< 0.033	
2	135063				Ĭ	0.16	
Fotal PCBs					£	0.16	
nerganic Compounds (mg/Kg)							
Antimony 744	7440360				YZ.	NA NA	
74	7440382 25 A	18 Л	3.5	16 11	9.4	. 33	/I/C
74	740393				921	120	
	7440417				Y.	¥N	
Cadmium 744	7440439				=	2.9	
Chromium 1608	6065831				49000	32000	
Hexavalent Chromium 1854	8540299			I	91	NA	
743	7439921		1		930 AUC	720 //	JVC
Mercusy 743	7439878		6		4.5	\$.5	
747	7440020				NA	NA NA	
Sclearum 778	7762492				3,4	< 3.5	
744	7440224				< 1.2	< 2	

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Comparison of Surface Soil Data in Area 2 to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

Depth Phase IPhase II Sample Type In-Place/Removed Soil Type Adaa CAS No. CAS No. CAS No. Seistle (rep/Kg) Berzo(s)andurecne Chipsene Chipsene Chipsene Chipsene Chipsene Cas No. Seistle Chipsene C	0-1 Phate II		5	_						
Phase IPP Sampl In-Place/Rei So CAS N	Phase			_	3			2		2
Samplin-PiecuRei So So		_	Phasell	_	Phase II	_	Phase	Phase II	===	Phase to
In-Place/Re So CAS N	Investigation	_	Investigation	_	Investigation	=	nvestigation	Investigation	atton	Investigation
CASN	in-Place	_	In-Place	_	In-Place	_	In-Place	In-Place	2	In-Place
CASN	Surface	_	Surface	_	Surface	_	Surface	Surface	8 .	Surface
,	Ares z		Areaz		Area 2		Artia 2	AMERIC	<u> </u>	YES Y
3				L		L				
	0.37	v	0.33	٧	0.33					
	0.51	v	973	٧	033					
	0.33	ν	0.33	٧	0.33					
Benzo(k)fluoranthene 207089 <	0.33	v	0,33	v	823					
Benzo(a)pyrene 5032a <	0.33	v	0.33	v	0.33					
Indeno(1,2,3-ed)pyrene 193395 <	0.33	v	0.33	v	0.33					
Dibenzo(a,h)anthracene 53703 <	0.33	v	0.33	v	633	_			_	
Pesticide Compounds (mg/Kg)				L						
309002	0.0017	٧	0.0017	٧	0.0017					
Heptachlor Epoxide 1024573 <	0.0017	v	0.0017	v	0.0017					
> 1209	0.0033	v	0.0033	v	0.0033	_				
50293	0.013		0.036	٧	0.0033					
		L	ı	-		_				
1336061	0.003	v	0.003	v	0,033	_				
1336361	0.033	v	0.003	v	0.033					
13355	0.17		0.22	v	0.033					
	0.17		0.22	_	P.					
Inorganic Compounds (mg/Kg)		L		_				j.		
7440360	NA		NA	_	Ϋ́Υ	_	NA	NA		NA
74403112	380 ••UNC	L	78 **/WC	H	16 11		=	91	U	18 Л
7440393	250	L	320	-	140	_	29	390		220
7440417	NA NA	_	Ϋ́	_	ΥN	_	γV	NA NA		××
7440439	6.9		22	_	3.7	v	1.2	> 1.6		42
-	31000		36000	_	44000	_	42000	40000		41000
Hexavalent Caronium 18540299 <	2.7		2.5	-	XX	v	2.4	٧ ٧		3.5
	260 AVC		410 AVC	F	970 AVC		1000 AVC	490	AUC.	1400 /I/C
7438975	0.39	L	0.25	H	9.5	L	=	1.4		0.75
7440020	NA		NA NA	_	×	_	NA	YZ.		ΝΑ
7782492 <	2.7	v	28	v	3.7	v		====		C.7. >
7440224 <	2.4	_	23	٧	2	4	2.3			

F.ComEn15150 Tanner/DataTier 1 EvalAres 2 Surface Solluts

Comparison of Surface Soil Data in Area 2 to Tier 1 Screening Values for Direct Contact Former Griess-Pileger Tannery
Commonwealth Edison Company
Waukegan, Illinois

IEA Sample ID Number	950248019 950248019 0-1 0-1 0-1 1 Phase II Phase II Investigation in-Place Surface Surface Surface Area 2	- E	950153003
Phase if P	0-1 Phase II (Avestgation In-Place Surface Avea 2		2
Phase II	Phase II (Average) Phase II (Average) Phase Surface Average		
Page	Investigation In-Place Surface Area 2		Phase II
In-Place  In-Place   In-Place   In-Place   In-Place   In-Place   In-Place   In-Place   In-Place   In-Place   In-Place   Surface   Surf	in-Place Surface Area 2	_	investigation
Soli Type   Surface   Su	Surface Area 2	M-Piace	in-Place
Area 2   Area 3   A	Area 2	Surface	Surface
## ## ## ## ## ## ## ## ## ## ## ## ##		Area 2	Area 2
### ### ### ### ### ### ### ### ### ##		III	
University   196533			
Vorabithche   2018019   Vorabithche   201801   Vorabithche   2018019   Vorab			
### 193392  ### 203992  ### 193393  ### 19			
Vortaubene 207089  Vortaubene 20208  1 3-capprime 193395  - Campounds (mg/Kg)  1 24  - Campounds (mg/Kg)  24  1 315553  254  1 315553  254  1 315553  Compounds (mg/Kg)  1 44019  1 44019  1 44019  1 440020  1 440020  1 440020  1 440020			
yrace 50328   35028   35028   35028   35028   35028   35029			
3-c0pyrene   193395			
Alphabinistric   19703   Alphabinistric   19703   Alphabinistric   19703   Alphabinistric   1974573   Alphabinistric   1974673			
Pepalde   1074573   1074573   1074573   1074573   1074573   1074573   1074573   1074573   1074573   1074573   1074573   1074573   1074573   1074573   1074573   1074673   1074			
Epoxide   1024573   1024			
Fepanide 1024573  1248 1336503  248 1336503  254 1336563  Compounds (mg/Kg)  7440317  7440317  7440317  7440317  7440317  74400209  1 Chromium 11540289			
S0251   S0252   S0253   S0253   S0253   S0253   S0253   S0254   S0253   S0254   S0254   S0254   S02553   S0254   S02553   S0254   S02553			
S0293   S029	***		
### 133653			
1244 1315553 135554 1315555 13555 1355555 135555 135555 135555 135555 135555 135555 135555 135555 1355555 135555 135555 135555 135555 135555 135555 135555 135555 135555 135555 135555 135555 135555 135555 135555 135555 135555 1355555 1355555 135555 135555 135555 135555 135555 135555 135555 135555 1355555 135555 135555 135555 135555 135555 135555 135555 135555 1355555 135555 135555 135555 135555 135555 135555 135555 135555 1355555 135555 135555 135555 135555 135555 135555 135555 135555 1355555 135555 135555 135555 135555 135555 135555 135555 135555 1355555 135555 135555 135555 135555 135555 135555 135555 135555 1355555 135555 135555 135555 135555 135555 135555 135555 135555 1355555 135555 135555 135555 135555 135555 135555 135555 135555 135555			
1254 1315553 1260 1315553 136 136 136 136 136 136 136 137 144035 144033 144033 144033 144033 144033 144033 144033 144033 144028 153 163 163 163 164030 1654028			
1260   1316363			
### Chromium   18565831   191			98
c Compounds (ing/Kg) 12 8.5 13 7440150 NA 7440150  n 7440191 NA 744017 NA 744017 NA 744017 NA 745017 NA 745017 NA 745017 NA 745017 NA 745070 C			
7440360 NA 8.5 II3 7440312 I2 8.5 II3 7440417 NA 460 7440417 NA 7440417 NA 7460419 3.6 m 18540289 < 3.03 7439978			
12 8.5 13 7440312 12 8.5 13 744033 460 NA 744033 3.6 m 7440439 3.6 m 18540289 < 3.03 7438978 191 7440020 NA		1	
n 7440793 460 n 7440417 NA n 7440439 37000 at Chromium 18540289 < 3,03 7439078   191 7440020 NA		U 64	150 AVC
7440417 m 1404139 m 18065831 at Chronium 18540289 < 7436021 7436021 7440020		l	L
m 7440439 mm 18965931 reat Chronium 18540299 < 7439021 7439076 7440020			
test Chronium 169,65531   165,40289 < 7439921   7439976   7449020		-	
test Chrossium 18540299 < 7439921 7439976 7440020			
7439921 7439976 7440020			
7438976			
7440020			
		_	
Selenium 7782492 < 7.8			
Silver 7440224 < 2.9			
e	Citon		5

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FiComEditite Tanner/Datative 1 Evalues 2 Surface Solixis

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Comparison of Surface Soil Data In Area 2 to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

Phase (Phase (Phase)   Phase		or way						
Phase (Phase)   Phase   Phas	IFA Sample 10 Number	950153005	950153007	950153009	950153011			
Phase     Phase   Ph	Depth		-	÷.	3			
Investigation   Investigatio	Il escricto escrit		Phase II	Phase II	Phase II			
In-Place	Sample Type	Investigation						
Soli Type   Surface   Su	In-Place/Removed	_	In-Place	In-Place	In-Place	In-Place	In-Flace	In-Place
CAS No. 2 Ava 2 Av	Soll Type		Surface	Surface	Surface	Surface	Surface	Surface
\$ 55553   218092   205992   20	Area CAS No.	_	Area 2	Area 2	Area 2	Area 2	AIE3 2	7 6874
218019 20092 201093 201	l							
2.019019 2.0								
200592 50724 50724 66 193395 133665 133665 133665 134655 134655 134655 134655 134655 134655 134655 134655 134655 134655 134655 134655 134655 134655 134655 134655 134655 134655 144039 14403 1								
Objective   207089   Objective   207089   Objective   207089   Objective   207089   Objective   207089   Objective   207089   Objective   207093   Objecti								
1,21,0002   193955   1,21,0002   193955   1,21,0002   193955   1,21,0002   193955   1,21,0002   193955   1,21,0002   193955   1,21,0002   193955   1,21,0002   193955   1,21,0002   193955   1,21,0002   193955   1,21,0002								
1,2,3-cd/pyrene   193355								
Composside (mg/Kg)   136002	ovrene							
e Composed to (mg/Kg) 109002  In 107473  In 60571  In 60572  In 60								
100002   1								
T   S0731   S0731   S0731   S0731   S0731   S0731   S0731   S0731   S0732   S0733   S0732   S0733   S0732   S0732   S0732   S0732   S0732   S0732   S0732   S0732   S0732   S07322								
GAS71   SAT93   SAT9   SA	for Epaxide 1							
S0293   S0293   S0293   S0294   S0295   S029								
96.52 133.563 134.64 134.653 135.63 1								
1315GG   1	PCBs (me/kc)							
13453G    13453G    13453G    144036    744036    7440393    7440417    7440419    10540296    7440020    7440207    7440207    7440207    7440207    7440207    7440207    7440207    7440207    7440207    7440207    7440207    7440207    7440204    74								
1336363 ppounds (mg/Kg) 7440362 7.1 210 //JC 21 //1 8448 //JC 13990 //JN/JC 7440417 7440417 7440419 185025631 romium 18540299 7440020 7740243 7740239 7740239 7740239 7740239		I						
Pepends (mg/Kg) 744036 744035 744035 744035 744035 744035 7440326 7440226 7440226 7440226 7440226 7440226 7440226								
F. Compounds (mg/Kg.)  7. 1440360  7. 1440317  1. 216 ///C  1. 3590 ///C  1. 416 //								
7 7440360 7 7440362 7.1 216 R/C 21 R 848 R/C 1590 R/V/C 740419 740419 740419 7440429 7440020 77440020 7744022	Inorganic Compounds (mg/Kg)							
7440120					- 1	ı		- 1
7440393 n 7440417 m 7440419 m 16065631 cot Chromium 16540299 7439021 7440020 n 7740024			7.1	Ш		- 1		2190 /000
1440417 7440439 18065831 1 (Chromium 18540289 7440020 77440020 7744020 7740129	•				-			
7440439 1 18065831 10 Chromium 18540289 1476 ///C 1748020 17440020 17440224 17440229								
um 1605-6531 lent Chromium 185-60299 743-6029 743-6029 744-6025 m 77-624-9		_						
kent Chromium 18540299 7 7439979 7 7440020 m 7782492								
7436921 476 1JC 7439976 476 1JC 744022D T782492								
7 7439976 744002D m 7782492		_				263		336
744025 m 7782452	2							
m 7782492 7440224		_						
7440224		<b>D</b>						
	Silver 7440224							

Comparison of Surface Soli Data in Area 2 to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

Sample ID Number	ā	ច	E	5	Ŧ	A.B,1,2	_
Phase UPhase II							
edyl eldmess	Investigation	Investigation	Investigation	investigation	Investigation	Investigation	
Soil Type	Surface	Surface	Surface	Surface	Surface	In-Place Surface	
Area CAS No.	Area 2						
CPAHs (mg/kg)							
Beazo(a)anthracene 56553							
N							
•							
thene							
Indeno(1,2,3-cd)pyrene 193395							
Diberzo(#,h)anthracene 53703							
Aldrin 309002							
Heptschlor Epoxide 1024573							
PCBs (mg/Kg)							
Aroclor - 1248 1336363							
Aracles - 1254 1336363			Ī				
Q							
Total PCBs							
Compounds (mg/Kg)							
Antimody 7440360							
Arsenic 7440382	1280 ALANC	1370 ARVC	200 AAC	332 ///	3100 000	1430 GRAIN	
Barian 7440393			L	ı	4		
Beryllium 7440417							
Cadmium 7440439							
Claronium 16065831							
Chromian 1							
Lead 7439921	425 AVC	385	907	477 1110	350	1	
	1	•	}	1		2	
Selenium 7782492							
Silver 7440224							
	ANAC	MANC	JQC	J/V	WC	ANC	

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Comparison of Surface Soll Data in Area 2 to 'Her't Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

JG JG	JC V	WC	WC.	J)	ANC	
						Metal 74,59470 Nickel 74,0020 Selenium 7782,492 Silver 74,40224
483 /I/C	S32 AVC	ST7 IVC	794 AVC	467 IJC	414 AUC	at Chromium 14
s =			37			9
SS6 AIVC	759 IUC	341 11/0	110 AC	663 IJIC	1340 /UNIC	ic Compounds (mg/Kg) y
		1				PCBs (mp/kg) 1336363 Arockor - 1248 1336363 Arockor - 1269 1336363 Total PCBs
						Pesicide Campounds (mg/Kg) 309602 Albahn 309602 Heptackor Epoxide 1024573 Dickin 60571 4.4".DDT 50293
1		. I				CRAMs (mp/Kg) 56553 Berazo(a)andraeene 218019 Berazo(b/iluoerandrene 205992 Berazo(b/iluoerandrene 207089 Berazo(c)aprantene 207089 Berazo(a)aprantene 50028 Indeno(1,23-ed)pyrante 193195 Dibecarso(a,b)andraecene 53703
Investigation th-Place Surface Area 2	Investigation in-Place Surface Area 2	Investigation in-Place Surface Area Z	Investigation In-Place Surface Area 2	Investigation In-Place Surface Area 2	Investigation In-Place Surface Area 2	Depth Phase (Phase) Sample Type In-Place/Removed Soil Type GAS No.
G,H,1,2	F,G,1,2	E,F,1,2	D,E,1,2	C'0'1'5	B,C,1,2	Sample ID Number

Comparison of Surface Soil Data in Area 2 to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

ជ	Investigation In-Place	Surface Area 2																				47 A						2/I/ 064					n/C
D2	Investigation In-Place	Surface Area 2																				91 UC						747 AVC					WC.
ន	Investigation In-Place	Surface Area 2		1																		=======================================						786 AMC					WC
192	investigation In-Place	Surface Area 2						1														ES AINC						911 AVC					O/I
Z.	Investigation In-Place	Surface Area 2						1			_											160 AUC						658 /IVC					WC.
4,4,2	investigation In-Place	Surface Area 2																				309 /IVC						614 AUC					///C
Sample ID Number IEA Sample ID Number Depth	Phase IPhase II Sample Type In-PlaceRemoved	Soil Type	CAS No.			205992		_		L		21	11209	50293		1336363	1336363	133663			7440360	7440382	7440393	7440417	7440439	_	um 18540299	7439921	7439976	7440020	7782492	7440224	
<b>1</b>				CPAHs (mg/Kg) Benzo(s)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)Hilloranibene Benzo(k)nvrene	Indeno(1,2,3-ed)pyrepe	Diberzo(a,h)anthrac	Pesticide Compounds (mg/IKg)	Aldrin	Heptschlor Epoxide	Dieldrin	(,4:DDT	PCBs (mg/Kg)	Aroclor - 1248	Aroclor - 1254	Aroclar - 1260	Total PCBs	Inorganic Compounds (mg/Kg)	Antimony	Arsenie	Burium	Beryllium	Cadmium	Chromium	Hexavalent Chronidum	Lead	Mercury	Nickel	Sclenium	Silver	

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Comparison of Surface Soil Data in Area 2 to Tier 1 Screening Valuos for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

IEA Sample ID Number		<b>.</b>		•		
Dhase Whase Whase Bonyle B	II Investigation Include	Investigation In Place	Investgation (n-Place	Investigation	Investigation In-Place	Investigation In-Place
Soil Type CAS No.		Surface Area 2	Surface Area 2	Surface Area 2	Surface Area 2	Surface Area 2
CPAHi (mg/kg)						
Chrysene 218019	6					
uoranthene	24					
hene	0. 1					
				1		
Indexo(1,2,3-ed)pyrene 193395	90 5					I
	2					
Atthin	É					
Inc Feeride						
	13					
				) i		
Aroclor - 1248 1336363	72			Ī		
	2					
Aroctor - 1260 1336363	Ē					
Total PCBs						
ompounds (mg/Kg)						
Antimony 7440360		١	1	Т	I	ı
Arsenic 7440382	27 871 /IVC	74 RVC	719 AVC	322 AMC	47 /1	7/ /6
Banium 7440393	23					
Beryllium 7440417						
Cadmium 7440439	61					
_	=					
Hezavalent Chromium 16540299	22				П	1
Lead 7438921	21 784 /IVC	789 /IVC	701 /UC	494 RVC	236 AVC	813 /IVC
Mercury 7439976	94				30	
	2					
Selenium 7782492	22					
74.807						

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Comparison of Surface Soli Data in Area 2 to Ther 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

200	JUC VICE	WC	UC.	2	2	
						Silver 7440224
			_			Z. uz
277	ı.	1				Mercury 7439976
270	310 017	1190 Am	1330 /1/C	ASS /INC	\$78 AVC	
						ratent Chromium 1
						Chromium 16065831
						Beryllium 7440417
н	1	П				
Cult. Conc.	JAN AM	286 AM	180 A/C	ES4 AIC	99 AVC	Arsenic 7440382
						Antimony 7440360
						Inorganic Compounds (me/Ke)
						Aroclor - 1260 1336363 Total PCBs
						Aroclor - 1254 1336363
						Aroclor - 1248 1336363
						4,4*.DDT 50293
						Dieldrin 60571
						or Epoxide
						Aldrin 309002
						Preficient Comments of Comments of Control
						_
						Benzo(k) (hotenthene 207019
						bocauthene
				34		2
						CPAHs (mg/Kg)
2						CAS No.
Amin 2	Area 2	Ares 7	Area 2	Area 2	Area 2	Area
Surface	Surface	Surface	Surface	Surface	Surface	Soil Type
forDiach	indiana	in-Place	In-Place	In-Place	In-Place	In-Place/Removed
Invanelani	Innettestion	Investigation	Investigation	Investigation	Investigation	Sample Type
						Phase UPhase II
						Att C
₽ F	H,12,3	G,H,2,3	F,G.2,3	E,F,2,3	0,5,2,3	CA Challenge And Miller
						THE RESERVE OF THE PARTY OF THE

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Comparison of Surface Soil Data in Area 2 to Tier 1 Screening Values for Direct Contact
Former Griess-Pfleger Tannery
Commonwealth Edison Company
Waukegan, Illinois

Sample ID Number IEA Sample ID Number Depth	83	3	£Q	23	F.	5
Phase IPhase II Sample Type In PlaceRenoved Soil Type	investigation In-Place Surface Area 2					
CPAHs (mg/kg)  Benzo(u)anthracene 218819  Benzo(u)fuernathene 218819  Benzo(v)fuernathene 201992  Benzo(v)fuernathene 201993  Indeaof(1,2)-edpyrese 59328  Indeaof(1,2)-edpyrese 593395			t. Fun			
Festicide Compounds (mp/kg) 309002 Addin 1024573 Hepathlor Epoxide 1024573 Diclarin 60571 44*:DDT 50295]	= 1	=====================================				
PCIs (wp/kg) Araclor - 124 Araclor - 1254 133636 Araclor - 1260 1336363 Total PCBs	Į,			= = 11		
(mg/Kg)	ATT UNC	21	V 94	180 /J/C	447 IUC	678 INC
Hearwheat Chromium   18540209	304	909 UNC	TTT 10C	964 AIC	1100 /I/C	748 /IVC
SING	υC	MC	NC	ΛΛC	MC	AVC

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	Comparison of Subsurface Solf Former Griess-Prieger Tannery Commonwealth Edison Compa Waukegan, Illinois	Comparson of Subsurface Soff D Former Griess-Prieger Tannery Commonwealth Edison Company Waukegan, Illinois	Comparison of Subsurface Soil Data in Area 2 to Tier 1 Screening Values for Direct Contact Former Griess-Pileger Tannery Commonwealth Edison Company Waukegan, Illinois	r 1 Screening Val	lues for Direct C	ontact
Sample to Number	59-018	\$8-028	88-06B	SB-07B	SB-08B	80-8S
Depth	1.2	4-5	3.5-4.5	7	465	4.5
Phase (Phase II	Phase	Phase I	Phase	Phase I	Phase J	Phase
Sample Type	Investigation	Investigation	Investigation	Investigation	hvestination	cultaeval
In-Place/Removed	In-Place	In-Place	in-Place	In-Place	In Place	release.
Soll Type	Subsurface	Subsurface	Subsurface	Subsurface	Subsurface	Subsurb
Area	Area 2	Ansa 2	Arna 2	Area 2	Area 2	Ages
CAS No.						
9						

Table 6

		•				-		_		_		_	
	Depth	1-2			4		3.5-4.5	_	3	_	<del>1</del>	_	57
#£	Phase (Phase II	Phase	_		Phase (		Phase	_	Phase		Phase 1	_	Phase 1
ió	Sample Type	Investigation	S	=	nvestigation	_	Investigation	_	Investigation	_	hvestloatlon	_	Investigation
In-Plac	In-Place/Removed	In-Place			In-Place	_	in-Place	_	In Place	_	In Diace	_	in Division
	Soll Type	Subsurface	5		Subsurface		Subsurface		Substarfara	_	Substantans		Suhambara
•	Area	Area 2			Arrea 2	_	Area 2	_	Area 2	_	Area 2		Ara 2
	CAS No.			_		_		_				_	
CPAHs (mg/Kg)			Γ			┝		╀		╀		ļ	
Benzo(a)anthracene	56553			v	1.5	V	-	٧	¥		920	_	,
Chrysene	218019		_		1 10		3		2 4		3 3	,	0.00
Встго(в)Лионифере	205992	0.26			0.41		2 =		1 1	١	0.45	,	· ·
Benzo(k) (luoranthene	207089	790		v			1 =	_	2 %	/	C.40	٠,	a: :
Benzo(a)nvrene	\$037E	0.22	_				2 2		2 :	_	Ch'a	,	2
Inferrof 1 2 1 cellularene	101106		3	,	;		2 :		2 :	_	0.34	v	1.6
Disentate himself-cone	CATON			, ,	2:	v '	2 :	v ·	<u>n</u> :	_	0.14	v	1,6
Description of the second		9.	1	J	1.5	<u> </u>	1.5	¥	15	v	0.46	v	1.6
A Mein	Ġ			,				_		_		_	
Destarbler English	200000			, .	u.co.	<u></u>	0.0047	v_	0.026	v	0.0025	v	0.0043
Charles Epoxine	2 (7 (970)			v	0.004	v	0.0041	v	970.0	v	0.0025	v	0.0043
Delatin	× 11/209			v	0.0077	V	000	V.	0.051	y	0.0049	٧	0.0034
(,4:DDT	50293	0.0092		٧	0.0077	٧	0.004	v	0.051	v	0.0049	v	0.0034
PCBs (mg/Kg)						H		L		L		Ļ	
Vroclor - 1248	1336563			v	0.077	٧	0.03	٧	15.0	V	0.049	v	0.084
Aroclor - 1254	1336865			v	7.200	٧		v	150	v	0.049	v	0.084
Aroclor - 1260	1336363	Ĭ	İ	,	0.077	V		v	0.51	y	0000	v	0.00
Fetal PCBs		ę			Ş	Ī	- CX		Ę		5		9
norganic Compounds (mg/Kg)	2					H		Ļ		Ļ		ļ	2
Antimony	7440360	7.4		v	2	V	6.4	v	29	y	3.9	٧	6.7
Arsenic	7440382	32.4	u.		6.9	_	SSSO RUNC	1	14.3 A	_	12.4		21.7
Barium	7440393	413			360	L	ш	Ļ	L	_	1 89		L
Beryllium	7440417	Ī		v	0.47		_	٧	0.49	٧	5	,	130
Cadmatom	7440439			v	1.4	V			1.4	_	3 5	, ,	
Chromium	16065831	4			33100	•	32400	r	4000	_	200	,	277
Hezavalent Chromium	18540299					_		_	2000		anere I		91300
cad	7439921	1520	JVC UVC	ı	481 AVC	١.,	253		22.4		281		1360
Метсилу	7439976	7.4	Ī		П	Τ	0.64	_	20 8		200		П
Nickel	7440020	11.3			4.2	٧	3.5		=				
Sefenitan	7712492 <	0.78		v	1 20	,	4 6	_	: 8		٠.	,	3 :
Silver	7440224			, v	300	_,	<b>5</b> -	<u>, , , , , , , , , , , , , , , , , , , </u>	n. 03	۷ ۱	- 5	v 1	<u>.</u>
		JIV.	1	Ĺ	5	1		4		╝	7970	v	2

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Comparison of Subsurface Soil Data in Area 2 to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery
Commonwealth Edison Company
Waukegan, Illinois

IEA Sampie ID Number Depth Phase UPhase II Sampie Type In-Place/Removed Soil Type	umber								
Phase up Sampl In-PlaceRe So	Denth		_		950153002	950153004	950153005	950153007	950153009
Phase tip Sampl In-Place/Re So		9	_	3	?	7	7	13	7
Samp In-Place/Re So	hase II	Phase	_	Phase	Phase	Phase II	Phase	Phase	Phase
In-PlaceRei So	• Type	Investigation	_	Investigation	investigation	Investigation	Investigation	Investination	favortigation
So	Davom	in-Place		In-Place	In-Place	in-Place	In-Place	In-Place	in-Place
	Soll Type	Subsurface		Subsurface	Subsurface	Subsorface	Subsurface	Subsurface	Subsurface
	Aca	Area 2		Area 2					
CAS NO.			†						
Cardin and a	-	,		!		ò			
Sentos a Januarense	20333	10 1	<u> </u>	2 !					
	> 610217	3.6	V	12					
	205992	5.8	V	2					
Senzo(k)fluoranthene	> 680102	5.8	v	12					
Вепло(а)рутеле	50328	9	ľ	12					
ndeno(1.2.3-ed)norme	101106	4.5	Ť	12					
Obenzo(a, handkracene	53703	*	<u>, v</u>	2 2					
esticide Comnounds (my/Ke)	-		+						
Aldrin	> 200003	21000	٧	81000					
for Enoxide	7 24577	0 0033	_	0.000					
•	7 1530	20000	/ 1	0.0039					
A.DDF	1 10000	0.0002	<u> </u>	0.0070					
C Ba (mortica)	20073	U.LAUD.	+	anno vo					
	236365	5000	,	0.076				İ	l
	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	7000	_	0/07					
	33000 <	0.062	v	9200					
	33000	0.062	V	0,076					
Total PCBs		£	_	2					
norganic Composada (mg/Kg)			┝						
Antimony	7440360 <	vs	v	6.1					
Arsenie 7	74403822	1210 /INVC	ب پ	604 /IVC	~	1.2	2	15 A	Z V
Barium 7	7440393	557	-	155					L
•	7440417 <	0.38	v	0.46					
Cadmium 7	7440439	67	V	13					
Chromium 16	6065831	20400		20800	•				
Hexavalent Chromium 18	1540299								
7 best	14399Z1	595 AVC	Γ	161					
Mercury	7439976	3.6	r	111 /C					
Nickel . 7	7440020	5.5	L	4.8					
R	782492 <	0.53	V	0.65					
Silver	1440224	67.0	v	0.97					

Comparison of Subsurface Soll Data in Area 2 to Tier 1 Screening Values for Direct Contact Former Griess-Pileger Tannery
Commonwealth Edison Company
Waukegan, Illinois

41						
inday.		7	7	7	?	7
Phase UPhase III	Phase II	Phase III	Phase II	Phase if	Phase II	Phase
In-Place/Removed	In-Place	in-Place	in-Place	In-Place	In-Place	In-Place
Soli 19pe Area CAS No.	Area 2	Area 2	Area 2	Area 2	Area 2	Area 2
CPAHs (mg/Kg)	100					
¥				•	< 0.33	
7					< 0.33	
luorauthene					< 0.33	
Benzo(k)fluorauthene 207089					< 0.33	
Benzo(a)pyrene S0328					c 033	
-					< 0.33	_
Dibenzo(a,h)andracene 53703					< 0.33	
Pesticide Compounds (mg/Kg)						
Aldrin 309002					< 0.0017	
Heptachlor Epoxide 1024573					< 0.0017	
					< 0.0033	
4,4'.DDT 50293					< 0.0033	
					< 0.033	
Aroctor - 1254					< 0.033	
Aroclor - 1260 1336363					^ 0.033	
John Cos					QN.	
Compounds (mg/Kg)				•	:	
1			-1	-1	-1	Y.
	26	10000 /IDN/C	72 U	140 **/J/C	370 ° 01/1C	
				200	00	330
Beryllium 7440417				¥	YY.	NA
				4.4	32	6.2
-				27000	3600	24000
Hexavalent Chromium 18540299				12	9"	
	ļ!			470 IVC	901	330 AVC
				0.54	0.55	4.3
Nickel 7440020				NA	WA	WA
6			<u>v</u>		6:1 v	× 136
Silver 7440224			٧	2,4		, e

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Comparison of Subsurface Soil Data in Area 2 to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

A Sample ID Number Depth Phase uPhase II Sample Type In-PlaceRemoved Soil Type CAS No.	13	950248018	4.3	0708470CA	200501008	100001000	
Phase (Phase II) Sample Type In-PlaceRemoved Soil Type CAS No. Area CAS No.	?				-	**	7
Phase Whase II Sample Type II In-PlaceRemoved Area CAS No.		2	2	?	2 1	S de la contra del la contra del la contra del la contra del la contra del la contra de la contra del la contr	Dhacell
Sample Type In-PlaceRemoved Soil Type Area CAS No.	F11256	F11256 II	F1125611	11025011		- Harriston	furnetional
In-PlaceRemoved Soil Type Area CAS No.	nvestigation	Investigation	Investigation	Investigation	nonegasavui	Investigation for Direct	investigation .
Soil Type Artea CAS No.	In-Place	In-Place	in-Fiace	TU-LISCS	MI-FIECE	Difference of	C. Property
2553	Subsurface	Substurface	Subsurface	Subsurizes	SUDSUITACE Area 2	Area 2	Area 2
	Area 2	7127	7 6050				
normathene			•				
nche 2							
			60				
Indeno(1,2,3-ed)pyrene 193395							
١							
ie Compounds (mg/Kg)							
or Epoxide 10				9			
4,4-DDT 50293							
	Ì						
	•						
Inorganic Compounds (mg/Kg)							
Antimony 7440360			- 1	н	ı	-1	1
	5.9	7.1	780 AVC	710 /UC	7 SS	240 AIAC	77
Barium 7440193							
Beryllium 7440417							
Cadmium 7440439							
_		•					_
Hexavalent Choraium 16540299							
Lead 7439921							
Moreury 7439976							
Selenium 7782492							_
Silver 7440224							

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Comparison of Subsurface Soil Data in Area 2 to Tier 1 Screening Values for Direct Contact Former Griess-Pileger Tannery Commonwealth Edison Company Waukegan, Illinois

Phase II Investigation In Place Subsurface Area 2	Sample ID Number	SB-848	859-85	SB-86B	MW-1A
Phase (Phase)   Phase   Phas		_	OLDCG ACA	21003005	950211802
Prizace   Priz		2	7	?	7
In Place   In Place   Investigation   Invest	Phase UPhase in	Phase	Phase II	Phase ()	Phase II
In-PlaceRemoved   In-Place   In-Place   Subsurface   Su	Sample Type	Investigation	Investigation	Investigation	Investigation
Soli Type   Subsurface   Subs	In-Place/Removed	_	In-Place	In-Place	In-Place
CAS No.   Avea	Soll Type		Subsurface	Subsurface	Subsurface
Compounds (mg/Kg)   Comp	Area		Area 2	Area 2	Area 2
Compounds (mg/Kg)					
Column   C					
Objinustablene   201592   Control					
Compounds (mg/Kg)   Comp					
(1)   (1)					
(1,2,3-edlpyrene 193395					
Compounds (mg/Kg)   1909002   Codd					
### ### ### ### ### ### ### ### ### ##					
More Epoxide   309002   0.0004   0.00	ļ				l
More Epoxide   1024573   C 0002					
December   Control   Con					
1316.563   1316.563	2				
Page   Page					
1254 13151563 0.004 1254 13151563 0.004 1254 13151563 0.004 1250 13151563 -					Ī
7-1244 113655					
1244 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04 1260 11305G3 C 0.04	_				Ī
1316353   1316353					Ī
CCBs  Inite Compounds (mg/Kg)  Inite Compounds					
	Total PCBs				
140350	Inorganic Compounds (mg/Kg)				
140342   19   170   17					
1440,191   1440,192   1   1440,192			ı	и	
um         7440417         < 0.24           um         7440439         < 0.24				1	
tium 7440439 < 0.24 tium 1605831					
ium 16065831 11.3  olent Chromium 18540299  74319921 2.2  7440020  mm 7782452 < 0.71  7440224 II niv. Arkiv.					
Juliar Chromium 18540299 NA 7419976 A 0.12  74 7440224	-				
74 7439976 2.2 748020 2.2 1782492 4.12 1782492 4.12 7440224 4.12	ij				2
77 7419976 < 0.12 7440220					5 6
m 7440220 2.5 7783452 < 0.71 7440224 d ner and a					
7782492 < 0.71					
7440224					3 5
A ANN ANNE					
			1		1

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Comparison of Surface Soil Data in Area 3A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery
Commonwealth Edison Company
Waukegan, Illinois

	IEA Sampte ID Number!			_						;				:		950158002
	Denth		-8	_	9			5		-0	_			•	_	9
Phas	Phase Whase if	d	Phase		Phase		-	Phase		Phase	_	Phase		Phase	_	Phase ii
		1		_		-	1						_	- Chambles -	_	anticopposition.
n i	edy) sidmes		nvesogation in Diete		invesugation In Disco	5		nonegagani	<b>€</b> _	investigation in Direct	=	In-Disca	•	in Diace	_	In-Place
THE PERSON NAMED IN COLUMN 1	To the second	ē	3	_			£ 6	Die February			_	Confessor.		Credence		Cumber
	Area	δ∢	Area 3A		Area 34		a ed	Arra 3A		Area 34		Area 3A		Anna 34		Area 3A
O	CAS No.										_	I		1	_	
CPAHs (mg/Kg)	ľ			L		Г			L		L		L		L	
Benzo(a)anthracene	56553	v	_	v	970		v	0.8	v	2.9	٧	0.4	٧	970		
Chrysene	211019	v	_	٧	0.6		v	0.8	v	2.9	٧	0.4	٧	0.36	4	
Benzofbiffworanthene	202992	Ġ	SS	ν	8.0		v	0.8	v	ร	٧	0.4	٧	0.36	_	
Benzofkifluoranthene	207089	¢	57 ]	٧	0.8		v	0.8	٧	2.9	٧	0.4	ν	970		
Benzolalovneae	50328	Ó	0.19	٧	870		٧	0.0	٧	2.9	٧	0.4	٧	0.36	_	
ndeno(1,2,3-cd)ovrene		v	1	٧	8.0		٧	0.8	٧	2.9	٧	0.4	٧	0.36		
Dibenzo(a.h)antaracene	53703	v		٧	0.8		v	0.8	v	2.9	٧	0.4	٧	036		
Pesticide Compounds (mg/K)				L					L		L				L	
Aldrin	309002		0.0028	٧	0.0022		v	0.0021	٧	910.0	٧	0.0021	v	6100.0		
Heptachlor Epoxide	1024573	ŏ	0.021	_	0.011		-	0.0046	٧	0.016	٧	0.0021		0.0061	_	
Dieldrin	60571	ð	0.047	_	0.03		Ī	0.0083	٧	50.0	٧	0.0042	v	0.0038		
t,4-DDT	50293	ŏ	970.0	_	0.027			0,000	v	0.03		0.012		0.02		
PCBs (mg/Kg)				L											_	
Aroclor - 1248	1336363	0	0.5	٧	0.042		٧	0.041	v	2	٧	0.042	v	0.038	_	
Aroclar - 1254	1336563	v 0.4	0.053		950		v	0.041	v	3	٧	0.042	v	0.032		
Araclor - 1260	1335563	× 0.1	0.053	V	0.042		٧	0.041	٧	2	٧	0.042	v	0,038	_	
otal PCBs		9	50		0.38			NO CA		PA PA		ND DN		NO.	_	
norganic Compounds (mg/Kg)	L			_					L							=
Antimony	7440360	v	4.3	٧	3.4		v	33	v	89 19	٧	33	٧	3		- {
Arstanic	7440382	1	79.3 M	L	151	JVC.		3.6		1.7		2		13.7 A		38 ••¶
Barium	7440393	2	8	L	198			066		4840		14.2		64.4	L	051
ayllium	7440417	ď	0.71	_	6			70.0	v	0.29	٧	0.25	v	673	_	٧×
Cadmium	7440439	Ÿ	54.8		21.7		v	0.72	v	0.85	ν	67.0		9	_	5.5
Chonsum	16065831	26	0065		6570			121		49.5		29.1		94.6	_	27000
Hexavalent Chromium	18540299			_		•									٧	
Lead	7439921		566 /IVC	H	103	APC.		14.5		27.9		6.5		646 AJC	Ľ	2/U 089
Mercury	7439976	ľ	5.1	L	1.1		v	90.0		0.09	٧	90.0		0.09		8.9
Nickel	7440020	(ri	52.1		11.6			10.8		64	_	202		8		٧V
Selenium	7782492	•	4.8		9.1		v	0.15		0.44	_	0.35	v	0.32	v	7
Silver	-	•		,			•	-		* * * *		0 63	1	070	,	

Comparison of Surface Soil Data in Area 3A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

Phase UPhase II Sample Type Investigation In-PlaceRemble Type Investigation In-Place Soll Type Area 3A CAS No.  CPAHS (mg/Kg) Sector(s) Laboration Support Chrystoc Support Support Support Support Support Support Support	Ē					
Sample Type In-PlaceRemoved Soll Type Area CAS No.  RPKE) 56553 Unranbene 205592 CONDAR	_	_				
nafig.  CAS No.  CAS No.  Refig.  Sold Type  CAS No.  218019 205992		=	Investigation	Investigation	Investigation	Investigation
CAS No.  CAS No.  Chas No.  S6553  S6553  Cas No.  218019  Consultation		n-Place	in-Place	in-Place	in-Place	In-Place
CAS No. 54551 substance 218019 205992	_	Surrect	Cultace	Surrace	Surace	Surrace
ng/Kg) othracene inoranthene	4 EEV	4 can	Area 34	Area 3A	Arra 3A	Area 116
athracene noranthene						
noranthene						
	9					
ACMC						
_						
Dipenzo(a,b)anthracene 53703						
ke Compounds (mg/Kg)						
for Epoxide 10						
4,4°.DDT 50293						
PCBs (mg/Kg)						
Aroclor - 1260 1336363						
Total PCBs						
Compounds (mg/Kg)						
Antimony 7440360						
Arsenic 7440382 12	11	17 //	IS A	878	12	7
Barium 7440393	2					
Beryllium 7440417						
Cadmium 7440439						
-						
Heravalent Chromium 18540299						
7439921 543	DC 170	42	455 /IVC	30	66	578 /UC
Mercury 7439976						Ł
Nickel 7440020						
Selenium 7782492						
Silver 7440224						

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Comparison of Surface Soli Data in Area 3A to Tier 1 Screening Values for Direct Contact Former Griess-Pileger Tannery
Commonwealth Edison Company
Waukegan, Illinois

Sample 10 Number IEA Sample 10 Number Death	0,P,1,2	P,Q,1,2	Q,R,1,2	R,S,1,2	N2	02	- -
Phase VPhase II	formittee	achter (lesson)	and the standard	Investigation	Investigation	Investigation	Investigation
In-Place/Removed	In-Place	In-Place	In-Place	In-Place	In-Place	in-Place	In-Place
Soll Type	Surface	Surface	Surface	Surface	Surface	Surface	Surface
Area	Area JA	Area 3A	Area 3A	Area 3A	Area 3A	Area 3A	Area 3A
CAS No.							
יושכשני						1	
Chrysene 216019							
Denza (a) (1) (1) (1) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4							
TANKE IN							
le Compounds (mg/l/g)							
Heptachlor Epaxide 1024573							
Dicidrin 60571							
4.4'-DDT 50293					THE STREET		
Aroctor - 1260 1336363							
Total PCBs	_						
Compounds (mg/Kg)							
						,	
Arsenic 7440312 <	٠ ،	זו ע	υ οχ υ	3	2 2	01	77
Cadmium 7440439							
Chromium 16065131							
Chromium							
Lead 7439921	416 AVC	268	544 ruc	168	710 INC	402 /IVC	426 /IVC
Mercury 7439976							
-							
Silver 7440224							
	SC.	۳	2		92	JAC VINC	AIRC

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Comparison of Surface Soil Data in Area 3A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

Jac.	INC.	JIC VIC	20		3	2		
	9		300		J. W		7440224	N.C.
								Schulum
								Nickel
L	1				ŀ		7439976	Mercury
431 AVC	534 /IVC	449 AVC	795 /UC	284	541 AVC	230		FER
				1			feravalent Chromium 38540299	Herava
							-	Chromium
								Cadmium
								Beryllium
								Barrem
17 A	n n	16 /11	66	6 v	-	45 II		Arsenic
								Antomony
					-		Compounds (mg/Kg)	I Borgan
			*				CBs	Tatal PCBs
						V		Anocior - 1260
							- 1254 1336363	Aroclor - 1254
		***					- 1248 1336363	Araclor - 1248
							JE/KE)	PCBs (mg/Kg)
	2						T 50293	4.4:DDT
								Dieldrin
							Repachlor Epoxide 1024573	Heptack
							309002	Aldris
							Peaticide Composads (mg/Kg)	Pestical
								Diberta
			1				Acto (1,2,3-ed)pyrane 193395	Indeno
							Beazo(a)pyrene 50328	Benzo(1
								Bernand
							Benzo(b)fluoranthene 205992	Benzoll
							c 218019	Chrysene
	3						36	Benzo(1
							CPAHs (mg/kg)	SPATE CPATE
	¥ 24	AL 287	500	5			CAS No.	
	20000	20000			400	4100.38	4	
Surface	Surface	Surface	Surface	Surface	Surface	Surface	Soll Type	
In-Place	In-Place	In-Place	In-Place	In-Place	In-Place	In-Place	In-Place/Removed	
Investigation	Investigation	Investigation	Investigation	investigation	Investigation	Investigation	Sample Type	
							Phase IPhase II	
							Depth	
	F,UZ.3	27.70	N,U,C,	70	ž	3	EA Samole IO Number	
5000	6600	1000	1002	625	22	60	Sample IO Number	_

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Comparison of Surface Soil Data in Area 3A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery
Commonwealth Edison Company
Weukegan, Illinois

Comparison of Surf Former Griess-Pfleg Commonwealth Edis Waukegan, Illinois

Satisfie D Number	R,5,2,3	2	8	2	3	2	3	t of other
Here Called and Market								
H escalar escala								
and desired	InviteHeation	ferentianilan	Investigation	Invastination	Investigation	Investination	Investigation	Investigation
and the second s				The state of	0.0	The Change	Pario al	in Diago
IN-LINCELLE MONEO	2001	114 120	IN-VACE	201	1			
Soll Type	Surface	Surface	Surface	Surface	Surface	Surface	Cultabe	
Area	Area 3A							
CAS No.				1/20				
CPAHs (mg/Kg)								
Benzo(a)anthracme 56553								
~								
horzothene								
- Contractor			5					
mer/Ke)								
Aldrin						8		
		•						
or esponde								
				£:				
4,¢-DDT 50293								
							_	
							9	
Araclor - 1260 1356363								
Total PCBs				_				
ompounds (mg/Kg)								
Antimony 7440360								
Arsenic 7440312	10 //	۷ ،	17 ת	10 VI	19 U	U 11	10 11	U 94
Banium 7440393								
Cadmium 7440439								
Hexavalent Chromium 18540299								
	S79 /IVC	1810 /IAC	ASO ANC	303	467 /IVC	S&1 /IVC	231 AVC	614 AVC
Mercury 7439976								
6								
Silver 7440224				100				

ace Soil Data in Area 3A to Tier 1 Screening Values for Direct Contact jer Tannery ison Company

_				_				_																						_		
ಕ	Investigation	Surface Area 3.A											*:								77						564 AJC					JAC MC
¥.	Investigation	Surface Area 3A																		-	76 A					1	447 AVC					/VC
R,5,3,4	Investigation	Surface Area 3A								,	25	59									וו ע						248	_				υ
0,R,3,4	Investigation In-Place	Surface Area 3A																			6						249					
P,0,3 A	Investigation In-Place	Surface Ans 3A																			100 AC						431 AAC					JIC.
O,P,3,4	Investigation to-Place	Surface Area 3A								_											N CS						O√1 / 1/1C					AC.
Sample ID Number IEA Sample ID Number Depth	Phase liPhase II Sample Type In-PlaceRemoved	Soll Type		214019		"		300000 au	L	309002	1024573	12999	50293		1336363	1336363	13388		L	7440360	7440342	7440393	7440417	7440439	_	m 18540299	7439921	7439976	7440020	7782492	7440224	
2			CPAHs (mg/Kg)	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Вепто(а)рупеле	Indenc(1,2,3-cd)pyrene Diberro(a,blanthracene	Perticide Compounds (mr/Ke)	Aldrin	Heptachlor Epoxide	Dictarin	4.4-DDT	PCBs (mg/Kg)	Aroclor - 1248	Anoclor - 1254	Aroclor - 1260	Total PCBs	Inorganic Compounds (mg/Kg)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Heasyalest Chromium	Lead	Mercury	Nickel	Scharium	Silver	

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Comparison of Surface Soil Data in Area 3A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Winois

Sample ID Number JEA Sample ID Number	umber Geoth	ī	3	Ė	\$		<u> </u>
Phase (Phase II Sample Type In-Place/Removed		nvestgation (n-Place	Investigation in-Place	Investigation In-Place	Investigation In-Place	Investigation in-Place	Investigation In-Place
CAS No.	Z S	Area 3A	Arra 3A	Area 3A	Area 3A	Area 3A	Area 3A
CPAHs (me/Kg)	-						
nthracene	56553						
	211019						
luoranthene	205992						
thene	207089						
	\$0324						
pyrene	193395						
Dibenzo(a,h)anthracene	53703						
Pesticide Compounds (mg/Kg)	-						
	309002						
Repushlor Eparide	E724573						
Dieldrin	17709						
4,¢-DDT	50293						
				7 160			
	133656						
	1336363						
Aroclor - 1260	1336163						
		_					
Inorganic Compounds (mg/Kg)							
Autimony	7440360	10.0					
	7440382	15 A	78 A	N 22	15 A	** V	70 U
	7440393						
Beryllium	7440417						
Cadmium	7440439						
_	1618309						
Hexavalent Chromium 18	8540299						
Tead 7		573 AVC	SBS /IVC	349 UIC	1280 AVC	119 AVC	815 AVC
Mercury	7439976						
	7440020						
=	7782492						
Silver	140224	2000					

Comparison of Surface Soil Data in Area 3A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

	Death of adminer						
Ph.	Phase Whase II	:	;				
ין פֿ	Sample Type	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
	IN-TIACEMENTOVED	in-risce		IN-Place	12-F12C#	in-Place	in-Place
	ock in	SULTACE	Surface	Surface	Surface	Surface	Surface
	Area	Area 3A	Ares 3A	Area 3A	Area 3A	Area 3A	Area 3A
	i Jan						
CPAHL (mg/Kg)	1						
Current	218019	000					
Berrachter	20000						
Berzofk) fluorauthene	207089						
Велго(в)рутеле	\$0028						
ladeno(1,2,3-cd)pyrene	193395						
Dibenzo(a,h)anthracene	53703						
Pesticide Compounds (mg/Kg)	2						
Aldrin	309002						
Heperchlor Epoxide	1024573						
Dieldrin	17209						
4,4*DDT	50293						
PCBs (mg/Kg)							
Aroclor - 1248	1336363						
Aroclor - 1254	133663						
Aroclor - 1260 Fatal PCRs	1336661						
Porsenic Cempounds (me/le)	3						
Antimony	784mkm						
Artenic	7440310	14 7	71 AUC	9	25 AAC	11 0	0
Barium	7440393	L	L		L	ı	
Berylbien	7440417						
Cadmium	7440439						
Chroman	16065831						
Hexavalent Chromium	185402.99						
Lead	7439921	785 AVC	569 AVC	ווו שכ	1280 /IVC	609 AVC	757 AVC
Метсшу	7439976	-		ı			
Nickel	7440020	ñ					
Selenum	7782492						
Silver	7440224						

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Comparison of Surface Soil Data in Area 3A to Tier 1 Screening Values for Direct Contact Former Griess-Pileger Tannery Commonwealth Edison Company Waukegan, Illinois

Table 7

Comparison of Surf Former Griess-Pfles Commonwealth Edis Waukegan, Illinois

Investigation Investigation In-Place Surface Surface Surface Area 3.A Area	Investigation In-Place Surface Area 3A	thvestigation In-Place Surface Area 3.A	invertigation in-Place Surface Area 3.A	investigation fin-Place Surface Area 3.A	Investigation In-Place Surface Area 3.A	Investigation in-Place Surface Are 3A
Phase UPhase II   Investigation   Investigation   Investigation   In-Place   Sample Type   In-Place   Surface   Su	Investigation In-Place Surface Area 3A	In-Place Surface Area 3.A	Investigation In-Place Surface Area 3A	Invastigation In-Place Surface Area 3A	Investigation In-Place Surface Area 3A	Investigation in-Place Surface Area 3A
Sample Type   Investigation	Investigation In-Place Surface Area 3A	Investigation In-Place Surface Area 3.A	Investigation In-Place Surface Area 3A	invasigation in-Place Surface Area 3A	Investgation In-Place Surface Area 3.A	Investigation fin-Place Surface Area 3A
In-Place  Temoved   In-Place   In-Place   Surface   Su	In-Place Surface Area 3 A	In-Place Surface Area 3A	In-Place Surface Area 3A	Surface Surface Area 3A	Surface Area 3.A	Surface Ava 3A
Soli Type   Surface   Surface   Surface   Surface   Surface   CAS No.     Cas No.   Cas No.   Cas No.     Distriction   Session   Sess	Surface Area 3A	Surface Area 3.A	Surface Area 3A	Sufface Area 3.A	Surace Area 3A	Area 3A
CAS No.   Area 3A   Area 3A	Area 3A	Area 3A	Area 3A	Area 3A	Area 3A	Are 3A
CAS No.   CAS No.   CAS No.   Cas						
(wg/kg)   56553   56						
bill bill bill bill bill bill bill bill						
12.05592   12.05592   12.05592   12.05592   12.05592   12.05592   12.05592   12.05592   12.05592   12.05592   12.0		-       = -				
Other control   193992   193		-				
### Campounds (mg/Kg)    1,2,4-doily						
Apprece 50.28  - 1, 2, 4-offpormet 193195  - 1, 2, 4-offpormet 193195  - 1, 2, 4-offpormet 193195  - 1, 2, 4-offpormet 193195  - 1, 2, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4,						
1,2,3-e0jpyrane 193395 20_h3-infrancene 53703 10_c0_h3-infrancene 53703 10_c0_h3-infrancene 53703 10_c0_h3-infrancene 60571 10_c0_h3-infrancene 6057						
Fe Compounds (mg/Kg) 199902  Index Epoxide 1074573 60571  Index Epoxide 1074573 105902  Index Ep						
is Compounds (mg/kg) 309002  Mar Epazide 60571  1						
Mar Epozide 1024573  10 10 24573  10 10 24573  10 10 24573  10 245						
hlor Eposide (1024573 (6051) (						
60571 \$0293 1248 1254 1254 1256 1256 135653 136563 136563 136563 140312 140312 140313 1404013						
50293 1248 1336163 1254 1336163 1260 1336163 1260 7440160 7440182 7440183 7440183 7440183 7440183						
### 1336363 1336363 1336363 1336363 1336363 1336363 1336363 1366 1336363 1336363 1336363 1336363 1336363 1336363 1336363 1336363 136636 1366363 136636 13663						
133656 133656 133656 7440382 30 A 36 A 16 A 7440417						
133655 136565 1440360 1440393 1440393 1440439						
1340363 1440360 1440393 1440393 1440493						
Ecompounds (mg/Kg) 7440360 30 A 36 A 16 A 1440383 30 A 1440417 1440417 1440417						
ke Compounds (mg/Kg) 7440360 7440382 7440393 7440439						
7440360 30 A 36 A 36 A 36 A 36 A 36 A 36 A						_
7440312 30 A 16 A 16 A 16 A 1 1440313 1440317 1440317 1440317		ļ	ı	,	,	5
E #	° ∸	70 V	11 62	1/ 67	ı	
Chronium 16065831						
Heravalent Cheminats 18540299				-1	4	1
	AND AND	122	414 AVC	1160 AVC	552 AVC	730 /UC
7419976						
E						
Silver 7440224			-	2012	300	30

ace Soll Data in Area 3A to Tier 1 Screening Values for Direct Contact jer Tannery kon Company

IEA Sample ID Number	Sample ID Number	2	8	<b>10</b>	8	R6
Phas	Phase UPhase II					
Ö,	edyl eldme	Sample Type Investigation	Investigation	Investigation	Investigation	Investigation
OR PLACE	In-PlaceMemoved	in-Place	In-Place	h-Place	In-Place	In-Place
	Soll Type	Surface	Surface	Surface	Surface	Surface
i	Area	Area 3A	Area 3A	Area 3A	Area 3A	Area 3A
	No.					
Charles (mp. 17)	-					
Derezo(a)animacene	26553					
Chrysene	218019					
Benzo(b)Buoranthene	202992					
Benzo(k)fluoranthene	207019					
Вепго(в)рутеве	50,128					
Indeno(1,2,3-cd)pyrene	193395					
Diberzo(a,h)anthracene	53703					100
Pesticide Compounds (mg/Kg)						
Aldrin	309002					
Heptachlor Epoxide	1024573					
Dieldrin	12509					
4,4*.DDT	\$0293					
PCBs (mg/Kg)						
Aroclor - 1243	1336363		,			
Aroclor - f254	1336363					
Aroclor - 1260	1336363					
Tetal PCBs						
Inorganic Compounds (mg/Kg)	2					
Antimony	7440360					
Arsenic	7440382	2	- JAV 19	7 97	-	5
Batium	7440393					
Beryllium	7440417					
Cadmium	7440439					
Chromium	160658331					
Hexavalent Chromium	18540299					
Lead	7439921	2600 /UC	571 AAC	A40 GA7	SAR AND	000
Mercury	7439976			L	Ł	П
Nickel	7440020					
Selesium	7782492					
Silver	7440224					
		200	ALUX.	-		

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Comparison of Surface Soil Data in Area 3A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery
Commonwealth Edison Company
Waukegan, Illinois

Comparison of Surf Former Griess-Pfleg Commonwealth Edi: Waukegan, Illinois

Sample ID Aumber Mumber Sample ID Aumber ID Au	<b>9</b>	N,0,6,7	0,P.6,7	P,Q,0,7	Q.R.6,7	R,S,6,7	Ż	<b>6</b>
Phase Urhase il Sample Type In Placersmoved Soil Type	investigation In-Place Surface Area 3A	Investigation In-Place Surface Area 3A	Investigation In-Place Surface Area 3A	Investigation in-Place Surface Area 3A	investigation In-Place Surface Area 3A	In-Place Surface Area 3A	Investigation In-Place Surface Area 3A	Investigation In-Place Surface Area 3A
care thene thene	m a P a							
Senzo(a)pyrene	W 50 W		t					
mg/Kg)		=			<b>L</b> :			5.5
PACE) 1248 1354 1254 1360 1360 1360	mmm						-9 -	
Instgrate Compounds (mg/Kg)   144136     Abstrace	0 2 3 3 5 0	n u	12	V OC	e0 V	<b>e</b>	e v	, v
ilent Chromium 18 57	11 785 AUC	310 IVC	332	498 /UC	243 /IVC	460 IUC	249 AAC	871 AC
SAINE SAINE	AVC	/VC		MC	UNC	MC	WC	WC

ace Soil Data in Area 3A to Tier 1 Screening Values for Direct Contact jer Tannery ison Company

Comparison of Surface Soil Data in A Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

<u></u>	*						Ţ
0,8,7,8	Investigation In-Place Surface Area 3A					423 AUC	AVC.
P,Q,7,8	Irvestigation In-Place Surface Area 3A			#	2	1130 AC	INC
0,P,7,8	Investigation In-Place Surface Area 3A	1-1			7.8	. E44	WC
N,D,7,8	investigation kn-Place Surface Area 3A				24.	1780 INC	WC WC
25	Investigation (In-Place Surface Area 3A				2	424 N/C	J/V
R7	Investigation In-Place Surface Area 3A	·			Ф.	766 AUC	AVC
ð	Investigation in-Place Surface Area 3A	1 = 2			71	82	
ld.	nvestgabon In-Place Suface Area 3A				35 A	S25 AVC	υC
Sample ID Number IEA Sample ID Number	Phase Union Sample Type Investigation In-PlaceRemoved In-Place Soil Type Surface CAS No.	CPAH (mg/Kg) 56533 Bermot-Janubracene 56533 Chrystene 218019 Bermot-Jilnorauthene 205992 Bermot-Jilnorauthene 207089 Bermot-Jilnorauthene 50338 Indernot-J.2-dapyrene 50338 Dibermot-Jahandracene 537039	Paticide Compounts (mg/Kg) 300002   Aldrin   1024373   Hopschlor Epaxide 1024373   Dielánin 647-DIT 50293	P Clis (mg/Kg) Arector - 1248 1336153 Arector - 1244 1336153 Arector - 1254 1336153 Total P Clis	Intergrate Compounds (mg/Kg) 744/0360 Ascele 744/0340 Bardon 744/0391 Beryllium 744/0391 Cadmium 744/0391 Choranium 166/05831	Chromium	

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																					ì			*						_			::			
R,5,7,8		vestigation	In-Place	Surface	Aria ar																I					7						217				
Sample ID Number Sample ID Number	Depth Phase VPhase II	Sample Type	In-Place/Removed	Solf Type	CAS No.		\$6553	216019	202992	207089	S0128	193395	53703		309002	1024573	17200	50293		1336363	1336563	1336363		SIG.	7440360	7440382	7440393	7440417	7440439	160658331	18540299	7439921	7439976	7440020	7782492	7440224
Sam IEA Sam	ā		급			CPANs (mg/Kg)	Benzo(a)anthracene	Chrysene	Велго(в)Диоганивене	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenzo(a,h)anthracene	Pesticide Compounds (mg/Kg)	Aldrin	Heptachlor Epoxide	Dickhin	4.4"-DDT	PCBs (mg/kg)	Aroelor - 1248	Aroclor - 1254	Aroclor - 1260	Tetal PCBs	Inorganic Compounds (mg/Kg)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Lead Lead	Mercury	Nickel	Schnium	Silver

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Comparison of Subsurface Soil Data in Area 3A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegen, Illinois

CPA Hs (mg/Kg)  Benzo(s)andwaene  Chas No.  CPA Hs (mg/Kg)  Benzo(s)andwaene  Chas No.	24 Phase f nvestigation In-Place Subsurface Area 3A 0.67 0.094	2-4 Phase				_				3,5-4.5	_	1
Sample Type   Sample Type	Phase f vestigation in-Place ubsurface Area 3A 0.67 J	Phase			2.4	_	- 010	**			_	ţ
CAS No.   CAS No.	Prass I In-Place ubsurface Area 3A 0.67 J						2	ξ,	_		_	
PlaceRemoved   In-PlaceRemoved   In-PlaceRemoved   Soil Type   Area	In-Place Ubsurface Area 3A 0.67 J			•	19220	•	-Dase	Phase	_	Fuse	_	Philips 1
In-PlaceRemoved   Solf Type	In-Place ubsurface Area 3A 0.67 J 0.54	Investigation	r o	Ž	nvestigation	Ē	mvestigation	Investigation		Investigation	<u>ξ</u>	Krvestigation
Soil Type Ana Ana CAS No.  athrecae 25533 Abranchese 205972 < branchese 207992 < branchese 207992 < branchese 207992 < branchese 207992 < branchese 207993 < characteristics 3038 < characteristics 193395 < characteristics	Ana 3A Ana 3A 0.67 J	In-Place		=	In-Place	=	In-Place	In-Place		In-Place	<u>~</u>	Removed
Area CAS No.  CAS No.  structure 25533  hornardere 205932   hornardere 205922   yreue 50328   Li-chlyrme 193395   Librithacere 53703   Compounds (Compounds)	Area 3A 0.67 J 0.94	Subsurface	3	Sul	Subsurface	S	Subsurface	Substarface	_	Subsurface	์ 	Subsurface
mg/Kg) athracece 2 horambere 2 yrane 1,3-edpyrme 1 hombreen 1 Compound (mg/Kg)	0.67 J	Area 3A	4	•	Area 3A	٩.	Area 3A	Area 3A	_	Area 3A		Area 3A
ntyKt) athracece  locrathese  yrtice  characterise  locrathese  locrathese  characterise  characterise  characterise  characterise  component (mg/Kt)	0.67 1.09 1.09 1.09		٦						-		_	
nthracene 2 horambene 2 horambene 2 yesue 4 horambene 2 horambene 2 horambene 1 horambene	790		-						-		Ц	
boranthene 2  yrene 2  yrene 2  yrene 1  Llymbarene 1  Llymbarene 1  Component (mg/N(g)	#60	0.16	7	·	0.4	v	1.2	7	v	960		1.2 A
e l	0.04	0.17	~	Ö	. D82 J	v	ū	7	٧	960	L	6.4
e l	5	0.16	_	0	0.12	v	1.2	1.7	v	0.96		U 378
pyrene l vacene owads (rag/Kg)	0.94	0.083	-	ð	. Z/O	v	77	0.49	٧	0.96		5.2
- K	0.94	0.078	_	¢	L 170.	ν	1.2	0.77 J	V	0.96	L	4.5 //
Ř	0.94	< 0.37		Ģ	0.06B J	ν	7	< 0.19	V	0.96	L	ş
ΚĐ	0.94		Ť	v	0.4	v		< 0.19	٧	0.96	v	3.6
									$\vdash$		L	
Aldrin 309002 <	0.0025	< 0.002	,	ă	0.0058	v	0,0032	< 0.0023	_	0.036	ν	0.0049
or Epoxide 10	D.0025	0.0034	Ť	3	0.0058	v	0.0032	0.048		0.054	v	0.0049
	0,0049	0.0094	·	o v	0.011		0.023	0.1	v	0,0049	v	0.0095
4,4'.DDT 50293 <	0.0049	< 0.0039		ā	0,0065 J	_	0.0062	0.028	v	0.0049	v	0.0095
				+					_			
	0,049	0.24			0.11	v	0.062	=:	_	7.8	v	0.095
	0.049	< 0.039		o v	0.11	v	0.062	1:2	v	0.049	v	0.095
Araclar - 1260 133@63 <	0.049	_				v	0.062	< 0.045	V	0.049	v	0.095
Fotal PCBs	Q.	0.24		~	e		ð	3 /P	H	2.8 RP		문
Compounds (mg/kg)									-		L	
Antimony 7440360 <	3.9	3.1		V	3.6	v	v	< 3.6	V	*	v	m
Arsenic 7440382	32.7 //	< 0.28		3	20.6 A		12.6	3/I/ M91	.,	1.1		7.7
	119	23			167		392	323	Γ	114		19.4
	0.65	< 0.24		v	127	v	0.38	1.2		9.9	v	0.23
	۵	A 0.68		_	12.8		7.	11		6:1	v	0.67
_	11900	302		12	12400		25500	3830	_	616	_	21.8
Heavakert Chromium 11540299	ı											
Lead 7439921	399	3.7			425 AUC		90	333		50.2		13.2
	~	0.61			9'9		2.2	2	_	0.5		0.07
Nickel 7440020	30.1	77		_	15.3		1.0	33.9		24,3	_	ถ
Selenium 7782492	-			,	96'0		0.54	7.		67.0	٧	0.78
Salver 7440224 <	0.62	< 0.49	Ì	v	0.57	v	62.0	< 0.58	٧	0,0	٧	0.41

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Comparison of Subsurface Soil Data in Area 3A to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery
Commonwealth Edison Company
Waukegan, Illinois

IEA Sample IO Number Depth Phase IP hase P has IP has	A A A A A A A A A A A A A A A A A A A	1.2 Phase I Combined In-Place Subsurface Area 3A 2.75 2.75 2.75 2.75 2.75 2.75 2.75 2.75	24 Phase 1 Investigation in Place Subsurface Area 3A  - 1.1 - 1.1		950168003 1-3 1-3 1-3 1 Phase Investigation In Place Subsurface Area 3A
Phase IPh Sample In-PlaceRem Soil ample In-PlaceRem Soil authorese 2 Iuoranthene 2 Iuoranthene 2 Iuoranthene 2 Iuoranthene 2 Iuoranthene 2 Iuoranthene 2 Iuoranthene 2 Iuoranthene 2 Iuoranthene 2 Iuoranthene 2 Iuoranthene 3 Iuoranthene 2 Iuo		1-2 Phase i Combined in-Place Subsurface Area 3A Area 3A 2.75 1.675 2.75 1.675 1.71 0.31 0.0034			
Phase uph Sample In-PlaceRem Soil Soil Industriese 2 Inoranthene 2 Inoranthene 2 Inoranthene 2 Inoranthene 2 Inoranthene 2 Inoranthene 2 Inoranthene 2 Inoranthene 2 Inoranthene 3 Inora		Combined Com			
Sample In-PlaceRem Soil Soil CAS No mg/Kg) Independent		Combined In-Place Subsurface Area 3A Area 3A 2.75 2.75 2.75 1.675 2.75 1.7 0.805 1.7 0.0034			-
In-PlaceRem  CAS No  Tel/Kg)  Thracese  Unorathere  Unorathere  22  Unorathere 23  Unorathere 24  Unorathere 25  Unorathere 26  Unorathere 27	<u> </u>	2.75 2.75 1.75 1.7 0.0034		V V V V V	
CAS No ref.Kg)  ref.Kg)  luoranthene 2 luoranthene 2 luoranthene 2 luoranthene 2 luoranthene 2 luoranthene 2 luoranthene 3 luoranthene 4 luoranthene 3 luoranthene 4 luoranthene 3 luoranthene 4 luora		Subsurface Area 3A Area 3A 2.75 1.675 1.75 1.7 0.0034			
CAS No mg/Kg)  minarcene  luoranthene 2 luoranthene 2 luoranthene 2 luoranthene 2 luoranthene 2 luoranthene 2 luoranthene 2 luoranthene 3 luoranthene 4 luoranthene 3 luoranthene 4 luor	<u> </u>	2.75 1.675 2.75 1.7 1.7 0.865 0.3			
CAS No marks)  minacese 2  luoranthene 2  luoranthene 2  luoranthene 2  luoranthene 2  luoranthene 2  luoranthene 2  luoranthene 2  luoranthene 3  luoranthene 4  luoranthe		2.75 1.675 2.75 1.7 0.865 1.1 0.0034			
nthracene 2 Iuoranthene 3 Iuor		2.75 1.675 2.75 1.7 0.805 0.0034			
athracese 2 luoranthene 2 luoranthene 2 luoranthene 2 lyrene 2 lyrene 2 lyrene 1 lyr		2.75 1.675 2.75 1.7 1.1 0.3			
luoranthene luoran		2.75 2.75 1.7 0.805 0.3			
b)fluoranthene 2)pyrene 11,2,3-«d)pyrene o(a,h)anthracene de Compounds (mg/Kg)		2.75 1.7 0.865 0.3 0.0034			
k)fluoraubtene a)pyrene (1,2,1,-ed)pyrene o(a,h)anthaecee de Compounds (mg/Kg)		1.7 1.1 0.3 0.0034			
a)pyrene (1,2,1-ed)pyrene (2,h)antracene de Compounds (mg/Kg)		0.805 1.1 0.3 0.0034			
(1,2,3-cd)pyrene o(a,h).nubracene de Compounds (mg/Kg)		1			
o(a,h)antiracene de Compounds (mg/Kg)			:: 	× 0.34	
de Compounds (mg/Kg)			1.1	< 0.94	
	1 CT00023		0.12	0.025	
Heptachlor Epoxide 1024573	< 0.0025	0.0019	0.054	9100	
Dieldrin 60571 <	A 0.0048	0.0205	< 0.0059		
.4. DDT 50293	< 0.0048	0.022	< 0.0059	< 0.003	
CB1 (mg/Kg)					
_		> 0.065	4.9	0.77	
Aractor - 1254 1316365 <		< 0.065	< 0.059	< 0.051	
Aroclor - 1260 1336363 <	< 0.048	< 0.065	< 0.059	< 0.051	23
Fotal PCBs	2	e s	4.9 AP	0.77	
norganic Compounds (meRC)					
Antimony 7440360 <	< 3.8	< 5.2	< 4.7	× 4.1	NA
Arsenic 7440382	12	16.45 A	69	6.1	20 A
Barium - 7440393	3	124	122	13.8	021
Beryllium 7440417		0.935	0.71	2	NA
Cadmium 7440439	6.9	9:1	2	< 0.19	33
Chromium 16065131	19.7	2	11500	76.6	37000
Hexavakest Chromium 18540299					コン
Lead 7439921	11.7	199.5	791 AVC	7,12	920 NAC
Mercury 7439976	6.5	9	2.6	160	=
		12.95	45.3	43	NA
Selenium 7782492	971	3.95	6.1	Ī	
Silver 7440224 <		< 0.83	< 0.75	< 0.65	7

Comparison of Surface Soil Data in Area 3B to Tier 1 Screening Values for Direct Contact Former Griess-Pflegor Tannery Commonwealth Edison Company Waukegan, Illinois

Sample ID Number	Number	SB-20B	9	L	SB-10A	_	SB-11A	_	SB-12A	Г	88	SB-15A	L	SB-19A	<u> </u>	PW-1	_
IEA Sample ID Number	Number			_						_			_		_		_
	Depth			_			2		6		۰	3		2		1	_
Jesett	Phase UPhase II	Phase	-	_	Phase		Phase I	_	Phase		ď	Phase		Phase I		Phase !	_
Sami	Sample Type	Complued	Dec	_	investigation	=	Investigation	_	Investigation	_	Invest	nvestigation	_	Investigation	_	Investigation	_
in-Place/Removed	Removed	InPlace	8		In-Place		In-Place	_	In-Place		75	In-Place		In-Place		In-Place	
<b>√</b>	Sall Type	Surface	3		Surface	_	Surface	_	Surface		S	Surface	_	Surface	_	Surface	_
	Arrea	Area 3B	38		Area 3B	_	Area 3B		Area 38		Are	Area 3B	_	Area 3B		Area 3B	
_	CAS No.					_		_					_		_		_
CPAHs (mg/Kg)				L		L		L		T			L		L		_
Benzo(a)anthracene	56553	_	-	v	0.63		0.89		4.9	<u></u>	12	E	٧	0.58	v	0.92	
Chrysene	216019	E.65		v	0.63	_	0.97		2.9		8	L	v	0.58	v	0.92	
Benzo(b)/huoranthene	205992	11	U	v	0.63	_	7		6.9	_	37	U	v	0.58	v	0.92	
Benzo(k)fluorzathene	207019	11		v	69.0	_	0.0	_	2.2		9		v	0.51	٧	0.92	
Benzo(a)pyreue	<b>S0328</b>		-	v	0.0	v	60		13. //	Ť	93	7	v	0.58	v	0.92	
Indeno(1,2,3-cd)pyrene	193395	_	7	ν	0.63	v	6.0	v	1.0	ř	6.8		v	0.58	v	0.92	
Dibenzo(a,b)anteracene	53703	= >		v	0.63	v	0.0		0.11 J	*	e.8		ν	0.58	v	0.92	
Pesticide Campounds (mg/Kg)						L		L	J	٢			Ļ		L		
Aloren	309002	v		v	0.018	v	0.0024	v	0.0025	_	0.35	N 5	v	0.0031	v	0.024	_
Heptachlor Epoxide	1024573			v,	0.018	v	0.0024		0.065	_	0.68	1/ 8		0.0091	v	0.024	
Dieldrin	12509	_	5		1.9	_	0.062	_	0.26	4	570.0	2	v	9000	v	0.047	
4,4'-DDT	50293	0.415		v	0.035		2.8		0.028		0.26		ë!	9100	v	0.047	
PCBs (mg/Kg)	I					_	į	L		Г			L		L		_
Aroclor - 1248	1336363	v	_		26	v	0.047	v	0.049		20		v	90'0	٧	0.47	
Aroclor - 1254	1336363	× 0.058	_	v	0.35	v	0.047	v	0.049	Ť		Įņ.			y	0.47	
Aroclor - 1260	1336363	٧	_	v	0.35	v	0.047	v	0.049	•	< 0.2	2	v	90:0	y	0.47	
Total PCBs		Q v	ĺ		56 /P	_	2	_	£	_	S	-	L	L3 (P		2	
(Inorganic Compounds (mg/Kg)				L		L		L		T		l	L		Ļ		_
Antimosy	7440360	v		v	2.8	v	3,8	٧	3.9		14.2	7		9.1	y	3.8	
Arsenic	7440382				3.6	_	4.6	Ļ	6.4		13.4	, n		# S		77	_
Barium	7440393	141.5			7.5		431		1570	_	371		_	197	_	101	_
Beryllium	7440117	v		v	0.21		9.0	_	0.33		200	6		150	v	0.29	_
Cadmium	7440439			v	. 1970		•		29.9		17.1	_		42.9		8,5	
Chromium	16065133	1090.5	vi		38.6		936		7190		4010	0	_	1490		187	
Hexavalent Chromium	18540299					_							_				
Lead	7439921				<b>1.1</b>		7,7	L	4250 AVC	b	4120	200	L	SH4 AUC	_	86.5	_
Mereuy	7439976		·	v	0.05		6.1		8.4	T	2		L	£	_	0,74	_
Nickel	7440020	12.5			4.9	_	29.5		43.7		343			113		3.1	_
Selenium	7782492			v	0.3	٧	6.4		0.72	_	, 3.9	_	y	15.0	_	0.58	_
Silver	7440224	v		v	0.44	_	47.3		126		623			95.8		6.1	
		ν	i I		WC				AC		AVC.			n/C			,



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Comparison of Surface Soil Data in Area 3B to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery
Commonwealth Edison Company
Waukegan, Illinois

Phase to Phase II   Phase II	<u> </u>	Phase I Investigation fin-Place Surface Surface Area 38 0.83 0.83 0.83 0.83 0.83 0.83 0.83 0	Phase II Investigation In-Place Surface Area 18 NA NA NA NA	0-1 Phase H Investigation In-Place Surface Area 18 0.26 0.45 0.17 0.39 0.27 0.03 0.03 0.03	Phase II investigation III Phase II investigation III Phase II Area 3B Area 3B	0-1 Phase II finvestigation In-Place Surface Surface Area 3B  0.02  0.02  0.01  0.038  0.031  0.037  0.044  NA	Phase II investigation In-Place Surface Area 3B
CAS No.   CAS	<u> </u>	hives@griton hives@griton hives@griton hives@griton hives 38 have 38 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.004 0.0044	Phase II Investigation in-thises Surface Area 18	Phase H Investigation heritace Surface Area 18 0.26 0.45 0.17 0.39 0.27 0.03 0.03 0.03	investigation in-Place Surface Surface Area 3B	1 1	Phase II invasigation in Place Surface Surface Area 3B
CAS No.   CAS	<u> </u>	Area 38  0.15  0.15  0.15  0.15  0.15  0.15  0.15  0.15  0.15  0.15  0.15  0.15  0.15  0.15  0.15  0.15	Investigation In-Place Surface Area 3B NA NA NA	Investigation in Place Surface Area 38 0.26 0.45 0.45 0.39 0.27 0.27 0.27 0.27 0.27 0.27 0.27 0.27	investigation In-Place Surface Area 3B		invasigation In-Place Surface Ana 3B
In PlaceAnges upper   In PlaceAnges upper   In PlaceAnges upper   In PlaceAnges upper   In PlaceAnges upper   In In PlaceAnges upper   In In In In In In In In In In In In In	<u> </u>	0.0044	Area 3B NA NA NA NA NA NA	0.2 Surface Area 38 0.2 0.2 0.2 0.27 0.27 0.27 0.27 0.27 0.	In-Place Surface Area 3B NA		Aria 3B
CAS No.  CAS No.  CAS No.  CAS No.  218019 <	<u> </u>	Surface Area 38 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.004 0.0044	Surface Area 18 NA NA NA	Surface Area 18 0.26 0.45 0.17 0.39 0.27 0.03 0.03 0.03	Surface Area 38 NA	11 %	Surface Area 3B
Avea  CAS No.  E. 56333 < 218019 < 218019 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20020 < 20	<u> </u>	Area 3B 0.85 0.85 0.83 0.83 0.83 0.004 0.0044	Area 18 NA NA NA NA	Are 38 02 026 0.45 0.17 0.17 0.39 0.27 0.005	Area 38	11 %	Area 3B
CAS No.  DE 56533 < 218019 < 218019 < 218019 < 20592 < 20028 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 < 30128 <  30128 < 30128 < 30128 < 30128 <  30128 < 30128 < 30128 <  30128 < 30128 <  30128 < 30128 <  30128 < 30128 <  30128 <  30128 <  30128 <  30128 < 30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <  30128 <	<u> </u>	0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15	X X X	0.26 0.26 0.45 0.47 0.27 0.27 0.27	Y X	11 %	<b>5</b>
kere 205992 c 205992 c 205992 c 507005 c 507005 c 507005 c 507005 c 50701 c 60571 c 60571 c 60571 c 60571 c 60571 c 60571 c 60571 c 60571 c 60571 c 60571 c 60571 c 60571 c 60571 c 60571 c 60571 c 60571 c 60571 c 60571 c	0000000 0000	0.15 0.15 0.15 0.15 0.15 0.004 0.0044	X X X	0.2 0.26 0.45 0.17 0.27 0.27 0.27 0.27 0.27	. X	11 %	¥
1867   1867	<u> </u>	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	X X X	0.05 0.45 0.17 0.03 0.03 0.03 NA	Y X	74	¥2
118019 <     118019 <     118019 <	<u> </u>	010 010 010 010 010 010 010 010 010 010	X X X	0.26 0.45 0.17 0.27 0.27 0.27 0.27 0.27	X X	74	ž
Component	<u> </u>	0.83 0.83 0.83 0.83 0.0044 0.0044	* * *	0.45 0.17 0.23 0.23 0.035 NA	¥ 5	74	ž
fluorauthene 207089 < pyrane 50328 < 2.3-cdpyrene 193395 < 2.3-cdpyrenee 133395 < 2.4-cdpyrenee 133395 < 2.5-cdpyrenee 133395 < 2.5-cdpyrenee 133995 < 2.5-cdpyrenee 133995 < 2.5-cdpyrenee 133656 < 1356	<u> </u>	0.83 0.83 0.83 0.0044 0.0044	* * *	0.17 0.29 0.27 0.035 NA	ž	74	ž
eyrene 50328 < 2,3-cdpyrene 193395 < 2,3-cdpyrene 193395 < 2,4-cdpyrene 13305 < 2,5-cdpyrene 130002 < 2,6-cdpyrene 130002 < 2,6-cdpy	<u> </u>	0.83 0.83 0.83 0.0044 0.0044 0.0085	X X X	0.39 0.27 0.035 NA NA	NA NA	74	NA AN
(2,3-cd/pyrene 193395 < (2,1-cd/pyrene 193395 < (2,1-cd/pyrene 193395 < (2,1-cd/pyrene 133656) < (2,124 133656) < (1246 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656) < (1256 133656	<u> </u>	0.83 0.83 0.0044 0.0044 0.0085	× × × ×	0.027 0.005 NA NA	NA NA		۸×
i,h)antiracese 51703 < Compounds (mg/Kg) 309002 < or Epoxide 1024573 < 60571 < 7	<u> </u>	0.0044 0.0044 0.0044	NA NA	NA NA	žž		¥Z
Compounds (mg/Kg) 3090021 < T Epoxide 1024573 < T SO293 < T SO293 < T SO294 < T SO294 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295 < T SO295		0.0044	N N N N N N	NA NA	Y X	NA	Ϋ́Α
or Epacide 1024573 < 607573 < 607573 < 607573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 < 707573 <	<u> </u>	0.0044	¥ X X	Y X	žž	¥:	YN .
or Epoxide 1024573 < 60571 < 60571 < 60571 < 60571 < 1248	<u>v v v</u>	0.0044	X X	NA.	MA	***	
60571 < 50293 < 1248   1348   1356361 < 1248   1316563 < 1124   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 < 1126   1316563 <	v v	0.0045	YY.	***	5	¥X	¥Z
1316361	V			YZ	NA NA	Ϋ́	¥Z
13666		0.0015	NA	NA	NA	ž	¥Χ
13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555 < 13555	_				,		`
× 1336651 × 8	v	0.005	0.08	16	46	-	97
> 1336363	V	0.015	0.58	70	9.1	0.68	5.6
	٧	0.085	0.16	5.8	3.1	0.21	7.1
Total PCEs		Ş	95.0	116.8 //	58.3 //	1.99 /P	37.6 (P
Inorganic Compounds (mg/Kg)	-						
7440360 <	v	979					
Arsenic 7440382 1.9	V	27.0					
7440393	_	11.1					
> 1140417 <	ν	150					
7440439	v	1.5					
16065831		15.2					
Occordium 18540299	_						
		787 AVC					
7439976	v	0.13					
	_	5.8					
7782492	v	0.72					
7446224	_	1.7					

Comparison of Surface Soil Data in Area 3B to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinots

Phrase Urbase   B50182019   B50182019   B50182010   B718201   B7	Sampa of express	_	SB-69ACA	SB-70A	SB-72A	SB-100A	SB-101A	SB-102A
Phase IP   Phase II	IEA Sample ID Numb	_	950182019	950188001	950188004	950424005	950424001	950424004
Phase   Phas	Den Den			3	-	0.1	1-0	1-0
Sample Type   Investigation	Phase UPhase		Phase	Phase II	Phase II	Dhaen II	Dhara	Dhara II
In-Place   In-Place	Sample Typ		Investigation	Investigation	Investigation	Investigation	Investigation	Impediation
Soil Type   Surface   Su	In-Place/Remova	_	In-Place	In-Place	In Plans	In Disca	Paris of	Dubling In
CAS No.	Soil Typ		Surface	Surface	Surface	Surface	Surface	Cueface
136563   13   14   15   15   15   15   15   15   15	Are	_	Area 3B	Arra 3B	Area 3B	Area 3B	Area 38	Area 3B
18553   0.51   < 0.33								
1180   1180								
218019   0.76   C   0.33   C   0.34   C			c 0.33					
19395								
193395   1.3   4   0.33   1.3   4   0.33   1.3   1.3   1.4   1.5			cro v					
19395   1.2	thene		< 0.33					
193395   1.2		22	× 0.33					
Figure   F	Ī		< 0.33					
(mg/kg)  1024573  NA  C 0.0017  S0271  NA  C 0.0017  S0291  NA  C 0.0017  S0291  NA  C 0.0017  S0291  NA  C 0.0018  S0291			< 0.33					
133563	de Compaunds (mg/Kg)							
1316565   0.000   0.						NA	NA NA	W
1316163   NA   C 0.0003   NA   NA   NA   NA   NA   NA   NA   N	_		< 0.0017			NA	NA	Y.Y
1315615   0.03   0.43   0.41   0.02   0.02   0.18   0.18   0.23   0.22   0.18   0.18   0.22   0.22   0.18   0.18   0.23   0.22   0.18   0.18   0.23   0.22   0.22   0.18   0.23   0.22   0.22   0.23			< 0.0033			2	2	2
1315615			< 0.0033			×2		2 2
134565 < 0.04	CBs (ag/Kg)					5	V	Š
134565  1.2		Ī					Ī	900
131555   0.25   0.18   C 0.16   C 0.16   C 0.16   C 0.16   C 0.16   C 0.22   C 0.22   C 0.25   C 0.2	_		0.41					
145	_		0.18			910	0.76	1 6
1 (mg/lkg)         7440360         NA	Fotal PCBs	ł	ę			020	200	0.45
7440350	norganic Compounds (mg/Kg)						200	O. 40
7440382 744047 7	•	99	Y.	W	NA		1	
1 7440393 250 130 150  um 7440417 NA NA NA NA NA NA NA NA NA NA NA NA NA	Arsenic 744038	82	4		L			
7440417 NA NA NA NA NA NA NA NA NA NA NA NA NA		63	250	120	1			
7440439 9.5 40 14 16065131 230 820 4900 18540299		11	NA	¥	S N			
16065131   230   820   4900   4900   1854029   15   2   2   2   2   2   2   2   2   2	•	39	26	9	2			
18540299 c 1.6 c 1.2 c 2.3 7439921 180 360 1200 7439976 16 3.9 16 740020 NA NA NA NA TIE2429 c 1.8 c 3 c 6.3	=	31	240	2	Vanan.			
7439921 180 360 1200 7439976 16 3.9 16 16 1700 16 1700 1700 1700 1700 1700	_	56	91					
7439976 16 3.9 16 16 1740020 NA NA NA NA 7712492 < 1.8 < 3 < 6.3		21	180	_	1300			
7440020 NA NA NA 7782492 C LB < 3 C		76	2		П			
7702492 < 1,8 < 3 <		20	×	N N	2 7			
		25		-				
7440224 92 89		24		2				
		JUL			5450			

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Comparison of Surface Soil Data in Area 3B to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinols

Phase UPhase II   Phase II   Investigation   In	isosan di samba van	Sample 1D Number 850424003	9	950424006	950424002	1-0	0-0182007		
In-Place   In-Place	Phase Uphase Sample Ty		Ę	Phase il Investigation	Phase II Investigation	Phase II Investigation	Phase II Investigation	Investigation	Investigation
CAS No.   Area 3B   Area	In-PlaceRemov Soil Ty			In-Place Surface	Surface	In-Place Surface	In-Place Surface	Surface	Surface
1900   1900	CAS No.			Area 38	Area 3B	Area 38	Area 38	Area 3B	Area 38
100   100		183							l
Others   20592   Others   20592   Others   20799   Others   20790   Others   Other		610							
121-cd/pyrene   19338		992				3.6			
1,2,3-cd/pyrene		128	ì						
Comparends (mg/Kg)   309002		395							
199022 NA NA NA NA NA NA NA NA NA NA NA NA NA	le Compounds (mg/Kg)						:		
Equation   1024573   NA				¥	¥Z.	ž	Y.		
Street   S				NA NA	ž	Y.	NA.		
SG093 NA NA NA NA NA NA NA NA NA NA NA NA NA				××	NA NA	YN.	¥		
1315550   0.000   0.21   3.6   0.000   0.087   0.057   0.040   0.057   0.040   0.057   0.040   0.057   0.040   0.057   0.040   0.057   0.046   0.057   0.046   0.057   0.046   0.057   0.040   0.046   0.057   0.040   0.046   0.046   0.057   0.040   0.040   0.046   0.046   0.040				¥	Ϋ́	VV	¥		
131556   2.5   0.24   < 0.16     131556     0.44   < 0.16     0.15			1	0.21	×	\$0.00	0.87		
1316563   0.44   < 0.16   277   < 0.16   < 0.16				0.25	52	0.24			
The continuation of the co				< 0.16	22	<. 0.16  -, 0.16			
Compounds (ung/Rg) 7440360 7440360 7440360 7440360 7440360 7440393 7440310 7440319 7440319 74403918 74399218 7439936 743996 7			ě	0.46		0.24	0.17		
7440360 7440382 7440393 7440417 11 Chromium 18340299 7439921 7439936 7440020	Į.								
7440327 7440437 7440437 7440437 1805831 11 Chromium 18540299 7439976 7439976 7439976		360							*
1440417 7440417 16065831 11 Chromium 1834021 7439978 7439978 7439978		23.0						= =	ı
1440417 7440419 11 Chromium 18540299 7439976 7440020		193							
7440439 11 Chromium 18340299 7439976 7439976 74439976 74439976		1	_						
ent Chronium 18540219 18540219 7439976 7439976 7439976 7459976 7459976		439							
7439971 504 744020		1531							
7439921 7449976 7440020	_	1299						1	JUD BES
		126						н	L
		916				_			
		020							0.
		2492							

Comparison of Surface Soil Data in Area 3B to Tier 1 Screening Values for Direct Contact Forner Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

Phase Phase Phase Phase I Sample Type In-PlaceRemoved Soil Type Soil Type CAS No.			•		2000	G,H,24,25	HJ,24,25	<b>A</b> 25
באים	Sample Type Scar Soll Type Soll Type	Investigation In-Place Surface Area 3B	Investigation In-Place Surface Area 38	investgation In-Place Surface Area 3B	Investigation In-Place Surface Area 3B	Investigation In-Place Surface Area 38	Investigation In-Place Surface Area 3B	investigation In-Place Surface Area 38
CPAHs (me/Ke)	+							
Benzo(a)anthracene	\$6553							
Chrysene	218019							
Benzo(b)fluoranthene	208992							
Benzo(k) Ruomathene	207049							
Benzo(a)pyrene	50328							
ndeno(1,2,3-cd)pyrene	193395							
Indenzo(a.h)anthracene	53703							
Pesticide Compounds (mg/Kg)								
	309002				_			
richaction apparate	1024573							
Course	12509							
4,4.DDT	\$0293							
	336363							
Arrocar - 1254	133663							
	336363							
iai rus								
Compounds (mg/Kg)								
	7440360							
	7440382 <	2	11 >	26 >	14 11	60	1 2	ı
•	7440393					*		
Beryllium 7	7440417							
	7440439							
	11.15909							
Chroteium	154m200							
		1	ч	- 1				
Ġ	7439976	694 /IVC	614 /J/C	2/J/ 899	366	571 IIVC	8	598 /IVC
	7440020		,-	•				
Scienium	7782492							
	1	nic.	500					

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Comparison of Surface Soil Data in Area 3B to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinois

	EA Sample ID Rumber Deoth								
Phase									ı
Sample Type In-PlaceRemoved		Investigation In-Place	investigation In-Place	Investigation	investigation in-Place	Investigation	Investigation	Investigation	Investigation
u7	Soll Type	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface
CAS No.	No.	Dres on	A62.36	ACE 235	Area 3B	Area 3th	Areasis	Area 36	Area 3B
CPAHs (mg/Kg)	599								
Christia	218019	•							
Benzo(b) Buorauhene	205992						ľ		•
Benzo(k) fluoranthene	207089	-					1		
Benzo(a)pyrene	50028								
Indeno(1,2,3-cd)pyrene	193395								
Manager of the second second	23/03								
Federal Compounds (mg/hg)	choone	11							
Hontreller Boomits	1001691								
Dieleria	11.509								
4.chbr	10005	•						=	
PCBs (mg/Kg)									
Aroelor - 1248	13360							ľ	
Aroclor - 1254	133663								
Araclar - 1260	1336363								
Tetal PCBs									
(nargazic Compounds (mg/Kg)									
Алитопу	7440360								
Arsenic	7440382	51 /1	25 A	< 8.5		8.1	< 9.7	01	7.1
Barrem	7440393								
Beryllium	7440417								
Codmium	7446439								
Chroman	16065131								
Hexavalent Chromium	18540299								
Lead	7439921	ន្ត	3/U 1/2*	239	120	091	280	217	\$
Mercury	7439976							1	
Nickel	7440020								
Selenium	7782492								
Z. Mart	7.4.1.74								

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ger sannery	Ison Company	
ronner Griess-Frieger Janner	Commonwealth Edison Company	Waukegan, Illinois

Table 10

2-4 2-4   Phase   Impliance   Impliance   Impliance   Impliance   Impliance   Subsurface   Subsu	Sample ID Number	Number	SB-31B	H	MW-3B	L	MW-3C	Ĺ	SB-10B	H	SB-11B	$\vdash$	SB-138	L	SB-14B	Г
Phisse   P	IEA Sample 1D I	Number		_						_		_		_		-
Phisse   P		Depth	2.3	_	74		4		2-4	_	77	_	2-4		7	_
Fig. 10   Fig.	Phase M	Phase II	Phase i	-	Phase I	_	Phase		Phase i	-	Phase	_	Phase		Phase 1	
In-Place   In-Place	THES	Me Type	Investigation	_	Investigation		Combined	_	Investigation	_	Combined		Investigation	프	vestigation	_
Soli   Type   Subsurface   Su	In-PlacedRt	релопа	m-Place		II-Place		In-Place		In-Place	_	In-Place	_	In-Place		In-Place	_
December   1809   CAS No.	ĸŎ	ol Type	Subsurface	_	Substurface	41	Subsurface		Subsurface	_	Subsurface		Subsurface	~/ 	abaurtace	
Marche   18019   1.17   1.00   1.17	CAS	Ž .	Area 35		200		Area Je		AMBOR		Area 35	_	Areado		Area so	_
December   18655   1.7   C   0.77   C   0.95   D.   D.   D.   D.   D.   D.   D.   D				╁		Ļ		L		╀		╀		L		T
December   1805    1.7	Benzo(a)anthracene	\$6553	1.7	V	0.77	y	0.95	_	=		0.54	_	-	_	0.11	_
December   1,000   Colorable   1,000   Color	Chrysene	218019	[]	٧	0.77	v	0.95		0.92	_	0.67	_	0.92		0.087	
Component	Berzo(b)fluoranthene	205992 <	1.7	Y	0.77	v	960		17	_	0.84		1.6		0.21	_
Compounds (mg/Kg)	Benzo(k)flaoranthene	207089 <	1.7	v	0.77	v	0.95		f ISO	_	1 350	٧	0.07	ν	0.45	-
13.000   19.3355   1.7   C 0.77   C 0.95   C 0.72   C 0.88   C 0.22   C 0.45	Benzo(a)pyrene	50328 <		٧	0.77	ν	0.95		0.42	٧	0.83	-	0.61		0.059	-
Component (mg/Kg)	Indeno(1,2,3-ed)pyrene	193395		٧	0.77	v	Ī	v	0.72	٧	0.88	٧	0.42	v	0.45	_
Compound   Compound	Dibenzo(a,h)anthracene	>10763		v	0.77	v	h	v	0.72	٧	0.88	v	0.42	v	0.45	_
198002   20047   20047   2001   < 0.002   < 0.0024   < 0.0024   0.0044   < 0.0047   < 0.0014   < 0.0042   < 0.0024   < 0.0042   < 0.0042   < 0.0041   < 0.0044   < 0.0047   < 0.0035   < 0.0042   < 0.0035   < 0.0042   < 0.0035   < 0.0044   < 0.0034   < 0.0034   < 0.0047   < 0.0036   < 0.0038   < 0.0044   < 0.0036   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0038   < 0.0048   < 0.0047   < 0.0036   < 0.0048   < 0.0048   < 0.0047   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0047   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0047   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0047   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0047   < 0.0048   < 0.0048   < 0.0048   < 0.0047   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0044   < 0.0048   < 0.0048   < 0.0044   < 0.0048   < 0.0044   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0044   < 0.0048   < 0.0048   < 0.0044   < 0.0048   < 0.0048   < 0.0044   < 0.0044   < 0.0044   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0044   < 0.0044   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0044   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   < 0.0048   <	Pesticide Compounds (mg/Kg)	-		H		L				H		-		L	ž	_
Part   135636   1024573   0.0047   0.0047   0.0041   0.0042   0.0042   0.0044   0.0044   0.0047   0.0044   0.0044   0.0044   0.0044   0.0044   0.0044   0.0044   0.0044   0.0044   0.0044   0.0045   0.0044   0.0045   0.0047   0.0045   0.0045   0.0046   0.0045   0.0046   0.0046   0.0047   0.0045   0.0045   0.0046   0.0046   0.0046   0.0046   0.0047   0.0045   0.0046   0.0046   0.0046   0.0046   0.0046   0.0046   0.0046   0.0046   0.0046   0.0047   0.0046   0.0046   0.0046   0.0046   0.0047   0.0046   0.0046   0.0046   0.0046   0.0047   0.0046   0.0046   0.0046   0.0047   0.0047   0.0046   0.0046   0.0046   0.0046   0.0047   0.0047   0.0046   0.0046   0.0046   0.0047   0.0047   0.0047   0.0046   0.0046   0.0046   0.0046   0.0046   0.0047   0.0047   0.0046   0.0046   0.0046   0.0046   0.0046   0.0046   0.0046   0.0047   0.0047   0.0046   0.0046   0.0046   0.0046   0.0046   0.0046   0.0047   0.0047   0.0046   0.0046   0.0046   0.0046   0.0046   0.0047   0.0047   0.0047   0.0046   0.0046   0.0046   0.0046   0.0047   0.	Aldrin	309002		-	0.003		0.011	v	0.002	٧	0.0025	٧	0.0024		0.0094	_
Fig. 135555   0.0041   0.0047   0.0047   0.0	Heptachlor Epoxide	1024573			0.0077	_	0.015		0.042	٧	0.0025		0.014		0.014	_
1346   135636   0.091   0.18   0.27   2.1   0.0048   0.29   0.29   0.0058   0.0048	Dieldrin	17509	0,041	٧	0.0047	٧	0.0041		0.11		0.038		0.067	v	0.0047	-
135656   0.091   0.019   0.019   0.016   0.016   0.016   0.017   0.19   0.015   0.016   0.016   0.017   0.19   0.015   0.016   0.017   0.018   0.016   0.017   0.018   0.018   0.018   0.017   0.019   0.019   0.018   0.016   0.014   0.019   0.018   0.016   0.016   0.016   0.016   0.016   0.016   0.016   0.016   0.017   0.018	4,4*DDT	>0293	1600'0	V	0,0047	v	0.0055	v	0.0036	_	3	_	0.031	v	0.0047	-
136561 < 0.091	PCB1 (mg/Kg)			H				L		H		$\vdash$		L		
13656   c 0.091   c 0.047   c 0.036   c 0.048   c 0.049   c 0.049     1366   c 0.091   c 0.047   c 0.055   c 0.046   c 0.048   c 0.046   c 0.047     1366   c 0.091   c 0.047   c 0.055   c 0.048   c 0.048   c 0.046   c 0.047     1366   c 0.091   c 0.047   c 0.056   c 0.048   c 0.046   c 0.047     1367   c 0.091   c 0.047   c 0.056   c 0.048   c 0.046   c 0.047     1368   c 0.041   c 0.151   c 0.056   c 0.048   c 0.046   c 0.047     1368   c 0.047   c 0.056   c 0.056   c 0.048   c 0.047     1369   c 0.047   c 0.057   c 0.054   c 0.054   c 0.054     1369   c 0.057   c 0.057   c 0.056   c 0.056   c 0.056     1369   c 0.057   c 0.057   c 0.056   c 0.056   c 0.056     1369   c 0.057   c 0.056   c 0.056   c 0.056   c 0.056     1369   c 0.056   c 0.056   c 0.056   c 0.056   c 0.056     1369   c 0.056   c 0.056   c 0.056   c 0.056   c 0.056     1369   c 0.056   c 0.056   c 0.056   c 0.056   c 0.056   c 0.056     1369   c 0.056	Aroclor - 1248	1336861			0.18		037		2.1	٧	0.048	ν	0.046		0.37	-
1360   131565   < 0.091   < 0.047   < 0.055   < 0.036   < 0.048   < 0.046   < 0.047   < 0.047	Aroclar - 1254	1336363 <		ν	0.047		0.19	v	0.036	ν	0,048	_	-		0.94	
Sample   S	Aroclor - 1260	13366		V	0,047	v	0.055	v	0.036	٧	0.048	V	0.046	v	0.047	_
Compounds (my/Ng)  1	Total PCBs		2		0.18		0.56	L	1	Т	2	_	_	L	1	<u>e</u>
1440156	Inorganic Compounds (mg/Kg)			H		L				H		H		L		г
1,045   1,04	Antimony	7440360		v	3.3	v	**	v	3.1	V	3.8	٧	3.7	_	15.8	_
1440179   185   11.6   8.25   40.5   16.65   45.5   16.65   16.65   45.5   16.65   1	Arsenic	7440382			5.7	_	3.045		5.9	-	1.6	-	5.3	_	7.9	
1440122   1	Barium	7440393	185	Г	13.6		8.25		40.5	-	16.65		45.5		191	_
140013  2.7	Berylium	7440417	-	٧	0.25	v	0.33	v	0.24		0.28		0.47	_	0.34	
nt Chronrium 11540291 678 /10C 16.8 10.8 23.3 58.9 36.8 29.3 10.1 10.1 10.1 10.1 10.1 10.1 10.1 10		7440439	2.7	٧	0.72	v	0.97	V	69.0	ν	<b>584</b>	-	1.9		37.5	_
rt Chromium         11540299         678 /10C         16.8         10.8         23.8         32.85         24.8           7439976         3.7         0.13         0.16         < 0.06		10000	29600	_	263	_	309.3		58.9		36.8		293	_	1060	_
7439921         678         16.8         10.8         23.8         32.85         24.8           7439976         3.7         0.13         0.16         < 0.06	_	540299								-		-				+
7439976 1.7 0.13 0.16 < 0.06 4.5 1.2 74407070 18.6 1.3 2.4 6.6 5.45 11.4 7782492 1.9 < 0.35 < 0.47 < 0.33 < 0.96 < 0.39 7440224 2.4 < 0.52 < 0.7 < 0.3 < 0.61 < 0.58	Lead	7439921	П		16.8		10.8		23.8	_	32.85	-	24.8		220	
7440000 18.6 3.2 2.4 6.6 5.65 15.4 7782492< 1.9 < 0.35 < 0.47 < 0.33 < 0.96 < 0.39 7440224 2.4 < 0.52 < 0.7 < 0.5 < 0.61 < 0.58	Mercury	7439976	3.7	Г	0.13		0.16	v	90'0	_	4.5	_	77		28.3	
mn 77824922 1.9 < 0.35 < 0.47 < 0.33 < 0.96 < 0.39   7440724 2.4 < 0.52 < 0.7 < 0.5 < 0.61 < 0.58	Nickel	7440020	18.6		3.2		2.4		9.9		5.65		15.4		3	
7440224 2.4 < 0.52 < 0.7 < 0.5 < 0.61 < 0.58	Selensum	7182492	1.9	V	51.0	v	0.47	v	0.33	V	960	٧	0.39		5.5	
	Silver	7440224	2.4	×	0.52	v	0.7	v	\$0	×	0.61	v	950		129	_

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Comparison of Subsurface Soil Data in Area 3B to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery
Commonwealth Edison Company
Waukegan, illinois

Depth   2-4     Depth   2-4     Depth   Phase     Imple Type   Imestigation     Imple Type   Imple Type     S6553   O.43     S6553   O.45     S7016   O.39     S7026   O.39     S7026   O.39     S7027   O.16     S7029   O.16     S7029   O.10     S	2.4 [Invasto i Invasto i I	2-4 Phase f Investigation In-Place Subsurface Area 38 0.37 0.39 0.44 1 0.44 1 0.14 1 0.0027 0.0027	1.5.3.5 Phase I (investigation   In-Phase Subsurface Subsurface Area 3B	2.3 Fhase i Investigation In-Pace Subsurface Area 3B C 0.48 C 0.4	10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0	Phrase II Phrase II Investigation In Place Subsurface Area 38
Phase IPhase IPPA	2-4 Phase i Investigation In-Place Subsurface Area 3B 0.28	_	_ ;		-	Phase I Investigation In-Place Subsurface Area 38
Phase   Phas	Phase ( Investigation   In-Place   Subsurface   Area 3B   0.28   0.33   0.41   0.41   0.53   0.653   0.6003		_ , ,		-	Phase II Investigation In Place Subsurface Area 38
Sample Type   Investigation	Area 3B  Area 3B  Area 3B  0.28 1  0.29 1  0.11 1  0.53  0.53  0.673  0.0033	_	_ ,		-	Investigation in-Place Subsurface Area 38
In-PlaceRemoved   In-Place   Soli Type   Subaurface   Soli Type   CAS NO.   Solid   Sol	In-Place Subsurface Area 3B 0.28		K I	"	"	In-Place Subsurface Area 38
Soil Type   Subsurface	Area 3B  0.28 1  0.33 1  0.31 3  0.31 3  0.35 0.53  0.53  0.653  0.0014		· I	"	"	Subsurface Area 38
Part   Part	Are 38 0.28 1 0.29 1 0.11 3 0.11 3 0.53 0.53 0.653 0.0073			1		Area 38
CAS No.	0.28 1 0.33 1 0.11 3 0.11 3 0.53 0.53 0.63 0.68			1		
National Property   186551	0.28 1 0.39 1 0.29 1 0.11 3 0.53 0.53 0.65 0.0073					
Interpretate   201513   0.43   0.43   0.43   0.44   0.45	0.28 1 0.23 1 0.29 1 0.11 3 0.53 0.53 0.073 0.008					1
Normalbrace   2039  0.39   0	0.33 1 0.22 1 0.11 1 0.53 0.53 0.053 0.0073					
University	0.29 1 0.11 3 0.13 4 0.53 0.63 0.0073 0.008					
207089 < 0.39  \$0.33 < 0.39  (0.33 < 0.39  (0.33 < 0.39  (0.34 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (0.35 < 0.39  (	0.11 J 0.13 J 0.53 0.55 0.057 0.0073 0.008					
square (939) c (1996) c (1997)	0.13 J 0.53 0.53 0.053 0.0073 0.0088			- 1		
pyrene [13395] < 0.19 < hrace	0.53 0.53 0.073 0.0073 0.0014			- 1		
109002   0.15   0.16   0.15   0.16   0.15   0.16   0.15	0.53 0.0073 0.008 0.014		< 0.93 0.0026 0.0025 0.0021 0.003	<ul> <li>0.0026</li> <li>0.0026</li> <li>0.0036</li> </ul>		
mg/KQ) 300021 < 0.0021   C   C   C   C   C   C   C   C   C	0.073 0.0073 0.088 0.014	0.037	6 20000 > 0.0026 1 20.0 0 0.003	< 0.0026 < 0.0026 < 0.0051	***	
100021	0.073 0.0073 0.088 0.014	< 0.0027 0.032 0.14	0.0025 0.0025 0.0025	0.0026 0.0026 0.0051	¥	
1024572	0.0073	0.032	0.0025 J	< 0.0026 < 0.0051	ž ž :	
50231 0.12 50231 0.0041 133535 7.4 135355 0.0041 135355 0.0041	0.014	0.14	0.021	< 0.0051	¥ ;	
\$9223 < 0,0041   1335363   7.4   1335363   0,0041   1335364   0,0041	0.014	< 0.0052	< 0.005		-	
133555 7.4 133555 0.0041 135355 0.0041				< 0.0051	VΑ	
13555 7.4 13555 < 0.0041 13555 < 0.0041 74						
1335353 < 0,0041	77	< 0.052		< 0.051	10.0	
1336363 < 0.0041	1.2	2.4	× 0.05	0.051	6.	
72	0.14	< 0.052	< 0.05	150.0	1	_
	3.4 /P	2.4 IP	Q	£	2.1 AP	
Inorganic Compounds (mg/Kg)					-	-
Antimony 7440360 < 3.2 <	45	< 4.2	4,1	×.1		ž
Arsenic 7440312 3.6	5.7	13.6 A	10.5 //	3.5		7.1
Burium 7440393 · 46.1	62.1	2140	콩	<u> </u>		740
740417	5	160	E	۰ 03		<b>≱</b>
	5.6	7.7	3.1	< 0.9		\$
16065831	1330	0561	191	158		2000
Chamium				*		- (
	B6.4	765	30,9	\$		1000 /I/C
1.0 2419976 O.1	7	33	0.35	× 0.08	•	3.2
7440020		4	32.4	2		NA NA
7782492 < 0.34	0.48	1.7	629	× 0.43		< 3.7
	0.72	4.5	> 0.65			260

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Comparison of Subsurface Soll Data in Area 1B to Tier 1 Screening Values for Direct Contact Former Griess-Pfleger Tannery Commonwealth Edison Company Waukegan, Illinols

(FA Same	FA Sample In Number		9 9	_	AC-MM	
	Death	20100	2	_	20011200	_
ā	Indao	2 4			?	
:	Samue Tines	Interesting	1	- 2	T. Lieban	
id.ei	in Place Removed	de Golden	5	=	In Pinn	_
	Soll Type	Substirface	į		Supering S	
	Arres	Area 3R		_	Ares 18	
	CAS No.		)			
CPAHs (mg/Kg)				L		Г
Denzo(a)anthracene	\$6553	0,33		v	g	
Chrysene	216019	0.33		v	600	
Зепхо(в) Пиолатьсьс	203992	0.33		v	673	
Benzo(k)fluoranthene	207019 <	0.33		ν	078	
Benzo(a)pyrene	50328	033		v	0.39	
ndeno(1,2,3-cd)pyrene	> 351761	5		v	073	
Dibenzo(4,b)anthracene	> 53703 <	623		v	0.39	_
Pesticide Compounds (mg/Kg)				L		Т
Aldrin	309002 <	0.0017		v	0.002	
Heptachlor Epoxide	1024573 <			v	0.002	
Dieldrin	> 1/209			v	0000	
4,4*-DDT	> 66203			v	0.004	
PCBs (mg/Kg)				L		Т
Araclor - 1248	1336363 <	0,033		v	0.04	-
Aractor - 1254	1336363	0.62		v	0.04	
Aroclor - 1260	1336363	0.26		v	0.0	
Fotal PCBs		80'1	e		2	
Inorganic Compounds (mg/Kg)	/Kg)			L		Ŧ
Antimony	7440360	NA	٠	٧	970	
Arsenic	74403112	. 5.4				m
Barium	7440393	280				~
Beryllium	7440417	¥		v	_	
Cadmium	7440439	21			0.19 B	_
Chromism	16065831	1600			22	
Hexavalent Chromium	18540299 <	6.1			¥	
Lead	7439921	100	Š		۳	
Mercury	7439976	35	·	v	0.11	
Nickel	7440020	NA			2.9 B	_
Selenium	7782492 <			v	_	
Silver	7440724	220		v	0.18	

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Comparison of Surface Soll Data in Area 1A to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater ingestion Route Former Griess-Pfleger Tannery, Waukegan, Illinois Commonwealth Edison Company

Phase IPPhase   Phase IPPhase   Phase IPPhase   Phase IPPhase   Phase IPPhase   Phase IPPhase   Phase IPPhase   Phase IPPhase   Phase IPPhase   Phase IPPhase   InPhase IQuellon	Phase   Phase	Phase II Investigation Investi	0-1 Phase in Investigation in Place Surface Ava 1A		0-4 Combined In-Place Surface Area 1A 1.5 1.7 1.8 1.35 1.35 1.35 0.33 0.037	Investigation In-Place Surface Area 1A	Investigation In-Place Surface Area 1A
Phase   Phas			Investigation in-Place Surface Area 1A		Combined In-Place Surface Area 1A 1.5 1.7 1.5 1.3 1.35 1.35 0.33 0.0017 0.0017	Investigation In-Place Surface Area 1A	Investigation In-Place Surface Area 1A
Removed   In-Place   Soil type   Suiface	v,	In-Place Surface Area 1A	v v	Surface Area 1A 1.5 1.7 1.8 1.35 1.35 1.35 1.30 0.33 0.0017	In-Place Surface Area (A	Surface Area 1A	
Soil Type Surface Area Area 14 5.853 1 5.8553 1 5.8553 1 5.8553 1 5.8553 1 5.8553 1 5.8553 1 5.8553 1 5.8553 1 5.8553 1 5.8553 1 5.8553 0	V V V		Surface Area 1A	v v	Surface Area 1A 1.5 1.7 1.1.55 1.3.5 1.3.0.037 0.0017	Ara 1A	Arrace Area 1A
5 No. 216019 5.1 226019 5.1 2207089 14 207089 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	V V V			v v	1.5 1.7 1.235 1.235 1.3 0.33 0.0017		F
\$6533 1 1 216019 5.1 205392 14 207083 2 2 50238 0.1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	V V V			v v	1.5 1.7 1.235 1.235 1.3 0.33 0.0017		F TAIR
210333 1 1 210019 2 1 2 203592 1 4 207082 2 2 2 203592 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	V V V			v v	1.7 1.235 1.235 1.35 1.3 0.33 0.031		
205972 14 207089 2,1 207089 2 20328 0,1 193395 1 53700 0,85 309002 < 0,12 1024573 < 0,12 60571 0,68	v v v			v v	1.8 1.235 1.55 1.3 0.33 0.0017		
2005992 14 207089 2 2 50708 0.1 193395 15 53700 0.85 1024571 0.68	V V V			v v	1.18 1.25 1.3 0.33 0.0017		
2070&9 2 \$023 0.1  93995 1 53700 0.85 399007 < 0.12 1024573 < 0.12 60571 0.68	V V V			v v	0.0017		
\$0328 0.1 193395 1 53703 0.85 309002 < 0.12 1024573 < 0.12 60571 0.64	v v v			v v	1.35 0.33 0.0017 0.0017		
193395 1 53703 0.85 309002 < 0.12 1034573 < 0.12 60571 0.68	V V V			v v	0.33 0.0017 0.0017		
309002 < 0.12 1024573 < 0.12 60571 0.68	v v v			v v	0.0017		
309002 < 0.12 1024573 < 0.12 60571 0.68	V V V			v	0.0017		
309002 < 0.12 1024573 < 0.12 60571 0.60	v v v			v	0.0017		
0.68	v v				0.0017		
0.68	v		* 0.001	v			
		> 0.016		v	0.0017		
50293 34 AG		0.04	0.15	-	0.89		
	-		3	١			
v	¥.	4	£ ;	, .	0.00		
1336363 < 2.2	<b>₹</b>	¥N	¥.	٧.	0.033		
1335061 < 2.2	¥	¥	ž	v	0.003		
<del>Q</del>	VN	NA	ž	٧	£		
norganic Compounds (mg/Kg)				_			
7440360 < 3.6					1		1
7440382					111 /GW	KD2 VGW	337 /CW
7440393 85.1					<del>2</del>		
7440417 0.57				_		,	
7440439 1.2				_	n		
		_			36000		
18540299					1	- 1	н
7438921 212 AGW	3			_	480 /GW	475 AGW	W. IX
7439976 1.6	_	_		_	۰,		20
7782492 < 0.38				v 1	3 5		

Comparison of Surface Soil Data in Area 1A to Tier 1 and Tier 2 Screening Values for the Soil Compone of the Groundwater Ingestion Route
Former Griess-Pfleger Tannery, Waukegan, Illinois

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E S S	

Phase   Phas	IEA Sample ID Number	1	<u> </u>	1,4,4,5	J,K,2,3	K123	L,M,2,3	
In Piece Removed   Investigation   Investiga	Dep Phase UPhase							
Solitype   Surface   Sur	in-Place/Remave		Investigation	Investigation	Investigation	Investigation	Investigation	
CAS No.   Area 1A   Area	SoliTy		Surface	Surface	Surface	Surface	Surface	
International continuo	CAS No.		Area 1A					
### House	CPAHI (mg/Kg)							
The contraction   1980   198	26	23						
Compounder   201592   Compound   Compounder   201592   Compound   Compounder   201393   Compound		6						
Discreptions   207089   Discreptions   207089   Discreptions   207089   Discreptions   207089   Discreptions   207097   Disc	voranibene	22						
### S0728  ### January	thene	25						
2.3-odpyrne 193355  Apjanthraceze 53703  Ar Eposide 1024573  Ar Eposide 1036452  1248 133645  1248 133655  1250 133655  1250 133655  1250 133655  1250 133655  1250 133655  1250 133655  1250 1250 1250  1250 133655  1250 13365  1250 13365  1250 13365  12		***						
Ajbankhactore 53702 Compared (ng/Kg) 309002  X Eponide 1024573  S0291  1348 1134563 1134640 1134563  L. Component (ng/Kg) 7440390  M. Chemian 16540289  M. C		32						
Compounds (mg/Kg)  1248 113636 11246 113616 1124 113616 1124 113616 1124 113616 1124 113616 1124 113616 1124 113616 1124 113616 1124 113616 1124 113616 1124 113616 1124 113616 1124 113616 1124 113616 1124 113616 1124 113616 11		2						
## Eposide   1024573   102	Pesticide Compounds (mg/Kg)							
# Eposide   1024573   134616								
#KE) 1248 113636 113646	or Epoxide	2						
9/Kg) 1146 1131615 1124 1131615 11254 11316162 1136161 1136161 1136162								
### 133635   1336355   133635   133635   133635   1336355   1336355   1336355   133635   133635   133635   133635   133635   133635   133635   1336		2			1			
1244 1136163 12540 1136163 125	PCBs (mg/Kg)							
1354 133653 B3		12						
1360 139363   196362		12					-	
B.5 Compounds (reg/Kg) 7440350 7440391 7440392 1 7440393 1 7440393 1 7440393 1 7440393 1 7440393 1 7440393 1 7440393 1 7440393 1 7440393 1 7440393 1 7440393 1 7440393 1 7440393 1 7440393 1 74403294 1 7440394 1 7440384 1 7440	9	72						
Composed (rigg/NC) 7 < 6.5 300 /GW 310 /GW 110 /GW 6.2 4.2 440350								
7440367 7 6 6.5 200 AGW 110 AGW 110 AGW 6.2 7440317 7440317 7440319 110 AGW 1300 AGW	Compounds (mg/Kg)							
7440352 7 < 6.5 200 AGW 130 AGW 1310 AGW < 6.2 7440393 1440393 1440393 1		8						
1440393 1440417 1440417 16605531 16 Chromium 16605531 1430621 1430621 1740020 1782402 1740020		7		WCN 000	L	F	63	
1 7440317 1 7420321 1 6540289		5			н		9.0	
1 160058331 nt Chromium 16540290 7439078 7430020 77430020 77440020 77440020 77440020		1						
nt Chromium, 165402893 165402893 1436921 599 7GW 346 682 7GW 1200 7GW 69 7GW 339 1440020 17440224		6.				7.475		
at Chromium 16540299 7439021 59 /GW 36 682 /GW 1500 /GW 59 /GW 39 74439978 74440020 7782492		12						
743021 59 /GW 36 682 /GW 1800 /GW 69 /GW 39 7430302 7745020 7745022		0						
7439878 7440020 7782492 7440224		85	ጽ			1	1	
			_	ш		П	1	
		0						
		7						
		*						

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Companison of Surface Soil Data in Area 1A to Tier 1 and Tier 2 Screening Values for the Soil Compon of the Groundwater Ingestion Route Former Griess-Pfleger Tannery, Waukegan, Illinois Commonwealth Edison Company

Sample ID Number	- F	ğ	3	=	1,13,4	J,K,3,4
IEA Sampse 10 Number Depth Dhace (10 hace (1	<b>5</b> - 5 - 5	•				•
Sample Type	or investigation	Investigation	Investigation	Investigation	Investigation	investigation
In-Piace/Removed	rd fn-Place	In-Place	In-Place	In-Place	In-Place	in-Place
Soll Type	Surface	Surface	Surface	Surface	Surface	Surface
Area	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A
CAS No.						
CPAHJ (mg/Kg)						
Benzo(a)anthracene 56553	23					
Chrysene 218019	61					
luorzuthene	22					
-	82					
	28					
-	95					
Diberzo(a,b)anthracene 53703	33					
e Compounds (mg/Kg)						
	20					
September Eposide 1024573	2					
Dieldrin 60571	71					
4,4-DDT 50293	93					
	8					
	G					
Aroclor - 1260 1336363	8					
Fotal PCBs		-				
Compounds (mg/Kg)						
Antimony 7440360	99				_	
Arsenic 7440382	#2/ 0/1 /CW	373 /GW	59 >	> 5.8	295 /GW	298 AGW
Barium 7440393	93					
	12					
	39					
Chromsium 16065831	31					
Hexavalent Chromium 18540299	66					
A38921	21 694 AGW	873 /GW	245 /GW	34	MDV 595	840 /GW
	78					
-	20					
- -	92					
LCCOALT.	24					

Comparison of Surface Soil Data in Area 1A to Tier 1 and Tier 2 Screening Values for the Soil Compone of the Groundwater ingestion Route Former Griess-Pfleger Tannery, Waukegan, Illinois Commonwealth Edison Company

Sample ID Number	K,L,3,4	A,E,M,J	. 25	¥4	3	₹
Depth Phase UPhase II						
Sample Type	Investigation	Investigation	Investigation	Investigation	nvestgation	investigation
egy_ clas	Surface	Surface	Surface	Surface	Soutace	Sireface
Area	Area 1A       Area 1A					
CPAHs (mg/Kg)						
Benzo(a) unthracene 56553			5			
Chrysene 218019						
normalisas.						
thene 2						
-						
Dibenzo(a,h)anthracese 53703						
Pesticide Compounds (mg/Kg)						
Aldrin 309002						
Heptachlor Epoxide 1024573						
Dieldrin 60571						
4,4'-DDT 50293						
Aroelor - 1254 1336363						
Aroclor - 1260 (13)6363						
Compounds (mg/Kg)						
A.						
	130 /GW	19	374 AGW	150 ACW	23	< 5.7
Cadmium 7440439						
Chromium 18065831			á			
Hexavalent Chromium 18540299						
Lead 7439921	110 /GW	MD/ III	397 /GW	459 /CW	227 /GW	4.6
8						
1000000						

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Comparison of Surface Soll Data in Area 1A to Tier 1 and Tier 2 Screening Values for the Soll Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery, Waukegan, Illinois Commonwealth Edison Company

Sample ID Number	1,1,4,5	J,K.4,5	K,L,4,5	L'MA,5	35	K5
IEA Sample 10 Number						
Deput						•
Sample Type	Investigation	Investigation	Investigation	Investigation	Investigation	investigation in-Place
hever Removed	In-Place	In-Flace	Cudaca	Suchan	Surface	Surface
Area	Area 1A	Anea 1A	Area 1A	Area 1A	Area 1A	Area 1A
CAS NO.						
CPAHS (mg/Kg) Beam(s) milhacone 56553						
2						
lucranthene						
pyrene						
Pesticide Compounds (mg/Kg)						
Aldrin 309002						
Heptachlor Epoxide 1024573						
Dieldrin 60571						
4,4:DDT 50293						
JKE)						
Arpelor - 1248 1336363						11
			ľ			
Aroclor - 1260 1336363						
Total PCBs						
Compounds (mg/Kg)						
Antimony 7440360	ı	ı		417	Way way	W:74 102
Arsenic 740382	SECO /CM	623 AGW	100 /CW	\$ 2	1000	1
-						
Chromium 16065831						
t Chromium 1	200		١.	1	-	1757
Lead 7438921	859 /CW	294 /GW	454 VGW	Z33 ACW	. 393 Acm	
8						
Silver 7440224						

Table 11

IEA Sample ID Number	•	È	n'z 'rd	2,5,2,5	5,6,3,6	a'c'M'
Depth				35		
Saturate Sat	Investigation	fmtestfankan	factor Manager			;
in-Place/Removed	In-Place	in Disch	nodegosavni 1-Diamen	Investigation	Investigation	Investigation
Soll Type	Surface	Surface	Surface	Suctions	in-race	In-Place
Area	Area 1A	Area 1A	Area 1A	Ans 1A	Area 1A	Area 1A
CAS No.			+1			
CPAHL (mg/Kg)						
Benzo(a)anthracene 56553						
Chrysene 216019						
hene						
Benzo(a)pyrene 50328				, it		
_						
te Campounds (mg/Kg)						
Aldrin 309002						
Heptachlor Epoxide					100	
Dieldra						
4,4*DDT						
g/Kg)						
Aroclor - 1246						
Aroclor - 1254 1336363						
Aroclor - 1260						
Isorganic Compounds (mg/Kg)						
Antimony 7440360						
Arsenic 7440312	S AGW	× 5.8	100 AGW	W2W 189	With Other	42.0 00.00
Barium 7440393			П	Ł		Т
Beryllium 7440417						
Cadmium 7440439						-
Chromium 15055531						
Chromium 1						
	574 AGW	90	539 ACW	WOW 552	WOW MAN	100 ANST
Mercury 7438976			ľ	L	ı	- 1
Nicket 7440020						
Selenium 7782492						
Silver						

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Comparison of Surface Soil Data in Area 1A to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Forner Griess-Pileger Tannery, Waukegan, Illinois Commonwealth Edison Company

Sample ID Number	95	6X	16	979	1,5,5,7	J,K,B,7
IEA Sample ID Number						
Depth						
Phase UPhase te					•	1 10 10 10 11
Sample Type	Investigation	Irrvestigation	Investigation	Investigation	investigation.	Investigation
In-Place/Removed	In-Place	In-Place	in-Place	IN-FIRCE	11-120	analytical and a second
Soll Type	Surface	Surface	Surface	Surface	Surface	Series
Area	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A	Z 222
CAS No.						
Benzo(a)anthracene 56553						
Bertzo(b)fluoramhene 205992						
7						
Benzo(a)pyreae 50328						
Indeno(1.2.3-edievrene 193395						
me/Ke)						
A14rin 309002						
lor Enoxide						
After)						
Araclor - 1248 1336363						
Instrumente Compounds (me/Ke)						
Antimony 7440360						-1
Arsenic 7440382	262 /GW	MD/ 69	120 ACW	6.4	6	120 AGW
E						
#						
Committee						
	411 AGW	381 /CW	171 AGW	185 AGW	451 AGW	470 ACW
2	П					
5						
Silver 7440224						

Comparison of Surface Soil Data in Area 1A to Tier 1 and Tier 2 Screening Values for the Soil Compont of the Groundwater Ingestion Route Former Griess-Pfleger Tannery, Waukegan, Illinois Commonwealth Edison Company

JEA Sample	EA Sample ID Number Depth	N, L, B, 7	L, M, 8,7	5	£	2	M7
- Phi	Phase Whase III	Investination	framewiller	- Haranda	1		
In-Plac	In-Place/Removed	In-Place	In-Place	In-Place	Indiana	Housegapon In-Blace	In Disco
	Soll Type	Surface	Surface	Surface	Surface	Surface	Surface
	Area	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A
	CAS NO.						
CPAHs (mg/Kg)							
Benzo(a)anthracene	56553				765		
Chrysene	218019						
Benzo(b)fluoranthene	202992						
Benzo(k)fluornathene	207049						
Benzo(a)pyrene	\$032B						
Indeno(1,2,3-cd)pyrene	193395						
Dibenzo(a,h)anthracene	53703						
Pestode Campounds (mg/Rg)	•						
Aldrin	309002						
Heptachlor Epoxide	1024573						
Dieldrin	12509						
4.4-DDT	50293						
PCBs (mg/Kg)							
Aroclor - 1248	1336363						
Araclor - 1254	1336363						
Aroclor - 1260	1336363						
Total PCBs							
Inorganic Compounds (mg/Kg)	2						
Antimony	7440360						
Arsenie	7440382	46 /GW	22	11	MCW 19	WON OTT	<b>y</b> 1
Barium	7440393				ı	П	1
Beryllium	7440417						
Cadmium	7440439						
Chromium	16085831						
Hexavalent Chromium	18540299						
Lead	7438921	SS AGW	~	WEN CEN	250 AGW	MEN PO	W.W. 141
Mercury	7439976		_	L	Ł	۱	L
Nickel	7440020						
Selenium	7782492						
Silver	7440224						

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Comparison of Surface Soil Data in Area 1A to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Prieger Tannery, Waukegan, Illinois Commonwealth Edison Company

Sample ID Number	er 1,3,7,8	J,K,7,8	K,L,7,8	L,M,7,8	97	<b>9</b>
Depth Phase IPhase II Sample Type In-PlaceRemoved	III Se . Investigation ed in-Place	Investigation	Investigation In-Place	Investigation in-Place	Investigation	Investigation In-Place
Sell Type Area CAS No.		Surface Area 1A	Surface Area 1A	Surface Area 1A	Surface Area 1A	Surface Area 1A
ng/Kg) stbracene	25					
	51					
Beard (Minoraphere 2039)	56					
	72					
pyrene	56			1 = 10		
meth(=)						
Aldrin	25					
dor Eportide 3	122					
Dieldrin 60571	11					
4,4'-DDT 50293	93					
				85		
Araclor - 1248 1356563	3 (					
	3					
Aractor - 1260 [135363] Total PCBs	2			242		
Inorganic Compounds (mg/Kg)						
	99	- 1	4	1		Ţ
Artenic 7440382 <	11 > 21	130 AGW	W5/ 96	35 AGW	=	3
	193					
Beryllium 7440417						
Cadmium 7440439	139					
Christian 16065831	[31]					
Chromium				L	-1	- 1
Lead 7439921	121 463 /GW	449 /CW	201 /CW	131 AGW	75Z 76W	41/ /64
Mercury 7439976	176					
	820					
E	261					
	224					

Comparison of Surface Soil Data in Area 1A to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery, Waukegan, Illinols Commonwealth Edison Company

Sample ID Number IEA Sample ID Number Death	7	SIM	6'8'1"1	e'e')r'r	K,L,8,9	6,8,4,3
Phase (Phase II) Sample Type In-Place/Removed Solf Type GAS No.	investigation In-Place Surface Area 1A	kivestigation In-Place Surface Area 1A	Investigation In-Place Surface Area 1A	Investigation in-Place Surface Area 1A	Investigation fo-Place Surface Area 1A	investigation In-Place Surface Area 1A
CPA114 (reg/Kg)  Bernzéjaulinzene 5653 Chysene 218019 Bernzéjánulenenbene 20593 Bernzéjánulenenbene 207089 Bernzéjánulenenbene 197089 Dibernzéjánuláneene 193393	34.3					
Petitode Compounds (mg/Kg) 309002  Hepschier Eposide 1024579  Dielden 60571  44.*DDT 50293						
Fr CBs (mg/kg) 1336363 Arockor - 124 1336363 Arockor - 1254 133633 Arockor - 1260 1336363 Total PCBs	+					
Isorganic Composads (mg/Kg) Anhimony Artenic 7440360 Artenic 7440316 Barium 7440317 Cadmium 7440317 Cadmium 16066531 Rexaylor Chronium 16066531	=	409 /GW	> 13	2	340 /GW	83
	M9V 16	70 AGW	E29 AGW	S33 AGW	IS ACW	43 KGW

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Comparison of Surface Soll Data in Area 1A to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery, Waukegan, Illinois Commonwealth Edison Company

Sample ID Number IEA Sample ID Number	7	2	3			
Phase Mhase III	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
in-Place/Removed	in-Place	In-Place Surface	In-Place Surface	In-Place	In-Place Surface	Surface
Area	Arts 1A	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A
CPA Ha (me/Ke)						
36						Ī
luoranthene						
Indeno(1,2,3-cd)pyrene 193395						
1						
e Compounds (mg/Kg)						
or Epoxide 10						
Dieldrin 60571						
4,4'.DDT 50293						
PCBs (mg/Kg)						
Araclor - 1248 1336363			*			
Total PCBs						
Campounds (aug/Kg)						
Antimony 7440360					•	
Arsenic 7440312 <	= >	7.7	<u> </u>	22	2	2
Barium 7440393						
Beryllium 7440417						
Hexavalent Chromium 18540299						_1
Lead . 7439921	MD/ 109	MDV SIC	MD/ 05	143 AGW	538 /GW	110 /GW
Матешу 7439976						
•						
-						
7440324						

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Comparison of Surface Soil Data in Area 1A to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater ingestion Route Former Griess-Pfleger Tannery, Waukegan, Illinois Commonwealth Edison Company

IEA Sample ID Number	KL9,10	L,M,9,10	J10	Kto	L10	MIO
Depth Phase IPhase II						
Sample Type In-Place/Removed	Investigation In-Place	Investigation In-Place	Investigation In-Place	Investigation in-Place	Investigation In-Place	Investigation In-Place
Soll Type	Surface Area 1A					
CPAHs (mg/Kg)						
Benzo(e)anthracene 56553						
7						
normathene						
hene						
	•					
syntane 1						
h)anthracene 53703						
Pesticide Compounds (mg/Kg)						
309002						
Heptachlor Epotide 1024573						
11209						
50293						
Aroclor - 1248 1336363						
				l		
9						
Tetal PCBs						
norganic Compounds (mg/Kg)				110		
7440360						
7440382 <	62	140 /GW	= >	9	32 AGW	7K4 ACW
7440393	_				ı	1
Beryllium 7440417						
Cadminm 7440439						
Chronium 16065831						
Hexavalent Chrotmum 18540299						
7439821	TS VCM	229 AGW	872 /GW	98 /CW	33	WEW ACW
7439976		L	1	L		1
7440020						
7782492						
7440374						

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Comparison of Surface Soil Data In Area 1A to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery, Waukegan, litinois Commonwealth Edison Company

Sample ID Number	1,10,11	J.K.10,11	K.L.10,11	L,M,10,11	111	K	5
Depth Phase UPhase 11 Sample Type In-PlaceRemoved Soil Type CAS No.	Investigation In-Place Surface Area 1A	investigation In-Place Surface Area 1A	Investigation in-Place Surface Area 1A	investigation In-Place Surface Area 1A	Investigation In-Place Surface Area 1A	Investigation In-Place Surface Area 1A	Investigation In-Place Surface Area 1A
CPAHs (mp/Re) 56533 Senzo(s)antracene 26533 Carysene 218019 Senzo(b)floorauthene 203992 Senzo(k)floorauthene 207089 Senzo(s)pyrese 50338 Indono(1, 2, 2, 4,							
Feudulde Compounds (mg/Ng) Aldrin Aldrin Heptachlor Epoxide 1024573 6071 4.*-DDT 6071							
JKg) 1348 13 1248 13 1254 13 1260 13	-	- 1	1				Ī
Inorganic Composads (mg/kg) Antimony Ansenic 7440350 8 sulum 7440381 8 sulum 7440317 Cadmium 16605831 Chornium 16605831	66 80	13	•	7.6	\$5 \$5	\$. 8.	S.9
	MOV 18	148 /GW	110 AGW	W 10W	S	-	Ē

Comparison of Surface Soil Data in Area 1A to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater ingestion Route Former Griess-Pileger Tannery, Waukegan, Illinois Commonwealth Edison Company

IEA Samule ID Number	1	71,14%	ZL'11'v'r	K,L,11,7Z	L,M,11,12	717	K12
D	Death						
Phase UPhase	=						
Sample Type	Ē	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
In-Fisce/Removed		In-Place	In-Place	In-Place	In-Place	In-Place	In-Place
soll type		Surface	Surface	Surface	Surface	Surface	Surface
A :40	Area Area 1A	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A	Area 1A
CAS NO.							
nthacene	56553						
Chrystone 214019	610						
Benzo(b)fluoranthene 205992	264						
Benzo(k)Buoranthene 207089	180						
	\$032B						
_	591595						
	53703					1	
Perticide Compounds (mg/Kg)							
Aldria 309002	250						
Heptechlor Epaxide 1024573	25						
Dieldrin 60571	71						
	50293						
PCBs (mg/Kg)							
	3						
	8						
Arocfor - 1260 1336363	3						
Total PCBs							
Cempounds (mg/Kg)							
Antimony 7440360	8						
	12 < 5.8	14	< 5.5	22	> 2.9	35	2 2
	33						
	-1						
	39						
Chroazium 16065831	31						
Hexavalent Chromium 18540289	08						
Lead 7429921	112	110 AGW	7.3	W.O. 62	(1107	,	•
Mercury 7438978		П	!	п	ı	•	5.5
Nickel . 7440020	8						
Selenium 7782492	92						
Cilman 704000	74						

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Comparison of Surface Soil Data in Area 1A to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Routo Former Griess-Pflager Tannery, Waukegan, Illinois Commonwealth Edison Company

AEA CALL	EA Sample 10 Mumber		!
dies voi	Depth		
P.	Phase UPhase II		
	Sample Type	Investigation	notestigation
1d-121	In-Place/Removed	in-Place	In-Place
	Soll Type	Surface	Surface
	Area	Area 1A	Area 1A
CPAH: (me/ke)			
Benzofalunthracene	56553		
Chrysene	210019		
Benzo(b)fluoranthene	205992		
Benzo(k) (luoranbene	207039		
Вспахо(в)лутеле	50328		
Indeno(1,2,3-cd)pyrene	193395		
Dibenzo(a,h)anthracene	53703		
Pesticide Compounds (mg/Kg)	L		
Aldrin	309002		
Heptachlor Epoxide	1024573		
Dieldria	17200		
4,4:DDT	\$0293		
PCBs (mg/Kg)			
Aroclor - 1248	1336363		
Aroclor - 1254	1336363		
Aroclor - 1260	1336363		
Total PCBs			
Teorganic Compounds (mg/Kg)			
Antimony	7440360		
Arsenie	7440382	9 >	< 5.7
Barium	7440393		
Beryllium	7440417		
Cadmium	7440439		
Chromium	16065831		
Hexavalent Chromium	18540299	ŀ	
Lead	7430921	=	4.6
Mercury	7438978		
Nickel	7440020		
Selenium	7782492		
	LCCUPAT.		

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Comparison of Subsurface Soil Data in Area 1A to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

Samp	SEMPLE INTERES	28.398			SB-TOB		200	SB-53B
IEA Sampi	IEA Sample ID Number						9501	950153019
	Depth	77			7		Ī	7
H.d.	Phase VPhase II	Phase			Phase I		<u> </u>	Phase 11
	Sample Type	Investigation	E O	Jav	Investigation	5	Inves	nvestloation
In-Pia	In-Place/Removed	In-Place		_	In-Place	_	2	In-Place
	Soll Type	Subsurface	8	ឆ	Subsurface	3	Subs	Subsurface
	Area	Area 1A	_		Area 1A		Ā	Area 1A
	CAS No.							
CPAHs (mg/Kg)			Γ					
Benzo(a)anthracene	56553	4.7			0.62	-		
Chrysene	218019	4.1			0.46	-		
Benzo(b) Buoranthene	205992	7			-			
Benzo(k) fluoranthene	207049	23			973	_		
Benzo(a)pyrene	50328	2.1		ν	-			
Indeno(1,2,3-ed)pyrene	193395	160		٧				
Dibermo(a,h)andracene	53703	0.22	-	v	:	_		
Pesticide Compounds (mg/Kg)	9					Γ		
Aldrin	309002 <	0.0024		_	62000			0.008
Hepachlor Epoxide	1024573			v	0.0029			0.0038
Dieldria	> 17509				0.0056		v	0.016
4.4.DDT	50293	0.084		v	0.0056			0.033
PCBs (mg/Kg)				l		Γ		
Aroclor - 1248	> 5363651	0.047		v	0.056		_	¥
Aroclor - 1254	1336363	0.047		v	0.056		_	NA NA
Aroclor - 1260	13366	0,047		v	0.056			Y
Total PCBs		£			£		. , , ,	×Z.
Inorganic Compounds (mg/Kg)	36					Γ		
Antimoty	7440360 <	3.8			7.5	/GW		
Arsenic	7440382	37.9	VCW		6.53	VGW		
Barium	7440393	39			223	Γ		
Beryllium	7440417	0.28		v	0.74			
Cadmium	7440439 <	0.83			15.8			
Chronian	16065131	278			816			
Hexavalent Caromium	16540299					I		
Lead	7439921	47.6	λQK		290	βğ		
Mercury	7439976	27	Г		355	Ř		
Nickel	7440020	6.9			1.62			
Selenium	7782492	0.63		v	0.41			
- 100	7AATTTA C			v	0.71			

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Comparison of Surface Soil Data in Area 18 to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

Sample ID Number	ח מחשמבין	<b>10000</b>		5000	_	V20-00-	_	91.50		1	2	_		i
(EA Sample ID Number	D Number				_		_		-	3	35016200B	-	950182009	000
	Depth	3		ទ		-		6			÷		-6-	_
Phase	Phase UPhase II	Phase		Phase		Phase	_	Phase I	-	Ξ	Phase II		Phase II	=
25	Sample Type	Investigation	_	Investigation	_	nvestigation	_	Investigation	_	Inve	nvestigation	-	Investigation	atton
In-Place	In-Place/Removed	In-Place		In-Place		In-Place		In-Place		٤	In-Place	_	In-Place	90
	Soft Type	Surface		Surface	_	Surface		Surface		ភ	Surface		Surface	83
3	Area CAS No.	Ares 18		Area 1B		Area 1B		Area 18		₹	Area 18		Area 18	<b>ē</b>
CPAHs (me/Ke)			L		╀		L		t			t		l
Benzo(s)anthreese	56553 <	0.62		17		2.6		ž		Đ.	7		2.9	
Chrysene	21019			7.	_	2.5		2.8		ud	1.9		•	
Benzo(b)Ournathene	205992	0.82		7.4	_	2.4		3.6		~	•0	_	2.7	
Berzo(k) fluoranthene	207089			0.76	_	0.92		7		m	33		1.6	
Вепто(а)рупеле	50328			7	_	า	_	2.1		wi	4.8	_	1.9	
Indeno(1,2,3-ed)pyrene	193395 <			C.7.0		0.11	v	1.3	_	ø	6.8		2.6	
Dibenzo(a,h)anthracene	53703 A			0.13		0.2	v	7			9		-	
Pesdelde Compounds (mg/Kg)			L		L		L		Т			-		
Aldrin	309002	6,0073	v	6100'0	٧	0.0013	٧	0.0029	*		0.0017	٧	0.0017	
Heptachlor Epoxide	1024573	0.023	_	0.015		0.0079	v	0.0029	*	0.0	0.0017	V	0.0017	
Dieldrin	> 11209	0.0045		0.016	ν	0.0035	v	0.0055	*	0.0	0.0017	V	0.0017	
4,4*DDT	50293	5 0,0045		0.066		0.023	v	0.0055		0	0.21		0.03	
PCBs (mg/Kg)					_		ŀ							
Aroclor - 1248	1336363		v	0.007	٧	0.035	v	0.055	*		0.033	V	0.033	
Aroclor - 1254	133663		v	0.037	٧	510.0	v	0.055	V		D,033	V	0.033	
Aroelor - 1260	1336363	0.045	v	7,000	v	0.005	v	0.055	<u></u>		0.033	V	0.033	
Total PCBs				QX.	_	2		8		Z	ND Qu		ę	П
Inorganic Compounds (mg/Kg)			L		L		L		Г			H		
Antimony	7440360 <		v	23	v	2.1	v	Ş		Z	¥		¥	
Arsenic	7440382	12.1		\$	_	0.77		6.4		•	9		s	
Barium	7440393	18.3		86.9	_	10,4		30.9		Š	220		180	
Beryllian	7440417	17		0.27	V	0.21	v	0.34		z	××		ž	
Cadmium	7440439 <	Ī		7	v	19'0	v	0.97		•	4.7		<u>.</u>	
Chromium	16065831	142		펄	_	75.1	_	2600	_	=	1100		22	
Hexavalent Chromium	16540299				_				Ī	Z	<b>∀</b>		NA	
Lead	7439921	22		457 /GW	_	16.2	L	99.6 AGW	≥	7	ZZO VCW	A	170	VG₩
Mercury	7439976 <	2000 >		0.08		0.14	L	1.7	T	ľ	950	-	0.092	
Nickel	7440020	EQ.	_	16.7	_	3.5	_	8.1	Ī	×	NA NA		٧X	
Selenium	7782492	24	v	100	٧	0.29	_	0.62	,	~	15	٧	1.7	
	*******		,	-	,	****								

Comparison of Subsurface Soil Data in Area 1B to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

Compartson of Si Soil Component of Former Griess-Pf Commonwealth E

	_		E		71			1	_	_	_	v	×	v	v	_	٧	v	v	٧	1	v	v	ν	_	<b> </b>	v		_		٧		_				v	v	
NW-4A	2.4	Phase	Investigation	n-Place	Subsurface	Area 18			0.37	750	0.37			. 0.37			0.002	0.002	_					0.039	2		17.5	28	9.0	0.24	0.68	46.7	į	3	0.06	75	0.61	0.49	
SB-36B	2.3	Phase	nvestkration	In-Place	Subsurface	Area 1B	!		0.4	<u>v</u>	× 0	0.4		Þ.0	_		0.0021	0.0021	0.0041				0041	0.041	ę		32	90	5.6	25	0.71	7		22	90.0	1.6	3	0.52	
								L	y	v	v	ν	v	v	v	L	٧	v	v	ν	L	v	v	v		L	٧			v	v				ν	v	v	v	
SB-37B	23	Phase	Investigation	In-Place	Subsurface	Area 1B			n	-	45	13	0.23	0.64	0.12		< 0.0019	< 0.0019	0.019	9.0			< 0.037	< 0.037	2		< 2.9	2.6	41.6	0.36	74	291		n	0.24	9.1		< 0.47	
SB-38B	23	Phase	nvestigation	n-Place	Subsurface	Area 1B			3.6	3.4	53	1.4	1.7	-	0.13		0.0018	0.006	0.0036	0.064				l,	Ş		2.9	1	21.9	0.23	0.63	303		24.2	0.33	4.6			
_	_	_	_	_	_	_		╀	-	-		_		_		H	٧	_	٧	_	L	٧	v	٧	-	Ļ	v	<u></u>		v	٧		-	_	_	_	٧	٧	
SB-35B	2.3	Phase	Investigation	in-Place	Subsurface	Area 19			0,42	0.42	0.42	0.42	0.42	0.42	0.42		0.0023	0.0023	0.0044	0.0044		0.044	0.044	0.044	2		3,5	40.6 AGW		1.7	21	. 19.1		72	0.12	15.5	0.54	0.56	
_	_	_	_		_	-	_	╀	٧	٧	v	v	٧	٧	٧	H	V	٧	v	٧	H	ν	y	٧	-	H	٧	L	1_		-	-	_	_	_	-	_	٧	
SB-34B	23	Phase	Investigation	In-Place	Subsurface	Area 18			0.36	0.36	0.36	0.36	0.36	036	0.36		0.0019	0.0019	0.0038	0.0038		0.03	0.038	0.03	ę		m	P.0	3.4	0.23	990	32		1.7	90'0	2			
_		_	_		-	-		t	V		v	V	v	v	v	H	_	V	<u>v</u>	ř	H	V.	v	V		H	V	Ť	T		V	-		₃	ř		v	Ÿ	
58-338	23	Phase !	Investigation	In-Place	Subsurface	Artea 1B			0.85	0.45	27	8.6	9,	5.5	-		0.0023	0.11	ì	L		32	1.9	0.045	5.1		52	5.9	27.	270	3	\$6		133 /GW	0.39	66	0.76	0,47	
	_	_	_	-	_	_	_	╀	٧	٧		_	_	-	_	H	v	_	L	L	L	_	_	v	_	H	v		_	٧	_	_	-	L	L		٧	٧	
28-728	23	Phase	Investigation	in-Place	Subsurface	Ansa 18			67.0	67.0	6,79	67.0	67.0	0.79	0.73		0.0021	0.009	0.0041	0.0041		0.041	0.041	0.041	£		33	6.7	41.9	9.0	27.0	77		17.4	0.07	7.8	0.71	0,52	
			_		_	_		L	٧	ν	v	v	٧	٧	v	L	٧	_	٧	٧	L	v	٧	v		L	٧				v	_						ν	
28-208	24	Phase I	Investigation	In-Place	Subsurface	Area 18			0.74			0.74			0.74				0,004	0.033		0.04		20.0	£			7.						<u></u> i	90'0	11.3	0.83	0.51	
Sample ID Number EA Sample ID Number	Depth	Phase UPhase II	Sample Type	In-Place/Removed	Soll Type	Area	CAS No.		56553	218019 <	202992	207049	>02205	193395	53703 <	_	309002 <	1024573 <	> 17509	50293		133666	133666	1336363		L	7440360 <	7440382	7440393	7410417	7440439 <	16065133	18540299	7439921	7439976 <	7440020	7782492 <	7440224	
Sampl	•	Pha	_	in-Pla				CPAHs (mg/Kg)	Beazo(a)anthracene	Chrysene	Benzo(b)fluoranthene	B cոzo(k) (կսօրհունոշոշ	Benzo(a)pyrene	Indepo(1,2,3-cd)pyrene	Dibenzo(a,h)anthracene	Periode Composeds (ng/Kg)	Aldrin	Heptachlor Epoxide	Dieldrin	4,4'.DDT	PCBs (mg/Kg)	Araclor - 1248	Aroclor - 1254	Aroclor - 1260	Tetal PCBs	Inorganic Compounds (mg/l/g)	Antimony	Arsenic	Banium	Bezylium	Cadmium	Chromium	Hexavalent Chromium	Lead	Mercury	Nickel	Sclenium	Silver	

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ubsurface Soil Data In Area 1B to Tier 1 and Tier 2 Screening Values for the of the Groundwater Ingestion Route leger Tannery - Waukegan, Illinois idison Company

					970-00
IEA Sample ID Number	Number			_	950182010
	Denth	4			7
Uhase U	Phase UPhase II	Phase			Phase II
Bas	Sample Types	vestionition	5		laves thoutton
In-Place/Removed	emoved	In-Place	_		In-Place
S	Soll Type	Subsurface Ages 48	8	V3	Subsurface Area 18
CAS No.	Ş.				
CPAHs (mg/Kg)				L	
Benzo(a) anthracene	56553	0.94		٧	ຄວ
Chrysene	218019	0.74	-	v	0.33
Benzo(b)fluoranthene	20592	0.74	-	٧	0.33
Benzo(k) fluorasthene	207089	0.93		v	0.33
Benzo(a)pyrene	50328	0.93		٧	0.33
Indeno(1,2,3-cd)oyrene	193395	0.93		v	0,33
Dibenzo(a,h)anthacene	53703	0.93		٧	0,33
Perticide Compounds (me/Kg)				L	
Aldrin	309002	0.0024		٧	0.0017
Heptachlor Epoxido	1024573	0.0024		٧	0.0017
Dieldrin	17.509	0.0047		v	0.0017
4,4'-DDT	50293	0.0047		٧	0,0033
PCBs (mg/Kg)					5
Aroclor - 1248	1336363	0.047		٧	0.033
Araclor + 1254	1336363	0.047		٧	0.033
Aroctor - 1260	1336363	0.047		v	0.033
Fetal PCBs		9			æ
Inorganic Compounds (mg/Kg)				L	
Antimony	7446360	3.6		_	Υ×
Arsenic	74403112	5.4		_	1.9
Barium	7440393	919		٧	4
Beryllium	7440417	1.7			NA NA
Cadming	7440439	0,82		٧	6.4
Chromium	16065831	65.2		_	5.8
Hexavalent Chromium	18540299			_	Y.
Lead	7439921	15.5		_	. 17
Mercury	7439976	0.14		٧	0.094
Nickel	7440020	17.8		_	NA
Sclenium	7782492	0.4			1.2
Cilmer	7440734	9.0		٧	0.03

Comparison of Surface Soll Data in Area 2 to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tennery - Waukegan, Illinois Commonwealth Edison Company

MES Sam	EA Sample 10 Number				9000	_	2000		5	907-90		20-004	≤		CDO-CC
	Cepth	3			7		3			3		50		_	50
ā	Phase WPhase II	Phase			Phase !	_	Phase		á	Phase		Phase	7		Phase
	Sample Type	Investigation	5	Ę	Investigation	_	Investigation	00	hves	nvestigation		Investigation	rtlon	_	mestigation
45	In-Place/Removed	In-Place			In-Place	_	In-Place		Ė	In-Place		h-Place			In-Place
	Soil Type	Surface			Surface	_	Surface		Š	Surface		Surface	Ħ	_	Surface
	Area	Area 2			Area 2	_	Area 2		₹	Area 2	_	Area 2	8		Area 2
ļ	CAS No.					_					_			Į	
CPAHs (mg/Kg)						H					H				
Benzo(a)anthracene	56553 <			v	0.10		ר ביו ר	_	Y	100	v	69.0		v	660
Chrysene	218019	55.0		v	0.89		0.87	-	9.1	<b>~</b>	v	0.69			0.38
Benzo(b)fluoranthene	202992	0.47		v	0.89	_	21		);;		v	90			0.42
Benzo(k)fluoranthene	> 680/02			v	0.89		-			v-	٧	0.69			0.19
Benzo(a)pyrene	\$0328	0.16		v	0.89		0.68		); 		٧	0,69		_	0.21 J
Indepo(1,2,3-cd)pyrene	193395 <	0.64		v	0.89		0.22	_		V-	v	0.69		v	0.99
Dibenzo(a,b)anthracene	53703			v	69.0	v	1.7			VC.	y	0.69		v	0.99
Pesticide Compounds (mg/l	/Kej					H		Γ			1				
Aldrin	309002	0.0034		Ą	0.0049	٧	0.0046		A 0.0044	<b>‡</b>	٧	0.0037		v	0.0026
Heperthor Epoxide	1024573	0,013		9	0.0049	٧	0.0046		4 0.0044	7		0.015		v	0.0026
Dieldrin	12509	0.056		0	0.0094	٧	0.0089		< 0.0035	35	٧	0.0072			0.091
4,4'-DDT	50293	0.022		9	0.0094		0.036		< 0.0085	85	v	27000			0.086
PCBs (mg/Kg)						L		Γ			L			L	
Aroclor - 1248	1336363		Ì	·	0.094	٧	6100	_	< 0.085	S	v	0.072		v	0.051
Aroclor - 1254	> 5969651		Ì	,	0.094	v	0.019		< 0.085	S	٧	0.072		v	0.051
Aroclor - 1260	1336363 <	Ö	-	v	1.094	٧	0.039	Ť	۰	15	٧	0.072		v	0.051
Total PCBs		ę			QX	_	2		2	•		2			ě
Inorganic Compounds (mg/Kg)	g/Ke					-					L			L	
Antimony	7440360 <	53		v	7.5	v	7.1		879 >	_	v	5.7		v	4.1
Arsenie	7440382	14.8	1		5.6		17.1		6.6	_	_	16.9			12.1
Barium	7440393	54.4			E99		327		200	1		2			95.5
Beryllium	7440417	0.53		V	0.57	٧	0.54	_	> 0.5	-	٧	Q.			0.34
Cadmium	7440439	. 77		v	1.7	_	12		1.5	·		22.6		_	1.9
Chronium	16065831	51600		9	00155		45100		ES	8		69300			17300
Hexavalent Chromium	18540299					_		_				•			
Lead	7439921	1150	NOV		902 VCW	H	7250 //	/GW	1620	W VGW	L	1960	ΛĊΜ	L	576 /GW
Mercury	7439976	3.8			6.1	H	10.1	VGW	× 0.13		L	ጽ	ΛÇΜ		1
Nickel	7440020	6.6			8.9		501		9.7	-	L	2			4.6
Sclenium	7782492	0.69				v	0.75		< 1.7		v	0.61		v	1.1
Silver	74402241<	0.85		v	1.2	_	*	_		_	٧	000		,	22.0

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Comparison of Surface Soil Data in Area 2 to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Grioss-Pileger Tannery - Waukegan, Illinois Commonwealth Edison Company

meS	Sample ID Number	\$5-01			55-02	_	SS-03	Т	S)	55.04		22-05		SS	55-06
IEA Samp	IEA Sample ID Number					_		_							
	Depth	-			-	_	-	_		1	_	÷		0	7
4.	Phase UPhase II	Phase	_		Phase 1		Phase	_	☲	Phase	_	Phase I		꿆	Phasel
	Sample Type	Investigation	Non	Ē	Investigation	_	Investigation	_	Inve	investigation	_	Investigation	_	Invest	Investigation
144	In-Place/Removed	In-Place	Ħ	_	In-Place	_	in-Place	_	Ė	In-Place		In-Place		1	In-Place
	Soll Type	Surface	9		Surface	_	Surface		ଊ	Surface	_	Surface	_	200	Surface
	Area	Arte 2	~		Area 2		Area 2		⋖	Area 2	_	Area 2		ą	Area 2
CPA Hs (me/Ke)	CAS NO.		T	1		ļ		T			╀		t		
Benzolalanthracene	> (5855) <	2.3		v	7	٧	6:1	Ť	,	. 8.8	٧	۳	<u>v</u>		
Chrysne	211019			v	7	v	6.1	Ť		5.8	٧	r	<u>v</u>	77	
Benzo(b) fluorauthene	205992	223		v	7	v	1.9	_	S. S.	=	v		V		
Benzo(k)fluoranthene	>070\$9			v	7	٧	1.9	·		5.8	ν	n	V		
Вепто(а)ручене	50328 <			v	7	v	1.9	İ	Š		٧	m	<u> </u>		
Indeno(1,2,3-cd)pyrene	> 561161			v	2	ν	61	Ť	ui V	5.8	v	e	V	2.7	
Dibenzo(a,h)anthracene	> 23703 <			v	71	v	1.9			5.8	V	•	Ý	1	
Pesticide Compounds (mg/K						L					_				
Aldria	309002	0.0065		0	0.0043	v	0.0025	,	0.0 V	9900'0	v	0.0038	<u>v</u>		121
Heptachlor Epoxide	1024573	Ī		0 V	0.0043	v	0.0025		9.0	0.013	V.	0.003	v	_	ca ca
Dieldrin	> 17200	0.013		v	0,0083	v	0.0049	İ	> 0.0	0.013	٧	0.012	V		-
4,4'.DDT	S0293 <	0.013		0 v	0.0083	٧	0.0049	·	0.0	0.013	v	0.012	v	0.012	~
PCBs (mg/Kg)		n				L		ì			ш				
Aroclor - 1241	> (9)9(()			v	0.083	v	0.049	Ì	Ī	0.13	٧	0.12	v		
Aroclor - 1254	1336363				0.083	٧	0.049	Ì	Ì	0.13	v	0.12	V		
Aractor - 1260	133663	0.13		v	0.083	v	0.049	Ť	ø	0.13	v	0.12	v	Ī	
Tetal PCBs		2			ON CON	_	S		Z	Q.	-	ę			
Inorganic Compounds (mg/Kg)	_			ľ		L									
Astimony	7440360 <			v	9.9	v	8.2		<u> </u>	10.3	V	2	v		
Arsenic	74403112	7.3	1		153	_	7.8	j	D.	93	-	=	Ī	4	
Barium	7440393	413			386	_	225		-	22	-	339		598	_
Beryllium	7440417 <	92'0 :		v	0.5	v	0.62		0 0	0.78	ν	0.76	<u>v</u>		_
Cadmium	7440439		4	v	1.5	٧	17		2	ដ	٧	ដ	<u>v</u>	규 	
Chromium	16065831	Ĭ			10400	_	47800		*	18400		43600	9	48400	2
Hearwalent Chromium	18540299					-					-				- 1
Lead	7439921	1050	رد		1460 ACW	H	27 898	MOV	14	1410 /CW		1760 AC	VGW	1320	W VCW
Mercury	7439978	5.9			B.6 AGW	H	4.5	Г	T.	24.9 rgw	-	18.1 /0	VCW.	4.6	
Nickel	7440020	22			5.9		67		1	15.5	-	9.6		-	
Sekniem	7782492			v	0.7	٧	0.88			1:1	v	:	Ť	_	
Silver	7440224			v	1.1	v	<u></u>			e.	٧	9.1	Ť	-	

Comparison of Surface Soil Data in Area 2 to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater ingestion Route Former Griess-Pfleger Tannery - Waukegan, illinois Commonwealth Edison Company

Companison of Surfr for the Soil Compon Former Griess-Pfleg Commonwealth Edia

readers Of the Sample ID Number	EA Sample ID Number				20-00	_	AT-CC	2	_	September 1	SBASA	SEPTEMENT	VATE OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAME
	4000	•			•	_				Looretoes	COORCLOCK	20022002	950153008
i	inden	3			2		5	2		2	-	5	2
A.	Phase PPhase III	Phase	_		Phase	_	Phase	Phase	_	Phase II	Phase	Phase II	Phase H
	Sample Type	Investiga	tlom	J	Combined	_	Combined	Investigation	Hon	Investigation	Investigation	Investigation	Investigation
	In-Place/Removed	A-Play	,		In-Place		In-Place	In-Place	•	In-Place	In-Place	In-Place	in-Place
	Soil Type	Surface			Surface		Surface	Surface	-	Surface	Surface	Surface	Surface
•	Area CAC No	Area			Area 2		Area 2	Area 2	_	Area 2	Area 2	Area 2	Ama 2
CPA Us (mas/Ma)			Ī			1			+				
Grand (mg/hg)	7 13353	Ē			•			;					
Chosese	>13010	:		, .	1.5	_	20.5		_				
Rentolh/Incomplement	200000			, ,	1;		3 :						
Benzoft Duoranthese	20000	::		, ,	1:		a i		_				
Branch Janes	2000			, ,	1:		5.003	0.1					
Service of the latest of the l	97505	3 :	_	,	7		3	7					
Indeno(1,2,3-cd)pyrthe	> 193395	7		y	77	v		71					
Libenzol a, hydracene	23.703.4	7	Ì		22	v	-	9"1	Ī				
Pesticide Compounds (mg/Kg)	_								-				
Aktria	309002	0.0062		v	0.006	v	0.0021	< 0.0035			, SA		
Heptachlor Epoxide	1024573	0.0062	_	v	0.006		0.007	0.015					
Dieldrin	× 17209	0.012		y	0.012	v	0.0042	c 0.0068					
4.4" DDT	> 20293	0.012		v	0.012	v	0.0042				4		
PCBs (mg/Kg)						L							
Araclor - 1248	1336363 <		_	v	0.12	ν	0.042	< 0.068					
Aroclor - 1254	1336363			v	0.12	٧	0.042						
Aroclor - 1260	1336361		İ	v	0.12	v	0.042						
Fotal PCBs		2	_		Q.	٧	g						
inerganic Compounds (mg/Kg)	3					L							
Antimony	7440360 <	5.6	Ÿ	v	9.3	v	33	c 5.4					
Arsenic	7440352	6.7			B.85		10.5	77.7	JCW.	4600 AGW	24	-	46 ACW
Banum	7440393	218			388		216.5	88.5	-				1
Beryllhun	7440417 <	0.73		v	0.7	v	0.25	0.41					
Cadmeum	7440439 <	2.1		v	2		1 95	-					
Chromism	16085831	21500		1	44000		Juston	COOO					
Hezavalent Chromium	16540299				200		200	90000					
Lead	7439921	556	ð		1445 ACW	L	1135 ACW	UVOI	ALC: N				
Merrino	7430078	ļ	Ī		1	ļ	н						
Ni-1-1	2440030	i					4.45	31.5	į				
VICIE	1440020	n ·			2		21.3	16.7					
Selenium	7782492 <	-	_	v	660	_	0.38	× 0.58					
Cileren	V 400040	2			3.5	v	463						

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ice Soil Data in Area 2 to Tier 1 and Tier 2 Screening Values ent of the Groundwater Ingestion Route er Tannery - Waukegan, Illinois ion Company

Somple ID Number 950153008	Sample ID Number   SB-48A Sample ID Number 95015300 Oroth 0-1	SB-48A 50153008 0-1	SB-49A 950153010 0-1	SB-60A 950153012 0-1	SB-51A 950153015 0-1	2 S	58-64ACA 950182012 0-1		25-507 850182014 0-1
Phase		Phase W	Phase II	Phase il	Phase il	۵	Phase II	£	Phase II
Sam	Sample Type Vestigation	ivestigation	Investigation	Investigation	Investigation	evel .	nvestigation	fines	Investigation
edyTies	Soil Type	Surface	Surface	Surface	Surface	S	Surface	S	Surface
CAS		Area 2	Area 2	Area 2	Area 2	<u>`</u>	Area 2	₹	Area 2
CPAHI (mg/Kg)						L			
Benzo(1)anthracene	56553					о У	0.33	70	
Chrysene	216019					o v	0.33	ľ	
Benzo(b) fluoranthene	208902						0.33		
Benzo(k)lluoraninene Renzo(s)mmene	SO 7089					, v	033	, v	
Indeno(1.2 Leglingene	101105					v	0.53		
Dipenzo(4,h)anthracene	53703						0.33	< 0.33	
Pesticide Compounds (mp/Kg)									
Aldrin	309002						0.0017		
Heptacklor Epoxide	1024573						0.0017		
Dieldrin	60571					0.0 ×	0.0033	< 0.0033	
4,4-DDT	50293	l				ä	0.0093	0.013	
PCBs (mg/Kg)									_
Aroclor - 1248	1336363						0.003		m (
Aroclor - 1254	1336363					v .	0.03	EE0.0 >	
Arocior - 1260	13366					v 2	2033 GN	0.10	
Jugganic Compounds (me/Kg)	T								
Antimony	7440360				-	_	NA	NA	
Arsenic	7440382	25	55	3.5	91	<u>~</u>	9.4	3	wg/**
Barium	7440393					_	180	120	
Berylliun	7440417						٧×	ž	
Cadmium	7446439				ł	_		22	
Chromium	16065831					\$	49000	32000	2
Hexavalent Chromium	18540299						- 1	NA NA	П
Lead	7438821					5	930 AGW	730	VCW.
Mercury	7439976						4.5	55	
Nickel	7440020						NA NA	ž	_
Selenium	7782482					v	3,4	3.5	
Siver	7440224	1					2.2	2	

Comparison of Surface Soil Data in Area 2 to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery - Waukegan, Hilnois Commonwealth Edison Company

EES	Cample ID Number	ADVOORD O	_	ないないののの	5	VDP-QC	5	_	SH-7.1A		ZH-Z	_	S. P. 75.A
IEA Sami	IEA Sample 10 Number	950182015	_	950182016	116	950182018	016	200	50188008	-	501888008		
	Depth	5	_	2		2			2		-0		2
ī	Phase IPhase II	Phase II	_	Phase II	=======================================	Phase II	=	-	Phase II		Phase II	_	Phase II
	Sample Type	Investigation	_	Investigation	tlon	Investigation	ation	Inve	nvestigation	-	Investigation	_	Investigation
id-ul	In-Place/Removed	In-Place	_	In-Place	,	In-Place	8	5	In-Place		In-Place		in-Place
	Soll Type	Surface	_	Surface		Surface	3	en en	Surface		Surface		Surface
	Area	Arma 2	_	Area 2	-	Area 2	7		Area 2		Area 2	_	Area 2
	CAS No.		_										
CPAHs (mg/Kg)			F							L		t	
Bea20(a)anthracene	56353	0.37	v	0.33		c 0.33							
Chrysene	218019	15.0	٧	0.33	. v	c 0.33							
Benzo(b)fluoranthene	> 208992		ν	0.33		< 0.33							
Benzo(k)fluoratibene	207089		٧	2									
Вспго(а)рутеве	50328	0.33	٧	633		c 0,33						_	
Indeno(1,2,3-ed)pyrene	193395		٧	0.33	V	< 0.33						_	
Dibenzo(a.h)anthracene	>53703		V	0.33	V					•			
Pesticide Compounds (mg/K)	٦		L		Ī							+	
Aldrin	> 309002 <	0.0017	v	0.0017	v	c 0.0017							
Heptachlor Epoxide	1024573 <	0.0017	ν	0.0017	V								
Dieldrin	> 12509	0.0033	v	0.0033	v							_	
4,4'-DDT	50293	0.013		0.036	v	c 0.0033							
PCBs (mg/Kg)			L							L		-	
Aroclor - 1248	1336661	i	٧	0.033	V	0.033							
Aroclor - 1254	1336363		٧	0.033	V	c 0.033							
Aroclor - 1260	1336363	Q.17	_	270	V	c 0.033	23						
Tetal PCBs		0.17	_	0.22		Q						_	
Inergant: Compounds (mg/Kg	J.Ke		L		T					L	١	+	
Antimony	7440360	NA.	_	NA		NA		~	YN.		Y.	-	¥N.
Arsenic	74403112	380 **/GW	L	12	MD/••	16		-			91	_	=
Barium	7440393	250	L	320		140		-			390	_	220
Beryllium	7440417	NA NA		Y.Y		XX		-	NA		Y.		ź
Cadmium	7440439	4.9	_	22		3.7			2	v	1.6		Ç
Chromium	16065831	31000		36000		44000		42	42000		4000	_	41000
Hexavalera Chromium	18540299			ม		NA		× ×	24	v	٠,	-	1.5
Lead	7439921	860 /GW	L	Ĩ	λ	970	A)	ľ	1000 VCW		490 /G	ζM	1400 /GW
Mercury	7439976	0.39	L	220		3.5	AQ/		Ł		1.4	H	L
Nickel	7440020			NA NA	_	٧×		٢	L		NA.	_	NA.
Selenium	7782492	2.7	٧	<b>27</b>	•	5.7			6.1	v	=	v	7.7
Silver	7440224 <		_	2.3	V	٠		,		v	3.2	V	11

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Comparison of Surface Soil Data in Area 2 to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwaler Ingestion Route Former Griess-Prieger Tannery - Waukegan, Illinois Commonwealth Edison Company

	-				0100100	Chance and a	DED 4 STANG	0KU KUUU
IEA Sample ID Number			950246015	950245017	20245013	SIOR*THEA	I POST OFFI	***
8			ě	ě	5	<b>3</b>	3	10000
Phase IPhase i	_	Phase ii	L ASSELLA					
Sample Type		Investigation	Investigation	Investigation	Investigation	investigation	Investigation	INVESTIGATION
In-Place/Removed		In-Place	In-Place	In-Place	In-Place	In-Place	In-Place	in-lace
Soll	_	Surface	Surface	Surface	Surface	Surface	Surace	Surace
		Area 2	Areaz	Area 2				
CAS No.								
CPAHs (mg/Kg)	-							
unthracene	56553							
	218019							
Tuoranthene	205992			53				
	207019							
	50328							
рутеле	193395							
	53703							
(me/Ke)								
Aldria	09002						-1	
or Epoxide	1024573							
Dieldrin	11209							
4,4-DDT	50293							
Aroclor - 1248 13	1316060							
Aroclor - 1254 13	1336363							
Aracler - 1250 13	1336363							
Total PCBs	-							
Compounds (mg/Kg)								
Antimony 74		<b>~</b>		:		-1	7100	W.C. A11
Arsenic 74		2	2	13	a	1900	1	н
Barium 74		460						
Beryllium 74		٧						
		9						
_		900						
Chromium	٧	8						-
		191 /GW						
	7438976 0.	0.24						
		. ₹						
=		7.8						
		6						

Comparison of Surface Soil Data in Area 2 to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

IEA Sample	EA Sample ID Number	950153005	950153007	950153009	950153011		i	61
Phas	Phase UPhase II	Phase II	Phase II	Phase II	Phase II			
S In-Plac	Sample Type	Investigation	Indication	Investigation	Investigation	notestigation	Investigation	hvestigation
8	Soll Type	Surface	Surface	Surface	Enthern C	In-Flace	In-Place	in-Place
	Area	Area 2	Area 2	Area 2	Area 2	Area 2	Sunace Area 2	Area 2
	CAS No.							
CPAHs (mg/Kg)								
Benzo(a)anduracene	56553							
Chrysene	213019							
Benzo(b)fluoranthene	208992							
Benzo(k)fluoranthene	207089							
Benzo(a)pyrene	S0328	ì						
Indepo(1,2,3-ed)pyrene	193395							
Undenzo(a, m) ammacene	١							
Pesticide Compounds (mg/Kg)	_							
Akana	309002							
Heptachlor Epoxide	1024573							
Dickens	60571							
4,4'-DDT	50293							
PCBs (mg/Kg)								
Aroclor - 1248	1336363							
Aroclor - 1254	13366							
Aroclor - 1260	1336363							
Tetal PCBs	Ī							
foorganic Compounds (mg/Kg)	l _							
Antimony	7440360							
Arsenic	7440382	12	7.1	230 AGW	23	348 ACW	1490 ACW	1100 HCW
Batium -	7440393					П		-11
Betyllium	7440417							
Cedmium	7440439							
Chromium	16065831							
Hexavalent Chronium	16540299							
Lead	7439921					763 AGW	W.D. 927	אלא אנג
Mercury	7438976				•	J.	Г	н
Nickel	7440020							
Seleniam	7782492							
Silver	7440224		-					

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Comparison of Surface Soil Data in Area 2 to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfloger Tannery - Waukegan, Illinois Commonwealth Edison Company

Sample ID Number	10	ũ	Œ.	61	¥	A.B.1.2
Phase (Phase) Sample Type In-Place/Removed Soil Type CAS No.	Investigation In-Place Surface Area 2	Investigation In-Place Surface Area 2	Investigation In-Place Surface Area 2	Investigation In-Place Surface Area 2	investigation in-Place Surface Area 2	Investigation In-Place Surface Area 2
CPA1st (mg/Kg) 56553 Chrystel and based 20593 Bernot(bliuorauthene 205992 Bernot(bliuorauthene 205992 Bernot(bliuorauthene 2019992 Bernot(bliuorauthene 50038 Indicator(1,21-of)pyrre 193993						
Diberzo(a,h)anthracene 53703 Pesticide Compounds (mg/Kg)						
Heptachlor Epoxide 1024373 Dieldrin 60571						
Aroclor - 1254 (336363) Aroclor - 1260 (1336363)						
Increasic Compounds (mg/Kg)						
Amenin 7440382	1280 AGW	1370 ACW	- 90 AGW	381 AGW	1100 /GW	1420 AGW
Cadmium 7440439						
-						
Hexavalent Chromium 18540299				1	ı	ŀ
•	425 /GW	MDV SRC	400 VCW	421 VCW	358 /GW	20 VCM
Метситу 7438976						
Nickel 7440020						
E						
Silver 7440224						

Comparison of Surface Soll Data in Area 2 to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Ptieger Tannery - Waukegan, Illinois Commonwealth Edison Company

E.F.1,2 F.G.1,2 G.H.1,2	The section with the section of the	In-Place	Surface Surface Surface Area 2 Area 2															341 AGW 759 AGW 536 AGW					ı	100		
C,0,1,2 D,E,1,2	Trossiton myantanasi	In-Place	Area Z Area Z															MOS 1/2W 210 AGW 3		-			467 AGW 794 AGW			
2,50,E	Investigation													_									414 /GW			
IEA Sample ID Number	Phase IPhase II Sample Type	In-Place/Removed	Area	CAS NO.	Character 26553	uocznithene		_	Dibertzo(a,h)anthracene 53703	Pesticide Compounds (mg/Kg)	or Epoxide 10	4,4".DDT 50293	_		Araclar - 1260 1336363	Tetal PCBs	Inorganic Compounds (mg/Kg) Antimony 7440150		•	Cadmium 7440439	Chromium 16085831	Chronium	Lead 7439921	Mercury 7439976	Nickel 7440020	Selenium 7782492

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Comparison of Surface Soil Data in Area 2 to Ther 1 and Ther 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

Sample ID Number	H,1,1,2	<b>A</b> 2	82	23	20	<b>3</b>
IEA Sample ID Number						
Phase UPhase II						:
Sample Type	Investigation	Investigation	Investigation	investigation to Disca	Investigation	Investigation In-Place
In-racial Removed	Confess	Curtino	Searline a	Surface	Surface	Surface
Age	Arra 2	Area 2	Area 2	Area 2	Area 2	Area 2
CAS No.						
					0.00	
Benzo(a)apthracene						
Benzo(b) fluorauthene 200992						
Denc						
Denzo(a)pyrese						
Indeno(1,2,3-ed)pytene 193399 Diberzofa, hizuitzacene 53703						
mg/Ke)						
Repuschlar Epoxide 1024573						V
4.4:DDT 50293						
PCBs (mg/Kg)						
Aroclor - 1254 133660						
Q						
Total PCBs						
(Jy/Jul) spanoduo						
		- 1	١		ı	Man at
Arsenic 7440382	909 VCM	MO/ 098	MS VCM	= ×_	) (GW	ı
Cadmium 7440439						
-						
Hexavaleat Chromium 16540299				-1	١	ı
Lead 7439921	614 AGW	658 AGW	921 /GW	786 AGW	747 /GW	WAY LKK
5						
7441774	_					

Comparison of Surface Soil Data in Area 2 to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwaler ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

IEA Sample ID Number Denth	2	B	#5	A.B,2,3	B,C,2,3	C,D,Z,3
Phase UPhase H						
egyT elqmeX	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
Soll Type	Surface	Surface	- Land		In-Place	In-Place
Anta	Area 2	Arna 2	Arm 2	Aces 2	Surface	Surface
CASNo	)(			Viet v	Arra 2	Areaz
athracene						
		Ī			ŀ	
Benzo(b)fluoranthene 205992				3		
Benzo(k)filmornalbene 207089						
Benzo(a)pyrene Su328						
_						
Dibenzo(a,b)anthracene 53703						
'esticide Compounds (eng/Kg)						
Aldrin 309002						
=						
4,4°-DDT						
_						
Aroclor - 1248					150	
Aroclor - £260						
Tetal PCBs						
morganic Compounds (mg/Kg)						
Appinony 7440360						
	871 ACW	74 /GW	T79 AGW	372 //20/	W. C.	18000
			1		ı	NOV YOU
			_			
West Chromium 1						
	WON HEL	789 AGW	701 /CW	494 YCM	ACM ACM	W.W. 118
			ı	1		1
E						

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Comparison of Surface Soil Data in Area 2 to Ther 1 and Ther 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Prieger Tannery - Waukegan, Illinois Commonwealth Edison Company

Sample ID Number IEA Sample ID Number Denth	ם'ב'צ'פ	E,F,Z,3	F,G,2,3	G,H,Z,3	H,[2,3	₹
Phase I/Phase II	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
In-Place/Removed	_	In-Place	In-Place	In-Place	In-Place	In-Place
Soll Type	Surface	Surface	Surface	Surface	Surface	Surface
Area Cos no	Area 2					
CPAHe (me/Ke)						
Bermel luthracene \$6553						
7						
luoranthene						
7						
-						
Dibertzo(a,h)anthracene 53 /U3						
e Compounds (mg/Kg)						
or Epoxide 10						
4,4*.DDT 50293						
				I		
Aroclor - 1260 1336363						
Total PCBs						
Compounds (mg/Kg)						6
Antimony 7440360					-1	- 1
Arsenic 7440382	99 AGW	634 /GW	160 /GW	786 AGW	764 /GW	302 VCW
Cadmium 7440439						
Chromium 16085831						
Hexavaleat Chromium 18540299						- 1
Lead 7439921	MD/ 818	MSV CSI	1330 AGW	1120 /GW	MS VCM	713 /GW
						***
Nickel 7440020						
Selenium 7782492						
7440774						

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Comparison of Surface Soil Data in Araa 2 to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Prieger Tannery - Weukegan, lilinois Commonwealth Edison Company

Sample ID Number	2	8	8	8	E	8
Phase UPhase III	mostleation	Immedia	Investigation	- Topical Property of the Parket of the Park	and the state of t	100
In-PlaceRemoved	In-Place	In-Place	in-Place	In-Place	In-Place	In-Place
Acta	Surface Area 2	Surface Area 2	Surface Area 2	Surface Area 2	Surface Area 2	Surface Area 2
CPAHs (mg/Kg)						
Bihracene						
Chrysene 218019						
uoranthene						
there 3						
Indexe(1,2,3-cd)pyrese 193395						
merical						
Aktrin 309002						
lor Epoxide						
4,4:DDT 50293						
Aroclor - 1260 1336363						
Total PCBs						
Compounds (mg/Kg)						
Antimony 7440360						
	422 /GW	< 12	WD/ 94	MDV Offi	447 /GW	MD/ 8/9
Chromium 16065831			-(+)			
Hexavalent Chromium 15540299						
	304 AGW	MD/ 606	777 AGW	MD/ 196	1100 AGW	748 AGW
Mercury 7439976						ь.
Ciliane 7AANTOA						

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Comparison of Subsurface Soli Data in Area 2 to Ther 1 and Tier 2 Screening Values for the Soil Component of the Groundwater ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

Sample ID Numbe	TEGERAL C		ē			-	1				-					
IEA Sample ID Number	Number										_					
	Death	7			3		3.5	3.54.5		7	_	4			4	
Phase	Phase UPhase II	Phase	-		Phase		Phr	Phase		Phase !	_	Phase	_		Phase	
San	Sample Type	Investigation	allon		investigation	5	Invest	nvestigation		Investigation	_	Investigation	Clon	=	Investigation	50
in-Place!	In-Place/Removed	In-Place	3		In-Place		4	In-Place		In-Place		In-Place	Я		In-Place	_
	Soll Type	Subsurface	face		Subsurface	,	Subst	Subsurface		Subsurface		Subsurface	2	••	Subsurface	3
	Area	Area 2	N		Area 2		Æ	Area 2		Area 2		Area 2	e.i		Area 2	
Š	CAS No.										4					
CPAHs (mg/Kg)				L		-									•	
Benzo(a)anthracene	56553 <	1.3		v	<u>5.</u>	•	. 13		v	15	_	0.56		v	9 !	
Chrystae	211019	0.37	_		0.14	<u>v</u>	<u>د</u>		v	15	_	0.45	_		0.37	_
Benzolbifluorauthene	205992	0.26	•		0.41	·	21 2		v	15	<u>v</u>	0,46		v	9.	
Benzofk)Buoranthene	207089	0,62	1	v	1.5	~	. 1.5		v	15	_	0.63	_	v_	9.	
Benzo(a)ovrene	50328	0.22	-		0.2	_	× 1.5		v	15	_	Ť	_	v	9:	
ndeno(1.2.3-ed)oyrene	193395 <	1.5		v	2.	•	< 1.5		v	12	_	0.14	_	v.	9	
Dibenzo(a, b)anthracene	53700 <	13		v	1.5	•	_		v	15	٧	0.46		v	9.	ł
esticide Compounds (mg/Kg)			-	L												
Aldrin	309002	0.0048		v	0.004	¥	A 0.0041	_	v	0.026	٧	0.0025		v	0.0043	
Heptachlor Epoxide	1024573 <	0.0048		v	0.004		c 0.0041	=	v	920.0	v	0.0025		v	6.0043	
Dieldrin	> 17.00	0.0092		v	0.0077	Ψ.	c 0.008	_	v	0.051	v	0.0049		ν_	0.0034	
4,4°.DDT	50293 <	0.0002		v	0.0077	Ť	< 0.008		v	0.051	시	0.0049		Ų	0.0014	
PCBs (mg/Kg)											-	0,000		,	7800	
Aroclor - 1248	1336363	0.092		v	0.077	*	0.03		v_	150	<u>,                                    </u>	0.00		,	5000	
Amelor - 1254	1336363 <	0.092		v	0.077	İ	× 0.08		v	0.51	v ·	0.049		۷ '	9 0	
Aroclor - 1260	1336363 <	0.092		v	0.077	Ť	c 0.01		v	15.0	v	0.049		v	5	
Fetal PCBs		g			Ş		물			£	4	£				١
norganic Compounds (mg/Kg)	L	h										;		,	;	
Antimony	7440360 <	7.4		v	6.2	•	v.	ı	v	2	v	2		,		
Arsenic	74403112	32.8	VGW		6.9		5550	WSW 0		14.3		7.4			7.17	
Barium	7440393	413			360		402			95.9	_	- H			82.6	
Beryllium	7440417	0.56		v	0.47		c 0.48		v	0.49	v	2		v.	0.51	
Cadmium	7440439 <	1.6		ν	3	_	× 1.4		v	<u> </u>	_	1.9		v	<u>ي</u>	
Tromium III	16065831	47400			33100		37400	9		49200	_	15300			81900	
Hexavalent Chromium	18540299		1						_					_		
Lead	7439921	1520	νcw	L	481	VGW.	CSZ	WDV I			4	Ħ	ş		1260	è
Mercury	7439976	7.4		L	0.63		0.84		Ц	29.8 AGW		0.27			ž	إَخُ
Nickel	7440020	11.3			4.2	İ	< 3.2		L	=		10.4			11.5	
Selenium	7782492	Ĭ		v	0.65		2.4		v	0.69	v	-		v	1:3	
C.3	7440774	1.2		v	0.9R		-		v	_	v	0.62		v	1.1	

Comparison of Subsurface Soil Data in Area 2 to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

IEA Samble IO Number	Sample 10 Number	MW-2B		MW-2C	SB-48	88-458	58-468	SB-47B	SB-48B
	Depth	4.6		8-8	4.1	4-3	600000000	950153007	950153009
Phase	Phase UPhase II	Phase	_	Phase		2 4	7 40	7	7
San	Sample Type	Investigation	ngu	Investigation	.5	Investigation	Investigation	Protection in	II esema
in-Place/	In-Place/Removed	In-Place	3	m-Place	_	In-Place	in-Place	In-Place	In-Place
	Soll Type	Subsurface	lace	Subsurface	-	Subsurface	Subsurface	Subsurface	Subsurface
3	CAS No.	Area 2	7	Area 2	Area 2	Area 2	Area 2	Area 2	Area 2
CPAHs (mg/Kg)			•		 				
Benzo(a)anthracene	56553	5.8	ā.	< 12					
Chrysene	> 610112	5.8	I	< 12					
Benzo(b)fluoranthene	205992	5.8		< 12					
Benzo(k)fluorauthene	207019 <	5.8		< 12					
Benzo(a)pyrene	\$032B	9		< 12					
Indeao(1,2,3-rd)pyrene	> 365661	2.8	Ĭ	< 12					
Dibenzo(a, h)anthracene	53703	5.8		< 12					
Pesticide Compounds (mg/Kg)									
Aldrin	309002	0.0032		< 0.0039					
Heptachlor Epoxide	1024573 <	0.0032		< 0.0039					
Dieldrin	> 17509	0.0062		< 0.0076			7.		
4,4:DDT	50293 <	0.0062		> 0.0076					
PCBs (mg/Kg)	-								
Aroclar - 1248	1336363	0.062		< 0.076					
Aracior - 1254	1336363 <	0.062		> 0.076					
Aroclor - 1260	1336363	0.062		c 0.076					
Total PCBs		운		Ş					
Inorganic Compounds (mg/Kg)									
Antimony	7440360 <	S	Ť	e.1					
Arsenic	7440382	1210	ΑQ	Į	S ve	1.7	=	91	ŗ
Barium	7440393	Ş		ш			:	1	3
Beryllium	7440417 <	0.38		< 0.46					
Cadmium	7440439	29	_						
Chromium	16065831	20400		20800					
Hexavaleat Chromium	18540299						-		
Lead	7439921	295	Ng	161	/CW				
Mercury	7439976	3.6		III	VGW.				
Nickel	7440020	5.5	*	7	T				
Selenium	7782492 <	0.53	Ì	< 0.65					
Silver	7440774 <	27.0	_*	< no.0			16		

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Table 16

Comparison of Subsurface Soil Data in Area 2 to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

Comparison of S
for the Soil Comp
Former Griess-Pi
Commonwealth t

Prize of P	Sample ID Number IEA Sample ID Number Death	SB-19B 950153011 1-3	58-508 950153014 1-3	\$8-518 950153016 1-3	\$8-64CB 950182013 1-3	SB-67B/CB 850182017 1-3	58-738 950188007 1-3	SB-778 950248016 1-3	58-788 950248018 1-3
Solitor   Subsurface   Subsur	Phase Uphase II Sample Type In-PlaceiRemoved	Phase II Investigation In-Place	Phase II Investigation In-Place	Phase II Investigation In-Place	Phase II Investigation In-Place	Phase II Investigation In-Place	Phase II Investigation In-Place	Phase il Investigation In-Place	Investigation in-Place
### 1935    Manual control	Soil Type Area CAS No.	Subsurface Area 2	Subsurface Area 2	Subsurface Area 2	Subsurface Area 2	Area 2	Subsurace Area 2	Area 2	Area 2
Compounds (mg/Kg)   Comp									
Second Comparison   Compariso									
19195   1919									
Figoriale (my/kg)   1924573	pyrene								
19002   1024573						1			
Figoratic   104573   C									
Mag   13105G   1310									
13656   1315555   13155555   13155555   13155555   13155555   13155555   13155555   13155555   13155555   13155555   13155555   13155555   13155555   13155555   13155555   13155555   131555555   131555555   131555555   131555555   131555555   131555555   131555555   131555555   131555555   131555555   131555555   131555555   131555555   1315555555   1315555555   1315555555   1315555555   1315555555   1315555555   1315555555   1315555555   1315555555   1315555555   1315555555   13155555555   1315555555   13155555555   1315555555   13155555555   13155555555   1315555555555		1							
1316363   1316						ŀ			
133G61									
1315055   1315055   1315050   1315		ı							
Chrossium   1540297   144029   1440   1440   1440   1440   14401   1									
Compaunds (mg/Kg)   140360	Total PCBs					UN			
1440.00   1440.00   15   15   16000   15   15   15   15   15   15   15	Compounds (mg/Kg)				MA	×Z.	NA.		
7440312 7.5 2000 0.07 7.440312 7.5 2000 0.07 7.440313 7.440413 7.4				•	ı	П	L	2	7.8
1440419				;	1	L	L	_	
1440439 4.4 12 6.2 150000 15005131 1.2 170000 150000 15000 1					NA	NA	NA		
1 Chrosnium 1634029 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					4.4	32	62		
1 Chromium 16340299					27000	3600			
7439921	Chromium				12	1.6	3.1		
7439976 0.54 0.55 7440220 NA NA NA NA TIE2492 < 3.7 < 1.9 <						Ĭ			
7440020 NA NA NA NA T7121497 < 1.9 <					0.54	0.55	7		
7712492 < 1.9 <					NA	<b>¥</b>	NA.		
	Selenium 7782492	8.		-	< 3.7	6.1	66 V		

ubsurface Soli Data in Area 2 to Tier 1 and Tier 2 Screening Values sonent of the Groundwater Ingestion Route Beger Tannery - Waukegan, Illinois Edison Company

		20/-00	-	Dipon	91797	SB-82B		
IEA Sample ID Number	Number	950248014	7.	950248020	050153002	950151004	050151000	DENISTAND
	50.0	7		?	2		17	5
Phase III	Phase I/Phase II	Phase II	_	Phase II	Phase II	Phase	Dhase II	Dhace
Samp	Sample Type	<u> </u>	fion	Investigation	Investigation	Investigation	Investigation	Invactionation
In-Place/Removed	релоше	In-Place	A	In-Place	In-Place	In-Place	In-Place	h-Place
ā	non lype	Subsurface	3	Subsurface	Subsurface	Subsurface	Subsurface	Subsurface
CAS No.	No.	Area 2	<u> </u>	Area 2	Area 2	Area 2	Area 2	Area 2
CPAHs (ms/Ke)	T		t					
Benzo(a)anthracene	56553	3						
Chrysene	212019							
Benzo(b)fluoranthene	205992							
Benzo(k) fluorinithene	207089						1	
Benzo(a)pyrene	50028				71			
Indeno(1,2,3-ed)pyrene	193395							
Diberto(a,b)anhacene	53703							
Pesticide Compounds (mg/Kg)								
Aldrin	309002							
or Epoxide	1024573		_					
Dieldrin	17509							
4,4'-DDT	50293		_					
PCBs (mg/Kg)			-					
	1336363							
	1336363							
Q	1336363							
Total PCBs								
Inorganic Compounds (mg/Kg)								
	7440360							
	7440382	780	Αğ	710 /CW	55 ACW	240 AGW	ŧ	=
	7440393		l		L	ь.	1	
	7440417							
	7440439		_					
	10003131							
Chromium	8540299							
	7439921							
Mercury	7439976							
	7440020		_					
=	7782492						Ш	
Silver	7440224							

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Comparison of Subsurface Soil Data in Area 2 to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

IEA Sampl	EA Sample ID Number	950153010	950153012	950211602	202
	Denth	7	1.3	7	
Pha	Phase VPhase III	Phase #	Phase II	Phase	=
~,	Sample Type	Investigation	Investigation	Investigation	tlon
ral4-ni	In-Place/Removed	In-Place	In-Place	In-Place	8
	Soll Type	Subsurface	Subsurface Area 2	Subsurface Area 2	, <u>S</u>
•	CAS No.				
CPAHs (mg/Kg)				_	
Henzo(a)anthracene	56553			•	
Chrysene	218019			A. 0.4	
Benzo(b)(Tuoranthene	205992				
Benzo(k)fluorauthene	207089				
Benzo(a)ovrene	50328			× 0.4	
Indexo(1.2.3-cd)ovrene	193395			× 0.4	
Dibenzola handercene	53703			× 0.4	
Pesticide Compounds (mg/Kg)	9				
Aldrin	309002			v 0.002	
Heatachlor Epoxide	1024573				~
Dieldrin	60571			v 0.004	_
4,4'-DDT	50293			> 0.004	
PCBs (mg/Kg)					
Aroclor - 1248	1336363				
Aroclor - 1254	1336363				
Aroclor - 1260	1336363			v 0.04	
Total PCBs				2	
norganic Composads (mg/Kg)	_				
Antimony	7440360	1		v .	
Artenie	7440382	70 /GW	4600 /GW	3.4	
Barium	7440393				Ø
Beryllian	7440417			× 0.24	_
Cadmium	7440439			_	_
Chromium	16065831			9.11	_
Hexavalent Chromium	18540299			¥X	
Lead	7439921			2.2	
Mercury	7439976			< 0.12	~
Nickel	7440020				A
Sclenium	7782492			۸ 0.7	
All lane	ACCOLAC			<u> </u>	

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Table 17

												_																							
<b>S</b> S		In-Plans	Surface	Area 3A																	2	9			r.	•					K17 40W	1			
RB	Townson Manual Communications	In-Place	Surface	Area 3A																					8.2			_			W2/ (6)	1			
ő	mantination	In-Place	Surface	Area 3A																					26	١		_			6430 AGW		_		
\$0 0	lavestlastlan	In-Place	Surface	Area 3A																					7.9						174 /GW	П			
5	investigation	In-Place	Surface	Area 3A																					254 /GW <						904 VCW				
Š	Irvestigation	In-Place	Surface	Area 3A												3									£3						1780 /GW				
Sample 1D Number, IEA Sample 1D Number, Depth	Phase Whase II	In-Place/Removed	Soil Type	CAS No		sthracene 56553	3	normbene	thene 2		_	Dibenzo(a,h)anthracene 53703	Pesticide Compounds (mg/Kg)		¥	12209	\$6205	WED	248 (336363	254 1336363	260 1336363		Borganic Compounds (mg/Kg)	7440360	74403BZ	7440393	7440417	7440439	_	Hexavalent Chromium 18540299	7439921	7439976	7440020	7782492	7440224
					CPAHs (me/Ke)	Benzo(a)anthracene	Chrysene	Beam(b)fl	Benzo(k)fl	Benzo(a)pyrene	Indeno(1,2	Dibenzo(a,	Pesticide (	Akdrin	Heptachlor Epoxide	Deldrin	100.7	PCBs (mg/Kg)	Aroclor - 1248	Aroclor - 1254	Aroclor - 1260	Total PCBs	Inorganic	Antimony	Arsenic	Barrion	Beryllian	Cadmium	Chromium	Hexavalen	PE S	Mercury	Nickel	Sclenium	Silver

F./ComEdxi8j50 TermeryRem Obj RepAppendAppend D Data CompAma 3A Surface Soluds

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Comparison of Surface Soil Data In Area 3A to Tler 1 and Tler 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

Sample 10 Number	N.O.B.0	0,P,8,9	P,0,6,9	Q.R.8,9	0,0,0,0,0	2
JEA Sample ID Number						
Il est (T) est (T)						;
Sample Type	Investigation	Investigation	Investigation	investigation	Investigation	Investigation
In-Place/Removed	In-Place	in-Place	In-Place	In-Place	in-Flace	In-Flace
Soli Type	Surface Area 14	Surface Area 3A	Surface Area 3A	Surface	Area 3A	Area 3A
CAS No.						
nthracene						
luoranthene						
Benzo(k)fluoranthene 207089						
pyrene						
Dibenzo(a,h)anthracene 53703						
Pesticide Compounds (mg/kg)						
A)drin 309002						
lor Epoxide						
Dieldrin 60571						
4,4'.DDT 50293						
UKE)						
Araclar - 1248 1336363						
Total PCBs						
ompounds (mg/Rg)						
Antimony 7440360	- 1					,
Arsenic 7440382	402 VGW	1.1	c 7.9	2	V	9
Cadmium 7440439						
Chromium 16065831						_
Hezzvalent Chromium 18540299				- 1	1	1
Lead 7439921	160 AGW	MOV UST	157 /CW	514 ACW	297 AGW	Z.
Nickel 7440020						
=						
Silver 7440224						

F.)ConEdits (59 TamesyRam Dij PapMopendAppend D Data ComplAree 3A Surface Sollade

MA 96:9 2002/10

Comparison of Surface Soil Data in Area 3A to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwaler Ingestion Route Formor Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

Investigation In-Place Surface
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AGW 218
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6772002 0:39 AM

Comparison of Subsurface Soil Data in Area 3A to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery • Waukegan, Illinois Commonwealth Edison Company

Comparison of Si for the Soil Comp Former Griess-Pf Commonwealth E

Sample 10 Number	SB-20B	-	\$8-218	H	SB-22B	-	\$B-23B	L	SB-24B	-	SB-258	SB-268	\$8-278	
IEA Sample ID Number				_		_							1	-
Depth	2.4		24	_	74	_	9-10		Ţ	_	3.54.5	ĭ	7	
Phase (Phase at Phase	<u>a</u>		Phase	_	Phase	_	Phase		Phase i	_	Phase J	Phase 1	Phase	_
Samula June	<u> </u>	_	Investination		Investigation		Investigation	_	Investigation	_	investigation	Investigation	Investigation	- E
paromagiantiqui	_	-	In-Place	_	In-Place	_	In-Place		In-Place		In-Place	Removed	In-Place	*
Soll Tona	u.		Subsurface	_	Subsurface		Subsurface	_	Subsurface	_	Subsurface	Subsurface	Substurface	908
Area		_	Area 3A		Area 3A		Area 3A		Area 3A	_	Area 3A	Area 3A	Area 3A	_ «
CAS No.		_		_				_		4				$\dagger$
CPAHs (mg/Kg)		L		-		_	:				-	:	5	
athracepe			0.16	v	0.4	V	7		77	۷ .	96.0	3;		
Chrysene 218019 <	19 < 0.94	_	0.17	_	0.082	٧	7	_	17	v	. 96'0	70		
Benzo(b)(luoranthene 205992 <	2 < 0.94	_	0.16	_	0.12	V	2	_	1.7	v	0.96			
Benzofk)fluorathene 207089 <			0.083	_	0.072	٧	77	_	0,49	٧	0.96	27		
			0.078	_	0.071 J	٧		_	0.77	٧	0.96	4,5		_
lovicile 1		v	0.37	_	0.068	٧	1.2	v	0.89	v	96.0	<b>\$</b>	۸ د	
		v	700	v	0,4	٧		v	0.89	Y	0.96	> 3.6	- C	1
merkel		L		H				_		_				_
Aldrin 309002 <	2 < 0.0025	v	0.002	V	0.0058	٧		v	0.0023		0.036	o.0049	0.0025	v .
Hentschlor Enoxide 1024573 <	23 < 0.0025	_	0.0034	v	0.0058	٧	0.0032	_	0.048		0.084	× 0,0049	< 0.0025	_
			0.0094	ν	0.011		0.023	_	0.1	V	0.0049	< 0.0095	A 0.0048	
		v	0.0039	_	0.0065		0.0062	-	0.028	ᅬ	0.0049	< 0.0095	V 0.004	†
ofkel		L		H		_				_			_	
Araclor - 1248	690'0 > 69	_	0.24	V	0.11	٧			1.8	_	2.8			
	_	٧	0.039	V		V		_	7	٧	0,049			
Aroclor - 1260 1336363 <		٧	0.039	٧	_	٧	0.062	v	0.045	V_	0.049	× 0.095	× .	<u>. v</u>
			0.24		ę		2	$\frac{1}{2}$	-	4	2.8	오		T
Inorganic Compounds (mg/Kg)		_		-				_	į			,	,	
Antimony 7440360 <	60 < 3.9	v	3.1	٧	3.6	v	<b>~</b>	V		<u>~</u>	4	۰ ; د	V .	<i>,</i>
Atsenie 7440382	82 32.7 AGW	v	0.28	-	30.6		12.6		164 /CW	П	77	7.7	7	
Barium 7440393		_	2.9		167		392		ជ	-	114	19.4	2:	_
Beryllium 7440417	•	y	0.24	v	0.27	V	0.38		7	_	9.9	20.	_	_
Cadmium 7440439		v	99.0		171	_	3	_	=		6.	0.07	2 5	
Chromium 16065331	11900	-	30.2	_	12400	_	25500	_	3820	_	919	21.5	-	
Hexavalent Chronium 18540299	66	_		_		1	1	4	ı	-{	ŀ	•	_	
Lead 7439921	21 399 /CW		3.7	٢	425 /GW	}	400 /GW	+	333 VCW	+	50.2 /GW	132		
Mcrairy 7439976	76		0.61	-	9.9	_	2.2		77		0.5	0.07	3 '	
Niekel 7440020	20 30.1		77		153		3	_	33.9	-	24.3	2.9	• `	
Selezium 7782492		٧	970		96'0		0.54	_	3		67.0		9.1	
Silver 7440224	v	v	0.49		0.57	V	67.0	v	0.58	Y	0.63	0.48		١

ubsurface Soil Data in Area 3A to Ther 1 and Tier 2 Screening Val ionent of the Groundwater ingestion Route leger Tannery - Waukegan, Illinois Edison Company

DATE:		28-788	_	WW-02	_	MW-6B	01/-00	a
EA Sample	EA Sample ID Number				_		950166003	503
	Depth	7.	_	7,	-	1	5	
Phas	Phase IPhase II	Phase I	_	Phase		Phase	Phase II	=
ĸ	Sample Type	Combined	_	Investigation	_	investigation	hvastidation	Hon
In-Plac	In-Place/Removed	In-Place		In-Place		In-Place	In-Place	3
	Soll Type	Subsurface		Subsurface	-	Subsurface	Subsurface	200
•	Area	Area 3A	_	Area 3A	_	Area 3A	Area 3A	<b>S</b>
	CAS NO.		_		۲			
CPAHs (mg/Kg)			_		H			
Benzo(a)anthracene	56553	2.75	٧		Y	\$0		
Chystae	218019	1.675	v	11	٧	20		
Benzo(b) fluoranthene	202992	2.75	v	==	V	30	ŀ	
Benzo(k)fluoranthene	207089	1.7	٧	3	٧	350		
Велго(в)рутеле	12005	0.805	v	=	v	750		
indeno(1,2,3-ed)pyrene	193395	1.1	v	3	v	3		
Diberzo(a,b)anthracene	53703	0.3	v	-		30		
Pesticide Compounds (mg/Kg)	9		Ļ		╀			l
Aldrin	309002	0.0034		0.12	_	sws.		
Heptachlor Epoxide	1024573	0,0089		0.034	_	3100		
Dieldrin	1209	0.0205	v	0.0059	v	0.0061		
1.4".DDT	50293	0.022	ν	0.0059	٧	0.0051		
PCBs (mg/Kg)			L		+			l
Araclor - 1248	1336063	0.065		6,4	_	0.77		
Aroclor - 1254	1336363	0.065	٧	0.059	V	0.000		
Aroclor - 1260	1336363	0.065	V	650.0	V	0.051		
Feld PCBs		œ.	_	4.9	_	0.77		
norganic Compounds (mg/Kg)	L		L		H			
Antimony	7440360	52	v	4.7	V	4.	×	
Arsenic	7440382	16.45		63	-	<u>6</u>	20	
Barium	7440393	124		182	-	13.8	120	
Beryllium	7440417	0.935		0.71	V	Ş	ž	
Cadmium	7440439	1.6	_	2	V	0.10	er er	
Chromium	16065831	12	_	11500		76.6	37000	
Hezavalent Chromium	8540299		_				< 2.1	
Lead	7439921	199.5 /GW	L	791 AGW	Г	21.7	920	ΛÇ
Mercury	7439976	3	L	2.6		160	=	NGW.
Nickel	7440020	12.95	_	45.3	-	Ş	ž	
Selenium	7782492	3.95 AGW	_	6.1	v	Ī	63	
Cilyman	704004	5	١,	35.0	_			

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Comparison of Surface Soil Data in Area 3B to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

- ACE AND A SECOND SECO	Sample ID Number	28-248	_	N.J	SB-10A		SB-11A	_	•,	SB-12A		58-154	8		K 200	
IEA Sample ID Number	D Number	•					•				_				4	
	Depth	-			2		-		•	ž	-	5		_		
Phase	Phase UPhase H	Phase	_	_	Phasel		Physe	_	•	Phase	_	Phase		_	Phase i	
r.	Sample Type	Combined	_	<u>¥</u>	Investigation		Investigation	lon	Juk Juk	Investigation	_	Investigation	Datton	_	Investigation	# O
In-Place	n-PlaceRemoved	In-Place		=	In-Place		In-Place			in-Place		In-Place	300	_	In-Place	
	Soll Type	Surface		Ų	Surface		Surface		W	Surface		Surface	909		Surface	
	Area	Area 3B	_	«	Arrea 3B		Area 3B	m	•	Area 3B		Area 3B	38		Area 3B	m
	CAS No.		1	١		4		1			†		١	+		١
CPAHs (mg/Kg)			_		ļ			_			_	2		_	85 0	
Benzo(s)untracene	56553	о.	<u>v</u>		0,63		0.89					97		, ,	2 6	
Chrysene	216019	8.65	v.	0	0.63		0.97		.,	2.9	Ī	2		v	600	
Berzo(b)fluoranthene	205992	=	<u>v</u>		0.63	_	2		_	6.9		33		٧.	0.58	
Benzofk)fluorantbene	207089 <	=	v		0.63	_	0	_		2		2		v	0.58	
Benzo(a)pytene	\$6328	0.35	ν.		0.63	٧	6.0			2		9		v	0.58	
indeno(1.2.3-ed)ovrepe	193395	0.26 J	V		0.63	v	670	Ì	v	2.7	V			v	0.58	
Dibenzo(a.h)andrracene	53703 <	11	V	0	0.63	ν	6.0		٥	0.11	Ÿ			ᅦ	0.58	
Pesticide Campounds (mg/Kg)		ī	l								_					
Aldrin	309002 <	D.003	V		0.018	v	0.0024		a	0.0025		0,35		v	0.0031	
Heptachlor Epoxide	1024573	0.041	v		0.018	v	0.0024		0	۱	٦	0.68			0.0098	
Dieldein	60571	0.0545	_		1.9 AGW		0.062		٥	0.26	VCW.	_		v	0.006	
4,4*DDT	50293	0.415	V	٦	035		2.8		0	0.026	d	026	l	-	910'0	
PCBs (mg/Kg)			-								_	1				
Aroclor - 1248	> 5959551	0.058	_		99	y	0.047	_	_	0.049				v	9	
Araclor - 1254	1336363 <	0.051	V		0.35	٧	0.047			0.049	V	0.25		ì	7	
Aroclor - 1260	1336363	0.058	V		0.35	v	0.047	Ì	0	0.049	V			<u>v</u>	90.0	
Fotal PCBs	V	Q			56		£			딝		8		+	2	
Inorganic Compounds (mg/l/g)	_												ı	+		
Antimony	7440360 <	4.6	v	v	2.6	٧	eq.	Ì	v	30		7	ΥÇ	-	9.1	٤
Arsenic	7440312	2.8	Ī		3,6	_	4.6	ļ		6.4	i	13.4		-	2	
Barium	7440393	141.5	Ī		7.5	_	43		_	52	Ī				262	
Beryllium	7440417	0.35	v	v	0.21	_	9'0		Ī	5	V				2	
Cadmium	7440439	1.7	<u> </u>	v	19.0	_	ça			567		17.1		_	42.9	
Chromium	18065831	1090.5			38.6		936			7190		4010	_		28	
Hezavalent Chromium	18540299										1		- 1	+		
Lead	7439921	N 2.9E1	VGW		4.1		277	VG.W		ı	₹	4120	٥	+	3	Š
Mercury	7439976	0.275	ř	Ū	0.05	L	1.9				/GW	7			4	
Nickel	7440020	12.5			4.9	_	29.5		ľ	43.7	ľ	343	- 1		113	
Scientiff	7752492	5.0	Ť	v	0.3	v	0.4			0.72	Ī	3,9	/CW	Š	0.51	
			_	,	77.0	_	47.2			N 261	NCW	1 69			8 20	

Comparison of Surface Soil Data in Area 3B to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

IEA Sample 10 Number Depth Phase IPhase I	umber		_		_					
Phase UP			-		_		950162001	950182002	950182503	950182004
Phase UP	Depth	2		9	_	-0-1	-	3	5	
	hase II	Phase	_	Phase 1	_	Dhaeaf	Dhase	Dispersion	Dhans in	
Sample Type	e Type	Investigation		Investigation	_	Investigation	Inchettostlon	-	Impellant	The state of
In-Place/Removed	moved	In-Place	_	In-Place	_	In-Place	In Place	_	In Disco	Investigation
8	Soll Type	Surface	_	Surface	_	Surface	Suclace	Sanfara	Surface	Starface.
	Arrea	Area 3B	_	Area 38		Aras 3R	Ares 3R	Anes TR	Action 200	Surrence Amen 30
CAS No.	و.		_							200
CPAH1 (mg/Kg)	-	-	L		+					
Benzo(a)anthracene	56553 <	0.92	٧	0.46	V					ş
Chrysene	> 610012	0.92	v	0.46	٧	0.83		900		70.0
Велго(b)Лиотливере	> 205952	0.92	v	0.46	V	00		0.46		0000
Benzo(k) fluoranthene	207019 <	0.92	ν	0.46	v	0.00		0.17		0000
Benzo(a)pyrene	S032E <	0.92	v	0,46	V	0.83		0 39		0.037
Indeno(1,2,3-ed)pyrene	193395	0.92	v	0.46	V	0.83		0.27		
Dibenzo(a,h)anthracene	53703 <	0.92	v	0.46	v	0.63		0.035		- C
Pesticide Compounds (mg/Kg)	-		L		-					t
	309002 <	0.024	v	0.0025	٧	0.0044	NA.	NA	MA	470
or Eposide	024573 <	0.024	v	0.0025	٧	0.0044	N.	NA.	×	× ×
Dieldria	× 11/509	0.047	v	0.0048	V	0.0015	12	12		V. V
(.4-DDT	> 1.6005	0.047	_	9000		20000	¥ .	4	4	V.
PCBs (me//ce)	+	1	4	0.000	4	0.0045	YV	YZ.	×2	Ϋ́
_	336363 <	0.47	v	0.048	٧	0.035	800	ā	76	
Aroclor - 1254 1:	> 699(5)	0.47	٧	0.048		o nats	200	3 8	? ;	- 3
Aroclor - 1260	> 136361	0.47	v	0.048		0.000	3 6		3.7	C.D.
		Q		Ę	_			116.8	4 5	170
foorgaale Compounds (mg/Kg)	-		L		+			1	26.6	8
	7440360 <	3.5	٧	3.8	V	8.9				
Arsenic 7	7440382	1.2		91	V	0.72				
Barium 7	7440393	101		361		11.1				
Beryllium 7-	7440417 <	0.29	v	0.29	V	150				1
Cadmium 7	7440439	1.1		11.7	٧	31				
¥	6065831	182		1010		15.2				
Chromium 1	8240299				1					
	7439921	865 /CW	L	235 AGW	-	787 AGW				
Mercury 74	7438976	0.74	L	L	1	L				
Nickel 74	7440020	3.1		17.6		2.1				
Selenium	7782492	0.53		47 MIW	Ţ	220				
	7440224	6.8			T	1.3				

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Comparison of Surface Soil Data in Arca 3B to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

sedmuN OI eldmcS SAMMOI OI eldmcS ARI	N 58-59A	5B-60A 050182007	SB-69A/CA 950162019	\$8-70A 950188001	SB-72A 950188004	SB-100A 950424005	SB-101A 950424001
Depth		3	5	5	0.1	-	I
Phase UPhase II	۵	Phase !!	Phase II	Phase II	Phase II	Phase (1	Phase II
Sample Type	=	Investigation	Investigation	Investigation	investigation	Investigation	Investigation
In-Place/Removed		In-Place	In-Place	fn-Place	In-Place	In-Place	In-Place
Soll Type		Surface	Surface	Surface	Surface	Surface	Surface
Area CAS No.	Area 3B	Area 38	Ame 3B	Area 38	Area 3B	Area 3B	Area 38
CPAHs (mg/Kg)							
Benzo(a)auturacene 56553	-	150					
~	61	0.76					
Bezzo(b)fluoranthene 205992	22	2	< 0.33				
Benzo(k) Ouoranthene 207089	6	673	د رئ				
Benzo(a)pyrene 50328	28	1.2					
рутеле	56	1.2					
Dibenzo(s,h)anthracene 53703	8	0.19	< 0.33				
mplkg							
Aldrin 309002		X	< 0.0017			¥Z	٧×
Heptachlor Epoxide 1024573	AN C	NA	< 0.0017			YY	¥
Dieldrin 60571		NA	< 0.0033			¥	٧X
4,4'.DDT 50293		NA	< 0.0033			Ϋ́	NA
PCBs (mg/Kg)							
		× 0.01	< 0.003			1000 v	0.24
Araclor - 1254 1336363		17	0.41			0.22	0,46
Araclor - 1260 1336363	2.1	625	0.18			c 0.16	970
Total PCBs	37.6	1.45	0.59			0.22	96'0
Inorganic Compounds (ng/Kg)							
Antimony 7440360	8		WA	¥	NA		
Arsenic 7440382			•	> 3.6	7		
Barium 7440393	93		250	120	150		
Beryllium 7440417	17		NA	NA NA	¥		
Cadmium 7440439	39		56	\$	7		_
Chomium 16085831	31		23	820	49000	ŵ.	
Hexavalent Chromium 16540299	8		9'1 >	< 1.5	< 23		
Lead 7438921	21		180 AGW	150 ACW	1200 AGW		
Mcroury 7439978	92		16 /GW	33	16 ACW		
	R		NA	¥	NA		
Selenium 7782492	92		1.1	e v	5		
744004	24		65	2	2.7		

Comparison of Surface Soil Data In Area 3B to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pileger Tannery - Waukegan, Illinois Commonwealth Edison Company

IEA Sample ID Number Depth	950424004	950424003	250424008 0-1	850424002	SB-108A 850424008	58-107A 950182007	A.B,24,25
Phase UPhase U		PhaseII	Phase II	Phase II	Phase II	Phase	
edyT sigmes	É	Investigation	Investigation	Investigation	hvestigation	Investigation	Investigation
In-Mace/Kemoved		In-Place	In-Place	In-Place	In-Place	In-Place	in-Place
Soil Type		Surface	Surface	Surface	Surface	Surface	Surface
Ama	Area 3B	Area 3B	Area 3B	Area 38	Arra 3B	Area 3B	Aras 18
CAS No.				1			
CPAHs (mg/Kg)							
Benzo(a)authracene 56553							
Chrysene 218019							
Benzo(b)fluoranthene 205992							
Benzo(k)fluoranthene 207019							
				Į			
Indeno(1,1,3-cd)pyreae 193395							
Dibenzo(a,h)anthracene 53703							
Pesticide Compounds (mg/Kp)							
Aldria 309002	XX.	×X.	NA.	77	***	***	
lor Epoxide		×	Y X	2 2	2 3	£ 3	
Dieldrin 60571		××	Ž	***	5 2	2 :	
4,4*DDT 50293		¥X	***	2	\$ 3	£ ;	
PCBs (mg/Kg)				4	V.	YZ.	
Aroclor - 1248 1336363 <	< 0.08	0.08	0.21	γL	1000	2	
Aroclar - 1254 1336363		2.5	0.25	3 5	0.34		
Arackar - 1260 1336363			910		210		
Total PCBs		194	0.46		200		
Inorganic Compounds (mg/Kg)				1	0.47	100	
Antimony 7440360							
Arsenic 7440352							
Barium 7440393							=
Beryllium 7440417							
Cadmium 7440439							
Chromium 16065831							
Hetavalent Chromium 18540299							
Lead 7439921							1000
Mercury 7439976							H
Nickel 7440020							
Selenium 7782492							
Silver 7440224							

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Comparison of Surface Soil Data In Area 3B to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

Sample ID Rumber	B,C,24,25	C,D,24,25	0,E,24,25	E. P. 24 A.	C747474	G, 7, 6, 7, 10, 5
IEA Sample ID Number						
Dhara Lights and	•					
Sample Type	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
In-Place/Removed	In-Place	In-Place	in-Place	in-Place	In-Place	In-Place
Soll Type	Surface	Surface	Surface	Surface	Surface	Surface
Area	Area 3B	Area 3B	Area 3B	Area 38	Area 3B	Area 3B
CAS No.				1		
nthracene						
Berzo(b)fluoraubene 205992						
Benzo(a)pyrene S0328						
pyrene						I
Dibenzo(a,h)anthracme 53703						
Pesticide Compounds (mg/Kg)						
Heptachlor Epoxide 1024573						
Dieldrin 60571	•					
4.4"DDT 50293						
Areclor - 1254 1336363						
Aroctor - 1260 1336363						
Total PCBs						
Compounds (mg/Kg)						
Antimony 7440360						
Arsenic 7440382	2	۲ F3	= -	26 >	7	v 9.2
Barium 7440393						
Beryllium 7440417						
Chroquium 16065831						
Chromium						
Lead 7439921	678 ACW	694 VCW	614 /CW	MD/ 199	398 ACW	572 AGW
Mercusy 7438976						
Scientium 7782492						
Silver 7440224						

MWG13-15\_46408

Table 19

1EA Sample ID Number 15 Number 15 Number 16 Nu	mple ID Number Depth	N. KAZS	<b>3</b>	B25	SZO	922	E25
Sample Type In-PlacaRemoved Solf Type CAS No.	Sample Type acaffemoved Soil Type Area	Investigation In-Place Surface Area 3B	investigation in-Place Surface Area 38	Investigation In-Place Surface Area 3B	Investigation In-Place Surface Area 38	Investigation In-Place Surface Area 3B	Investigation In-Place Surface Area 3B
CPAHa (mg/Kg) Benzo(a)anthracene	56853						
Chrystale	218019						
Denzo(e) (horasbene	207049			•			
Вешдо(а)рупеле	50328						
indeno(1,2,3-ed)pyrene Dibenzo(a,h)authracene	59195						
Pesticida Compounds (mg/Kg)							
Aldrin	309002						
reparent eposoe	1024573					00	
t.e.por	7/000						
PCB1 (mg/Kg)	-		1				
Aroclor - 1248	13366						
Araclor - 1254	1336363						
Aroclor - 1260	1336363						
social rubs							
Antimony	7440360						
Aranic	7440382 <	22	9	W.W.	Andre 27		
Bantom	7440393		•	ı	į	2	-
Beryllium	7440417						
Cadmium	7440439						
Chroenium 10	16065831						
Chronium	18540299						
Cend	7439621	MD/ 001	598 AGW	229 ACW	W24 174	220 ACM	1
Метсилу	7438978	ш	L	н	Т		MON VON
Niclos	7440020						
Selenium	7782492						
Clare	7440224						

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Comparison of Surface Soil Data in Area 3B to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tannery - Waukegan, Illinois Commonwealth Edison Company

IEA Sam	EA Sample 10 Number				_				
i									
ā.	Phase (Phase II			4				,	,
	Sample Type	Investigation	Ę	Investigation	atton	Investigation	ation	Investigation	Tabon
Ē	In-Place/Removed	in-Place		In-Place	8	in-Place	8	In-Place	200
	Soll Type	Surface		Surface	8	Surface	3	Surface	900
8	Area CAS No.	Area 3B	m	Area 3B		Area 3B	98	Area 3B	8
CPAHs (mg/Kg)	-		Γ		T				
Benzo(a)anthracene	56353								
Chrysene	212019		l						
Benzo(b)fluoranthene	205992			1					
Benzo(k)fluorauthene	207089								
Benzo(a)pyrene	50028								
Indeno(1,2,3-cd)pyrene	193395		ļ				Ī		
Dibenzo(a,h)anthracene	53703								
Pesticide Compounds (mg/Kg	Ke)								
Aldrin	309002								
Heptachlor Epoxide	1024573								
Dieldhia	12509								
4,4'-DDT	50293								
PCBs (mg/Kg)									
Aroclor - 1248	1336163		ĺ						
Aroclor - 1254	1336363		1				Ī		
Araclar - 1260	133663								
Total PCBs									
norganic Compounds (mg/kg)	_			h					
Antimony	7440360								
Arsenic	7440382 <	6.9	I	< 9.7	I	2	II	> 7.1	
Barium	7440393								
Beryllium	7440417								
Cadmium	7440439			ı					
Chromitan	16085831								
Hexavalent Chromism	18540299								
Lead	7430821	091	¥.	290	YO.W	217	MO/	1	VGW.
Mercury	7439978								
Nickel	7440020								
Selenium	7782492								

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Table 20

	in the second second	2	_		_			28-108		SB-118		SB-13B		7	
IEA Sample ID Number	D Number				_						_		_		ı
	Depth	23		*	_	4.6	_	24		2.4		2.4		2.4	
Phase	Phase UPhase II	Phase		Phase	_	Phase		Dhaen		Direct of		7	_		
S	Sample Type	Investigation	_	mestigation	_	Complement		Constitution	_	'ombiond	_	TIMES I		F112.50	- 4
In-Place	In-Place/Removed	In-Place	_	In-Place		In-Place		lo-Place		In Diana	*	lo Disce		In Disco	
	Soll Type	Subsurface	_	Subsurface	-	Subsurface	9	Subsurface	V	Substinibera	_	Substitions		Subeneties	
	Area	Area 3B		Arna 38	_	Area 3B	_	Ares 18	}	Arms 38	_	Acres 10	_	Acces 20	3 0
3	CAS No.	!	_		_		_				_	2	_	2	0
CPAHs (mg/Kg)			┡		L		1		ı		1		1		١
Benzo(a)anthraceme	56553 <	1.7	٧	0.77	٧	0.05	_			1 750	_				
Chrysene	218019 <	1.7	٧	0.77	v	0.95	L	0.60		190		. 2		- 100	٠, -
Benzo(b)fluoranthene	205992		v	11.0	v	560		1.2		780	_	1 6			
Benzo(k)fluoranthene	>07089		v	0.77	v	0.95		0.51		1 87 0	٧	2000	V	770	,
Benzo(a)pyrene	50328 <	1.7	v	0.77	ν	260		0.42	v			, 190	_	900	
Indeno(1,2,3-cd)pyrene	193395		v	0.77	ν	560	Ų		v		٧	90	V	0.46	•
Diberco(a,h)anthracene	53703 <	1.7	v	0.77	v	0.95	v		v	110		0.43		246	
Pesticide Campounds (mg/Kg)			L		L				ļ		4				ļ
Aldrin	309002 <	0.0047		0.005		0.011	v	0.002	v	0.0025	٧	0.0024		0.0004	
Heptachlor Epoxide	1024573 <	0.0047	_	0.0077		0.015		0.042	v	0.0025		7100		100	
Dieldria	17509	0.048	v	0.0047	v	0.0041	_	0.11		0.038		2900	_ v	0.0047	
4,4'.DDT	50293 <	1600'0	v	0.0047	v	0.0055	v	91000		1		0.031		2000	
PCBs (mg/Kg)			L		L				İ		1	1	1	ì	
Aroclor - 1248	1336363 <		_	0.18		0.37		2.1	٧	0.048	٧	0.046		0.32	
Amelor - 1254	1336363	0.091	v	0.047		0.19	ν		v	0.048		-		9	
Araclor - 1260	1336363 <		v	0.047	v	0.055	v		V	0.041	v	0.046	٧	200	
Tetal PCBs			_	0.18		0.56			v	Ę.	,	-	,	} -	
Inorganic Compounds (mg/Kg)	0		L		L		L	T	ı						
Achimony	7440360 <	7.3	v	33	v	4.4	v	3.1	v	40	v	17		14.8	W.Ch
Arsenic	7440382	16	_	5.7		3.085		5.9		1.6	_	5		70	
Barium	7440393	155		13.6		17		40.5		16.65		45.5		2 5	
Beryllium	7440417	_	v	0.25	ν	0.33	v	0.24		0.28		-		2	
Cadmum	7440439	77	v	0.72	v	0.97	v	89	u	2		10			
Chromium	16065831	\$9600	_	262		309.3		58.0	,	14.		302		500	
Hezavaleni Chromium	18540299		_									6		2	
Lead	7439921	678 /GW	_	16.8		10.3		23.8		22.05		24.8		410	AL.
Mercury	7439976	3.7		0.13	_	0.16	v	90.0		5.7		12			
Nickel	7440020	18.6		3.2		2.4		979		5.63	_	15.4		1	
Selenium	7782492 <	<u>6</u>	v	0.35	y	0.47	v	0.33	v	96.0	v	0.30		,	ALC:
Cilma	7445334	2.4	v	200	٧		,		,		,		J	3	

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Comparison of Subsurface Soil Data in Area 3B to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pileger Tannery - Waukegan, Illinois Commonwealth Edison Company

Samule ID Number		SB-15B		SB-16B	H	SB	SB-17B	Ľ	SB-18B	SB	58-198	SB-56B	88-60B	
redound Clehome S. A.R.					_						_	950182005	950188014	
Depth	ş	2-4		7	_	N	24	•	1,53,5	••	2	?	7	
Phase (Phase I	_	Phasel		Phase	_	Pha	Phase		Phase	モ	Phase I	Phase II	Phase II	
Samula Trace		nvestlaation	_	nvestigation	_	Invest	investigation	hva	hvestigation	Inves	Investigation	Investigation	Investigation	
In-PlaceRemoved	_	In-Place		in-Place			In-Place	_	In-Place	Ξ	In-Place	In-Place	In-Place	
Soil Type		Subsurface	(S)	Subsurface		Subst	Subsurface	Su	Subsurface	Sub	Subsurface	Subsurface	Subsurface	
An		Area 3B		Area 38	_	Ame	Ansa 3B	_	Area 3B	An	Area 3B	Area 3B	Area 38	
CAS No.					-									
						[			6		978			
nthracene		0.40		970	-	3 8	•	, ,		, ,	0.48			
		0.39		500								0000		
		2						<u> </u>	200			\$60.0		
Dene		0.39		0.11	_		, .	<i>,</i> ,	2 6	, ,	170	1000		
		0.39		0.00			•	, ,	500					
	93395	0.19	v (	0.53	<u>v v</u>			v v	2 5	<u>/ v</u>	0.48	600 V V		
1		S.		65	1	1				l				
te Compounds (mg/Kg)				-			•	1	2000		2000	¥.X		
	v.	0.0021		0.073	v			<u>,                                     </u>	0.0020	5 G	0.0020	47		
or Epoxide 10			v	0.0073	_	0.032	ł		U.0025		0700	\$ 3		
Dieldrin 60571		0.12 /GW		0.038	_	5	AÇA 1	_	0.021	5 i	10001	<b>V</b>		
4,4".DDT 502	S0293 < 0.	0.0041	v	0.014	۲	0.0052	22	V	0.005	ا ا	0.0051	¥Σ		
	Ş	"		3.3		0.062		v	900	v	0.051	0.08		_
				1		3	•		0.00					_
	v	0.0041		77		1	. 1	, ,	3 5	, c	1300	2 5		
Aroclor - 1260 1336160	v	0.0041	v	0.14	<u>v</u>	40052	7	v_	3 !			7 6		•
Total PCBs	_	7.4		3.4	7	7			2		Q	7.1		
Inorganic Compounds (mg/Kg)					_				;		-;		**	
Antimony 7440360	> 090	3.2	v	4.5	<u>v_</u>	4,2		v	<del>1</del> .	v	7		Y i	
Arsenic 7440382	382	3,6		5.7		13.6	- 1	_	20.5		2.5		3 1	
Barium 7440393		46.1		<u>2</u>		2140	NO.	_	2		7		3	
Beryllium 7440417		0,34		N.		860	60		n	v	0.31		¥.	
	v	0.71		2.6		7.			3.1	v	60		₹ ;	
_	153	9'09		1330		1950	9		161		151		••	
Hexavalent Chromium 18540299	567							_					1	_
Lead 7439921	126	1610 ACW		B6.4 AC	/GW	394	A VCW	_	30.9		£5		1000 VCW	_
Mercury 7439976	926	0.1		4		33	_		0.35	v	800		32	
Nickel 7440020	020	5.9		11		4	_		324		7		YY.	
	7782492 <	0.34	v	0.46		1.7	1		0.53	v	0.43		ı	_
	440224	0.52	v	27.0	_	7		v	0.65		0.65		760 /GW	_

Comparison of Subsurface Soil Data in Area 3B to Tier 1 and Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Route Former Griess-Pfleger Tennery - Waukegan, Illinois Commonwealth Edison Company

			9		MW-64
IEA Sam	EA Sample ID Number	950182020	2	_	550211803
	Depth	7			7
ā.	Phase IPhase II	Phase II	_		Phase II
	Sample Type	Investigation	- CO	<u> </u>	Investigation
	In-Place/Removed	In-Place	_		In-Place
	Soll Type	Subsurface	8	67	Subsurface
	Acea	Arra 38			Arms 38
	CAS No.				
CPAHs (mg/Kg)			Γ	L	
Benzo(a)anthracene	\$6553 <	0.33		v	0.39
Chrysene	214019	0.33		v	010
Bertzo(b)fluoranthene	705992	033	_	v	01.0
Benzo(k) fluoranthene	> 07019	0.33	_	v	0.39
Велго(в)рутеле	\$032B <	0.33		v	0.10
Indexo(1,2,3-ed)pyreac	>   261.61	0.33	ľ	v	0.39
Dibenzo(s.h)znthracene	53703	0.33		v	0.19
Proticide Compounds (mg/Kg)	L		Γ		
Aldrin	309002 <	0.0017		٧	0000
Heptachlor Epoxide	1024573 <	0.0017		v	0000
Dieldrin	> 12509	0.0033		v	9000
4,4*-DDT	> 20203	5,000	_	Ų	500
PCBs (mg/Kg)			T	l	
Aroclor - 1248	1336363 <	0.033		v	0.04
Aroclor - 1254	1336363	0.82		v	0.04
Aroclor - 1260	1336363	0.26		v	0.04
Total PCBs		1.08			ę
Inorganic Compounds (mg/Kg)	UKE		Γ		
Antimony	7440360	NA		٧	900
Arrenic	7440312	5.4	l		1.2 B
Burium	7440393	280	ı		
Beryllium	7440417	NA	Ī	v	
Cadmium	7440439	71			0 19 B
Chromium	16065131	0091	Ī		
Hexavalent Chromium	18540299 <	<u>6.</u>	Ī		¥
Lead	7439921	700	<u>₹</u>		1
Mercury	7439976	35 /	چ (	v	0.11
Nickel	2440020	AN			2.5 B
Selenium	7782492 <	2.4		v	_
Chart	TEAMORE	2.00	ě	v	81.0





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Table 21 Tier 1 and Tier 2 Screening Values

Constituent of Interest VOCs Accione 2-Butanone Carbon disuble Methylene Chioride Toluene Trichloroethene SVOCs PAIIs Accesshibytene Accesshibytene Accesshibytene Accesshibytene Accesshibytene Benzo(s)/muranihene Benzo(s)/muranihene Benzo(s)/muranihene Benzo(s)/muranihene Benzo(s)/muranihene Benzo(s)/muranihene Benzo(s)/muranihene Benzo(s)/muranihene Benzo(s)/muranihene Benzo(s)/muranihene Benzo(s)/muranihene Dibenzofuran Thoranihene	CAS No. Value  67641 78933 75150 75062 108683 79018  83329 208968 120127 56553 205992 207069 50328 191242 86748 218019 53703 112649 206440 86737 193395 91576 91203 85018 129000 117817 84742 87865	Industrist/C Ingestion (mg/kg)  200000 1000000 - 200000 780 410000 520  120000 610000 8 8 78 0.8 61000 - 200 0.8 8200 - 82000 82000 82000 81000 - 41000 - 61000 - 61000 - 61000 - 61000 - 61000 - 61000 - 61000 - 61000 - 61000 - 61000 - 61000 - 61000 -	Inhalation (mg/kg)  1000000 220000 * 22000 * 24 6550	Construction (mg/kg)  200000 410000 20000 12000 12000 12000 12000 12000 1200 1200 1200 170 170 170 1700 170	In Worker Inhalation (mg/kg)  100000 140 9 34 42 12	Soil Component Groundwater Ingestion Rout  16 17 32 0.081 12 0.06  570 30 12000 41 128 49 209 32000 12 15 4300 650 15 4300 650
VOCs Acetone Acetone Carbon disultide Methylene Chioride Toluene Trichicopethene SVOCs FAHs Acenaphthene Acenaphthene Acenaphthene Benzo(a) historanthene Benzo(b) fisoranthene Benzo(b) fisoranthene Benzo(b) prene Benzo(b) prene Benzo(b) prene Benzo(c) historanthene Benzo(c) historanthene Benzo(c) prene Be	67641 78933 75150 75092 108883 79018 83329 208968 120127 56553 205992 207089 50328 191242 86748 218019 53703 132649 208440 86737 193395 91576 91203 85018 129000	(mg/kg)  200000 100000 - 200000 780 410000 520  120000 61000 - 610000 8 B 78 0.8 61000 - 290 780 0.8 8200 - 82000 82000 82000 82000 82000 81000 - 41000 -	(mg/kg) 100000 22000 720 24 650 8.9	(mg/kg)  200000 410000 20000 12000 410000 12000  12000 610000 170 170 170 170 170 1700 177 61000 62000 17000 17 820 82000 82000	100000 1100 - 9 34 42 12	\$\text{lngestion Rout}\$  16 17 32 0.081 12 0.06  570 30 12000 41 128 49 209 32000 12 160 2 15 4300 680
VOCs Acetone Acetone Carbon disultide Methylene Chioride Toluene Trichicopethene SVOCs FAHs Acenaphthene Acenaphthene Acenaphthene Benzo(a) historanthene Benzo(b) fisoranthene Benzo(b) fisoranthene Benzo(b) prene Benzo(b) prene Benzo(b) prene Benzo(c) historanthene Benzo(c) historanthene Benzo(c) prene Be	67641 78933 75150 75092 108883 79018 83329 208968 120127 56553 205992 207089 50328 191242 86748 218019 53703 132649 208440 86737 193395 91576 91203 85018 129000	200000 1000000 780 410000 520 120000 610000 8 8 78 0.8 61000 290 780 0.5 8200 82000 82000 82000 81000 41000 61000 61000 61000 610000 610000 61000 61000 61000 61000 61000 61000 61000 61000 61000 61000 61000 61000 61000 61000 61000 610000 610000 610000 610000 610000 61000 610000 61000 61000 61000 6	100000 22000 ° 720 24 650 8.9	200000 410000 20000 12000 410000 410000 1200  12000 610000 610000 170 170 170 1700 177 61000 6200 17000 17 520 82000 82000 82000	100000 140 ** 9 34 42 12	570 32 0.081 12 0.06 570 30 12000 41 128 49 209 32000 12 15 49 3000 2 15 49
Acetons 2-Butanone Carbon disultide Methylene Chioride Tolvene Trichlorpethene SYOCs A-Alfa Acenaphthene Acenaphthene Benzole philosophitylene Ben	78933 78150 75092 108883 79018 83329 208968 120127 56583 205992 207089 50328 191242 86748 218019 53703 132649 206440 86737 193395 91576 91203 85018 129000	1000000 - 200000 - 780 - 410000 - 520 - 6100000 - 610000 - 610000 - 610000 - 610000 - 610000 - 610000 - 6100000 - 610000 - 610000 - 610000 - 610000 - 610000 - 6100000 - 6100000 - 610000 - 610000 - 610000 - 610000 - 610000 - 610000 - 6100	22000 ° 720 24 650 8.8	12000 - 12000 - 12000 - 12000 - 12000 - 12000 - 12000 - 170 - 170 - 170 - 1700 - 170000 - 17000 - 17000 - 17000 - 17000 - 17000 - 17000 - 17000 - 1700	140 ° 9 34 42 12 12 12 12 12 12 12 12 12 12 12 12 12	17 32 0.081 12 0.06 570 30 12000 41 11 128 49 209 32000 12 160 2 15 4300 680
2-Butanone Carbon disultide Wethylene Chioride Foluene Inthiorpethene SVOCs AAHs Acenaphthene Acenaphthene Acenaphthene Acenaphthylene Anthiacone Benzo(a)pirturanthene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(a)hjperylene Benzo(a)hjperylene Benzo(a)hjperylene Benzo(a)hjperylene Benzo(a)hjperylene Benzo(a)hjperylene Benzo(a)hjperylene Benzo(a)hje	78933 78150 75092 108883 79018 83329 208968 120127 56583 205992 207089 50328 191242 86748 218019 53703 132649 206440 86737 193395 91576 91203 85018 129000	1000000 - 200000 - 780 - 410000 - 520 - 6100000 - 610000 - 610000 - 610000 - 610000 - 610000 - 610000 - 6100000 - 610000 - 610000 - 610000 - 610000 - 610000 - 6100000 - 6100000 - 610000 - 610000 - 610000 - 610000 - 610000 - 610000 - 6100	22000 ° 720 24 650 8.8	12000 - 12000 - 12000 - 12000 - 12000 - 12000 - 12000 - 170 - 170 - 170 - 1700 - 170000 - 17000 - 17000 - 17000 - 17000 - 17000 - 17000 - 17000 - 1700	140 ° 9 34 42 12 12 12 12 12 12 12 12 12 12 12 12 12	17 32 0.081 12 0.06 570 30 12000 41 11 128 49 209 32000 12 160 2 15 4300 680
Carbon disultide Methylene Chloride Foluene Frichlorgethene Fr	75150 75062 108883 79018 83329 208968 120127 56553 205992 207069 50328 191242 86748 218019 53703 112649 206440 86737 193395 91576 91203 85018 129000	200000 780 410000 520 120000 610000 8 8 78 0.8 61000 • 200 780 0.8 8200 • 82000 82000 82000 81000 •	720 24 650 8.9	20000 12000 420000 12000 12000 12000 12000 17000 170 1700 170	9 34 42 12	32 0.881 12 0.06 570 30 12000 41 126 49 209 32000 12 160 2 15 4300 680
Methylene Chioride Coluene Frichlorpethene Frichlorpethene FYOCS FAHS Leenaphthylene Leenaphthylene Leenaphthylene Benzo(s)anityscene Benzo(s)anityscene Benzo(s)anityscene Benzo(s)pyrene Benzo(s,hiperylene Benzo(s,hiperylene Benzo(s,hiperylene Benzo(s,hiperylene Benzo(s,hiperylene Benzo(s,hiperylene Benzo(s,hiperylene Benzo(s,hiperylene Benzo(s,hiperylene Benzo(s,hiperylene Benzo(s,hiperylene Benzo(s,hiperylene Benzo(s,hiperylene Benzo(s,hiperylene Benzo(s,hiperylene Benzo(s,hiperylene Benzo(s,hiperylene) Benzo(s,hiperyl	75082 108883 79018 83329 208968 120127 56553 205992 207069 50328 191242 66740 218019 53703 132649 206440 86737 193385 91576 91203 85018 129000	780 410000 520 120000 610000 - 610000 - 8 B 78 0.8 610000 - 290 780 0.5 82000 - 82000 - 82000 - 810000 - 410000 -	24 650 8.9	12000 410000 1200 1200 61000 61000 170 170 170 170 1700 17 61000 6200 17000 17 820 82000 82000	34 42 12 12	0.081 12 0.06 570 300 12000 41 128 49 209 32000 12 180 2 15 4300 680
Toluene Troluene Troluene Toluene SVOCs PAHs Acenaphthene Acenaphthylene Acenaphthylene Acenaphthylene Acenaphthylene Acenaphthylene Benzo(a)gunthyscene Benzo(b)gunthyscene Benzo(b)grene Benzo(b)grene Benzo(b)grene Benzo(b)grene Benzo(a)grene Benzo(a)grene Benzo(a)grene Benzo(a)grene Benzo(a)grene Benzo(a)grene Benzo(b)gre	108883 79018 83329 208968 120127 56553 205992 207089 50328 191242 86748 218019 53703 132649 206440 86737 193395 91576 91203 85018 129000	410000 520 120000 610000 - 610000 - 8 B 78 0.8 61000 - 290 780 0.8 8200 - 82000 -	650	12000 1200 12000 12000 12000 1700 170 170 170 1700 177 61000 177 820 8200 17000 1700 17000 177 820 82000	42 12	12 0.06 570 30 12000 41 128 49 209 32000 12 160 2 15 4300 680
Inchlorpethene SYOCs FAHS Acenaphthene Acenaphthylene Achtracene Benzolejanitrscene Benzolejhtoranthene Benzolejhtoranthene Benzolejhtoranthene Benzolejhtoranthene Benzolejhtoranthene Benzolejhtoranthene Benzolejhtoranthene Benzolejhtoranthene Benzolejhtoranthene Benzolejhtoranthene Benzolejhtoranthene Benzolejhtoranthene Benzolejhtoranthene Benzolejhtoranthene Benzo	79018  83329 208968 120127 \$6553 205992 207089 \$0328 191242 86748 218019 \$53703 132649 206440 86737 193395 91576 91203 85018 129000 117817 84742	120000 61000 61000 61000 610000 610000 610000 610000 610000 610000 610000 610000 610000 610000 6		12000 120000 610000 610000 170 170 1700 17 61000 - 6200 17000 17 820 - 82000 82000 82000	12	0.06 570 30 12000 41 126 49 209 32000 12 180 2 15 4300 680
SVOCs ALL ACENSPHENE ACENSPHENE ACENSPHENE ACENSPHENE ACENSPHENE BERECOPE B	83329 208968 120127 56553 205992 207089 50328 191242 86748 218019 53703 132649 208440 86737 193395 91576 91203 85018 129000	120000 610000 ° 610000 ° 8 B 78 0.8 61000 ° 290 780 0.5 8200 ° 82000 82000 8		120000 61000 ° 610000 ° 170 170 170 170 177 61000 ° 6200 17000 17 820 ° 82000 82000		570 30 12000 41 128 49 209 32000 12 160 2 15 4300 880
AALI Aconaphibene Aconaphibene Aconaphibene Aconaphibene Anthracone Benzo(s)Anthracone Benzo(s)B	208968 120127 56553 205992 207089 50328 191242 66748 218019 53703 132649 206440 86737 193395 91576 91203 85018 129000	61000 ° 610000 ° 8 8 8 78 0.8 61000 ° 290 780 0.8 8200 ° 82000 82000 6 61000 ° 61000 ° 61000 ° 61000 ° 61000 ° 61000 ° 61000 ° 610000 ° 61		61000 ° 610000 170 170 170 170 170 177 61000 ° 6200 17000 17 820 ° 82000 82000		30 12000 41 128 49 209 32000 12 160 2 15 4300 880
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Acenaphthylene untivacone Senzo(s)antivacene Senzo(s)fluoranthene Senzo(s)fluoranthene Senzo(s)fluoranthene Senzo(s)fluoranthene Senzo(s)fluoranthene Senzo(s)fluoranthene Senzo(s)fluoranthene Shenzo(s)fluoranthene Shenzo	208968 120127 56553 205992 207089 50328 191242 66748 218019 53703 132649 206440 86737 193395 91576 91203 85018 129000	61000 ° 610000 ° 8 8 8 78 0.8 61000 ° 290 780 0.8 8200 ° 82000 82000 6 61000 ° 61000 ° 61000 ° 61000 ° 61000 ° 61000 ° 61000 ° 610000 ° 61		61000 ° 610000 170 170 170 170 170 177 61000 ° 6200 17000 17 820 ° 82000 82000		30 12000 41 128 49 209 32000 12 160 2 15 4300 880
Anthracene Senzo(s) smitracene Senzo(s) filoranithene Senzo(s) filoranithene Senzo(s) filoranithene Senzo(s) filoranithene Senzo(s) filoranithene Senzo(s) filoranithene Senzo(s) filoranithene Sibe	120127 \$6553 205992 207089 \$0328 191242 86748 218019 \$3703 132649 206440 86737 193395 91576 91203 85018 129000 117817 84742	610000 8 8 78 0.8 61000 ° 290 780 0.8 8200 ° 82000 82000 82000 61000 ° 61000 °		610000 170 170 170 1700 177 61000 - 6200 17000 17 820 - 82000 82000		12000 441 126 49 209 32000 12 160 2 15 4300 680
Senzo(s)anihracene Senzo(s)ifuoranihene Senzo(s)ifuoranihene Senzo(s)pyrene Senzo(s)pyrene Senzo(s)pyrene Senzo(s)pyrene Senzo(s)pyrene Senzo(s)pyrene Senzo(s)pyrene Senzo(s)shanihracene Siberzo(s,h)anihracene $6553 205992 207069 \$0328 191242 86748 218019 53703 132649 206440 86737 193385 91576 91203 85018 129000	8 8 9 78 0.8 61000 • 2200 760 0.5 8200 82000 82000 81000 • 41000 • 110000 • 110000 • 110000 • 110000 • 110000		170 170 1700 17 6100 - 6200 17000 17 820 - 82000 82000		41 126 49 209 32000 12 160 2 15 4300 880	
Jenzo(h)fluoranthene Jenzo(h)fluoranthene Jenzo(h)fluoranthene Jenzo(h)fluoranthene Jenzo(h)fluoranthene Jenzo(h)fluoranthene Jenzo(h)fluoranthene Jenzone Jen	205992 207069 50328 191242 66748 218019 53703 132649 206440 86737 193395 91576 91203 85018 129000	8 78 0.8 61000 ° 290 780 0.8 8200 ° 82000 82000 6 81000 ° 41000 ° 1000	-	170 1700 17 61000 - 6200 17000 17 820 - 82000 82000 170		126 49 209 32000 12 160 2 15 4300 580
ienzo(i)/kuraanhene erzo(a), iliperylene arbazole hitysene iliberzo(a,h)anthracene iliberzo(a,h)anthra	207089 50328 191242 86748 218019 53703 132649 206440 86737 193395 91576 91203 85018 129000 117817 84742	78 0.8 61000 ° 290 780 0.8 8200 ° 82000 82000 82000 81000 ° 41000 °		1700 177 61000 - 8200 17000 17 820 - 82000 82000		49 209 32000 12 150 2 15 4300 660
ierzofg, it. Il perylene lazode it. Il perylene lazode it. Il perylene lazode it. Il perylene lazode it. Il perylene lazode it. Il perylene lazode it. Il perylene it. Il pery	50328 191242 86748 218019 53703 132649 206440 86737 193395 91576 91203 85018 129000	0.8 61000 ° 289 780 0.8 8200 ° 82000 82000 81000 ° 41000 °		17 61000 ° 6200 17000 17 8200 ° 82000 82000		209 32000 12 160 2 15 4300 660
ierzofg, it. Il perylene lazode it. Il perylene lazode it. Il perylene lazode it. Il perylene lazode it. Il perylene lazode it. Il perylene lazode it. Il perylene it. Il pery	191242 66748 218019 53703 132649 206440 86737 193395 91576 91203 85018 129000 117817 64742	\$1000 • 200 780 0.8 8200 • 82000 82000 • \$10000 • \$10000 • \$10000 • \$10000 • \$10000 • \$10000 • \$10000 • \$100000 • \$100000 • \$100000 • \$100000 • \$10000	-	61000 - 6200 17000 17 820 - 82000 82000 170	-	32000 12 160 2 15 4300 660
arbazole hhysene hhysene hhysene hhysene hhomoduran huoranhene huorane	86748 218019 53703 132649 208440 86737 193395 91576 91203 85018 129000	290 780 0.8 8290 * 82000 82000 8 61000 * 41000 61000 *	1	8200 17000 17 820 • 82000 82000	=======================================	12 160 2 15 4300 660
hysens Necro(a.h)anthracene Necro(a.h)anthracene Necrons Necro	218019 53703 132649 206440 86737 193395 91576 91203 85018 129000	780 9.8 8200 * 82000 82000 8 61000 * 41000 61000 *	-: 	17000 17 820 • 82000 82000 170	= =	160 2 15 4300 660
Nicerco(a,h)anthracene interactions to the state of the s	\$3703 132649 206440 86737 193395 91576 91203 85018 129000 117817 84742	9.8 8290 * 82000 82000 8 61000 * 41000 61000 *		17 820 * 82000 82000 170	= =	2 15 4300 660
ribeasofuras Lucraniens Lucraniens Lucraniens Lucraniens Lucraniens Lucraniens Lucraniens Juden (1,2,3-c,d)pyrens Juden (1,2,3-c,d)pyrens Juden (1,3,3-c,d)pyrens Juden (1,3,3-c,d)pyrens Juden (1,3,3-c,d)pyrens Juden (1,3-c,d)pyrens Juden (1,3	132649 208440 88737 193395 91576 91203 85018 129000 117897 84742	8200 * 82000 82000 8 8 1000 * 41000 61000 *	-	820 82000 82000 170	= =	15 4300 660
luoranhene luorane luorane luorane Methylamphhalese aphibalene henanhrane yrane ther SVOCa SICZ-elhylinenyl)phihalate i-h-buty phihalate i-h-buty phihalate entachkorophenol 4,5-Trichkorophenol entickee drin sia-BHC pha-Chlordene lumma-Chlordene	206440 86737 193395 91576 91203 85018 129000 117817 84742	82000 82000 8 61000 • 41000 61000 •		82000 82000 170	== =	4300 660
lucrene deno(1,2,3-c,d)pyrene Methylaphibalese aphibalene hersanthrene prane ther SVOCs SSZ-ethylheayl)phibalate Fr-buhyl phibalate enholorophenol 4,5-frichlorophenol drin pla-8HC pha-Chlordsne prane-Chlordsne	86737 193395 91576 91203 85018 129000	82000 8 61000 41000 61000	=	82000 170		660
deno(1,2,3-c,d)pyrena Methylinsphibalena aphibalena penanthrena yrene ther SYOCs ts(2-elhylhenyl)phibalate t-h-butyl phibalate t-h-butyl phibalate antischkorophenol 4,5-Trichlorophenol pia-BHC pha-Chlordane	193395 91576 91203 85018 129000	8 61000 • 41000 61000 •	-	170		
Methylmphbalers aphthalens aphthalens aphthalens hersanbrens yeare ther SVOCs (SC-ebylmenyl)phthalats (+-butyl phthalats (+-butyl phthalats entachkorophenol 4,5-Trichlorophenol 4,5-Trichlorophenol 6,6-Butyl phthalats (+-butyl phthalats entachkorophenol 6,6-Butyl phthalats (+-butyl phthalats entack)phthalats (+-butyl	91576 91203 85018 129000 117817 84742	61000 ° 41000 61000 °	-		-	
aphthalene henanthrena yrene tiker SVOCs sick-ellysheays)phthalate i-n-buhyi phthalate entachiorophenoi 4,5-frichlorophenoi gidn esta SHC pha-Chlordene anna-Chlordene	91203 85018 129000 117817 84742	41000 61000 •	270	ו" שטום ו		
henanthrene yrane Ider SVOCs Ider SVOCs Ider SVOCs Ider	85018 129000 117817 84742	61000 *	2/0		1.8	58
yrene ther SVOCs SC2-thylhexyl)phthalate in-buly phthalate entachiorophenol 4,5-fichiorophenol suicides drin sia-8HC pha-Chlordene turma-Chlordane	129000 117817 84742			4100 81000 *		12
ther SYOCs SIZ-ethymenylyphthalate silca-thymenylyphthalate shlachlorophenol 4,5-Trichlorophenol strictides drin sla-8HC phs-Chlordene umma-Chlordene	117817 84742	01000	-	61000 °	_	280
ts/2-e/hy/hexyl/jphthalate i-r-butyl phthalate entschkorphenol 4,5-Trichlorophenol zitickie drin sla-BHC pha-Chlordene zima-Chlordane	84742		-	81000	-	4200
in-buhi phihalate entachtorophenot 4,5-Trichtorophenot erticides drin eta-BHC pha-Chlordene urma-Chlordane	84742	410	31000	4100	31000	
entachiorophenoi 4,5-Trichlorophenoi zutidides idrin Ha-Chlordene zuma-Chlordene		200000	2300	200000		3600
4,S-Trichlorophenol stitcides idrin ste-BHC pha-Chlordene smma-Chlordene			2300		2300	2300
sriicides Idrin els-8HC phs-Chlordene Imma-Chlordene	95954	200000	-	520 200000	**	0.43
idrin eta-8HC pha-Chlordane amma-Chlordana	63834	200000		200000	-	64
eta-BHC  pha-Chlordane tmma-Chlordana	309002	0.3	6.6		9.3	
pha-Chlordane amma-Chlordane	319857	32 .	12 *	6.1		0.5
amma-Chlordane	57749	1.6	140	100	15 °	0.065
	57749	1.6	140			10
DD	72548	24		100	22	10
DE	72559	17	-	520 370	-	16
OT	50293	17	1500		7400	54
ieldrin	60571	0,4	1500	100	2100	609,5
ndrin	72208	610		7.8	3.1	0.11
ndosultan.	115297	12000	_	51 1200	-	11
eptachlor	76448				-	18
optachlor epoxide	1024573	.1	11	28	16	23
ethoxychlor	72435	0.5	9.2	2.7	13	0.7
CB:	12133	10000		1000		160
roclor - 1248	1336363		•			
racior - 1254	1336363					
oclor - 1260	1336363					
tal PCBs	1338383	1				
ttab	1030303	_ 1		1		
umicum	7429905	_	74			
GITORY	7440360	820	//A = =	82	-	= =
senic	7440382	13	1200		25000	5
dum	7440393	140000	1200 910000	61 14000	25000 870000	31
rytium	7440417	4100				2100
dmium	7440439	2000	2100	410	44000 50000	8000
leium	7440702	2000	2600	200	28000	430
romium, lon, kivalent	16065831	1000000	_	2,200	-	-
romium, fon, hexavalent	18540299		-	310000		
half	7440484	6100	420	4100	8600	28
0044	711000	120000	-	12000	-	
aujqe Pha	7440508 57125	82000	-	8200	**	330000
D 110E	15438310	41000	-	4100	-	} 40
ad	15438310 7439921	, <del></del>	-	400	-	-
goesiwa	7439921	400	-	400		36
NOSNESE CHEMICA	7439955	05000	54555		PT00	(
ALTINA Militaria		96000	91000	9600	8700	' =
kel	7439976	610	540000	<b>61</b>	52000	
assium	7440020	41000	21000	4100	440000	3800
assium lenium	7440097		-	-	-	-
renium; /6/	7782492	10000	-	1000	-	2.4
ver Swn	7440224	10000	-	1000	-	110
own allum	7440235		-	T.=	-	l
auum nadium	7440280	160		160	-	3.8
raediym C	7440622 7440666	14000 610000	-	1400 61000		990 53000

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	Sample Name	MW-1 05/13/02	MW-1A 05/13/02	MW-2 05/13/02	MW-3 05/13/02	MW-4 05/10/02	MW-5 05/13/02
	Sample Type Site CAS No.		Investigation	Investigation Investigation Tan Tan	<u>=</u>	Investigation	Investigation Tan
Total Metals (mg/L)							-
Antimony	7440360	0.0061	<0.003	ľ	<0.003	<0.003	<0.003
Arsenic	7440382	0.93		0.025	< 0.010	< 0.010	×
Barium	7440393	1	1	1	1	1	
Calcium	7440702	310	230	310	240	140	300
Chromium	18540299	ı	1	I	1	1	1
Iron	15438310	< 0.050	< 0.25	1.2	2.0	4.7	6.6
Lead	7439921	•	•	1	1	1	
agnesium	7439954	77	46	78	82	30	49
Manganese	7439965	0.080	0.38	0.47	0.29	0.43	0.84
Mercury	7439976	ı	1	_	1	:	1
Selenium	7782492	1	1	1		l	1
Silver	7440224	7	ı	1	ı		
Challium	7440280	:	ı	•	ı	•	-
Zinc	7440666		1		1	1	1
Water Quality Parameter (mg/L)	(mg/L)			•			
Solids. Total Dissolved (TDS)	S	1600	1000	1500	1500	006	1200

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Summary of Groundwater Data (Continued)

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	Sample Name	MW-5A	MW-6	MW-7	MW-7A	MW-8	05/11/02
	Sample Type	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
	CAS No.		======================================	packground	Background	ne r	
Total Metals (mg/L)							
Antimony	7440360	0.0036	<0.003	<0.003	<0.003	0.0035	<0.003
Arsenic	7440382	< 0.010	< 0.010	< 0.010	< 0.010	0.95	0.014
Barium	7440393	•	:	1	1	7	
Calcium	7440702	210	240	440	140	180	170
Chromium	18540299	•	1	į	:	:	
Iron	15438310	1.4	< 0.050	0.51	4.7	2.4	3.4
Lead	7439921		1	1	1	;	
Magnesium	7439954	198	42	29	46	70	39
Manganese	7439965	0.55	1.0	0.44	0.67	0.13	0.58
Mercury	7439976	•	1	1	1	1	
Selenium	7782492	1	1	i	1	1	
Silver	7440224	•	1	i	:		
Thallium	7440280	1	1	•	1	1	ī
Zinc	7440666	-	:	1	T		7
Water Quality Parameter (n	(mg/L)						
Solids, Total Dissolved (TDS)		1700	1500	2000	1100	1100	1500

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	Sample Name Date Sample Type	MW-10 05/09/02 Investigation Tan	MW-11 05/09/02 Investigation Tan	MW-12 05/09/02 Investigation Tan	MW-13 05/09/02 Investigation Tan	MW-14 05/09/02 Investigation Tan
Total Metale (mad.)	CADIMO					
Antimony	7440360	<0.003	<0.003	<0.003	<0.003	<0.003
Arsenic	7440382	0.45	0.73	0.023	< 0.010	0.39
Barium	7440393	1	1	;	ı	ı
Calcium	7440702	110	210	330	55	160
Chromium	18540299	1	l	1	•	•
Iron	15438310	5.3	2.4	4.6	0.083	2.1
Lead	7439921	1	1	1	1	1
Magnesium	7439954	23	63	17	3.7	58
Manganese	7439965	0.18	0.43	0.26	0.013	0.15
Mercury	7439976	1	•	1	•	
Selenium	7782492	1	1		1	l
Silver	7440224	1	1	1	1	1
Thallium	7440280	1	1	1		1
Zinc	7440666	-	1	1	`1	
Water Quality Parameter (mg/L)	(mg/L)	П				
Solids, Total Dissolved (TDS)	(S)	260	1100	1600	200	870

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Summary of Groundwater Data (Continued)

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	Sample Name Date Sample Type	Sample Name MW-101 (MW-4 dup)  Date 05/10/02  Sample Type Investigation  Site Tan	MW-102 (MW-6 dup) 05/10/02 Investigation Tan	MW-GB2 05/10/02 Investigation GB	MW-GB5 05/10/02 Investigation GB
Total Metals (mo/L)					
Antimony	7440360	<0.003	<0.003	<0.003	<0.003
Arsenic	7440382		< 0.010	< 0.010	0.0085B
Barium	7440393	•	1		'
Calcium	7440702	140	230	92	110
Chromium	18540299			I	•
Iron	15438310	5.3	< 0.050	2.4	2.5
Lead	7439921		1	1	
Magnesium	7439954	93	40	37	32
Manganese	7439965	0.44	86.0	0.26	0.29
Mercury	7439976			1	•
Selenium	7782492	1			•
Silver	7440224		1	1	
Thallium	7440280		1	1	
Zinc	7440666		-	_	
Water Quality Parameter (mg/L)	er (mg/L)				
Solids, Total Dissolved (TDS)	TDS)	1098	1100	570	040

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Table 22

Sample Name  Date  Sample Type  Site  CAS No.  7440360 < 0.067  7440382  7440393  0.008		MW-GB2 Mar-98 Investigation GB 0.067		MW-GB3 Mar-98 Investigation GB 0.067		MW-GB4 Mar-98 Investigation GB		MW-GB5 Mar-98 Investigation GB
)   v	vv	0.067	lv v	0.067	_  v	2900		8
_	V V V	0.067	V v	0.067	<sub>\</sub>	0.067	Ц	
v	v v v	0.067	V V	0.067	V_	0.067		
	v v	0.002	V	0.002	_		V	0.067
	v	2200	-		_	0.003	v	0.002
		0000		0.16	_	0.121		0.17
7440702 NA	_	NA		NA V	_	NA		X
8540299 < 0.011	v	0.011	v	0.011	v	0.011	٧	0.011
1.88		14.8		80.3		2.88		4.9
7439921 < 0.003	ν	0.003	v	0.003	V	0.003	v	0.003
7		NA		NA	_	NA		×
		0.414		9.0		0.452		0.3
v	٧	0.0002	v	0.0002	٧	0.0002	v	0.0002
	V	0.003	v	0.003	v	0.003	v	0.003
	V	0.011	v	0.011	v	0.011	v	0.011
	٧	0.002	v	0.002	V	0.002	v	0.002
7440666 < 0.022	٧	0.022		0.058		0.091	V	0.022
NA	L	NA	L	NA		NA	L	NA
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	Sample Name Date	MW-GB6 Mar-98		MW-GB7 Mar-98		MW-1 Oct-97		MW-1A Oct-97		MW-2 Oct-97
	Sample Type Site	Investigation GB	ı	Investigation GB		Investigation Tan		Investigation Tan	<del></del>	Investigation Tan
Total Metals (m9/L)	CAS No.		_		_ _		_		1	
Antimony	7440360 <	0.067	\ <u>v</u>	0.067		0.029	<u>                                     </u>	0.028	-	0.038
Arsenic	7440382	0.002	v	0.002	_	1.3	٧	0.002		0.069
Ватічт	7440393	0.073		0.11	v	0.056	V	0.056	_	0.066
Calcium	7440702	NA		NA		NA		NA	_	Y'A
Chromium	18540299 <	0.011	V	0.011	v	0.011		0.02	v	0.011
Iron	15438310	8.5		7.8		1.3		0.092		2
Lead	7439921 <	0.003	٧	0.003	v	0.003	v	0.003	٧	0.003
Magnesium	7439954	AN		NA		NA		NA		NA
Manganese	7439965	0.35		0.49		0.38		0.99	_	0.28
Mercury	7439976 <	0.0002	٧	0.0002	v	0.0002	v	0.0002	٧	0.0002
Selenium	7782492 <	0.003	٧	0.003	v	0.0033		0.0033	V	0.0033
Silver	7440224 <	0.011	v	0.011	v	0.011	v	0.011	v	0.011
Thallium	7440280 <	0.002	٧	0.002	v	0.0022	V	0.0022	V	0.0022
Zinc	7440666 <	0.022	٧	0.022		0.048	v	0.022	٧	0.022
Water Quality Parameter (mg/L)	(mg/L)									
Solids, Total Dissolved (TDS)	(6	NA	L	NA	_	NA	L	NA	_	NA

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	N. disease	È		, and a		S. Charles				7 110%
	Sample Ivame Date	0ct-97		Oct-97		Oct-97		MW-54 Oct-97		0ct-97
	Sample Type Site	Investigation Tan		Investigation Tan		Investigation Tan		Investigation Tan		Investigation Tan
	CAS No.								_	
Fotal Metals (mg/L)	+10			1	L				_	
Antimony	7440360	0.033	_	0.049	L	0.036		0.035	L	0.053
Arsenic	7440382 <	0.002		0.0044		0.0038		0.0032	٧	0.002
Barium	7440393 <	0.056	_	0.097	V	0.056		0.1	٧	0.056
Calcium	7440702	NA	_	AN	_	NA		NA	_	NA
Chromium	18540299	0.011	v	0.011	٧	0.011	٧	0.011	_	0.013
ron	15438310	9.3	_	7.4	_	15	_	11	_	0.14
Lead	7439921 <	0.003	v	0.003	v	0.003	v	0.003	V	0.003
Magnesium	7439954	NA		NA	_	NA		NA		AN AN
Manganese	7439965	0.24		0.31		0.78		0.41	_	3.5
Vercury	7439976 <	0.0002	v	0.0002	٧	0.0002	٧	0.0002	V	0.0002
Selenium	7782492 <	0.0033	٧	0.0033	V	0.0033	v	0.0033	٧.	0.0033
Silver	7440224 <	0.011	v	0.011	٧	0.011	٧	0.011	٧	0.011
Thallium	7440280 <	0.0022	٧	0.0022	٧	0.0022	v	0.0022	V	0.0022
Zinc	7440666	0.059		0.16		0.1		0.024	_	0.46
Water Quality Parameter (mg/L)	/L)									
Solids, Total Dissolved (TDS)		Ϋ́	L	ΝĀ	Ļ	ΨN	_	ΝĀ	ŀ	NA

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Summary of Groundwater Data (Continued)

	+									
	Sample Name Date	MW-7 Oct-97		MW-7A Oct-97		MW-8 Oct-97		MW-9 Oct-97		MW-10 Oct-97
	Sample Type Site	Investigation Background		Investigation Background		Investigation Tan	Inv	Investigation Tan		Investigation Tau
Total Metals (mo/L)			1		Ļ				╀	
Antimony	7440360 <	0.028	V	0.028	v	0.028		0.039	v	0.028
Arsenic	7440382	0.076		0.0033		19.0		0.032		0.17
Barium	7440393	0.072	_	0.16	٧	0.056		0.088		0.065
Calcium	7440702	NA	_	NA	_	NA	į	NA	ļ	NA
Chromium	18540299 <	0.011		0.026	٧	0.011		0.012	v	0.011
Iron	15438310	5.4	4	5.9		33		9	_	3.3
Cead	7439921	0.0041	٧	0.003	٧	0.003	v	0.003	٧	0.003
fagnesium	7439954	NA		NA	_	NA		NA	_	NA
Manganese	7439965	0.45		1:1	_	0.11		0.26		0.085
fercury	7439976 <	0.0002	V	0.0002	٧	0.0002	v	0.0002	v	0.0002
Selenium	7782492	0.0068	٧	0.0033	٧	0.0033	v	0.0033	v	0.0033
Silver	7440224	0.056	٧	0.011	v	0.011	v	0.011	V	0.011
Thallium	7440280 <	0.0022	_	0.0029	V	0.0022		0.0022	v	0.0022
Zinc	7440666	0.032		0.096	v	0.022		0.068	<u> </u>	0.022
Water Quality Parameter (mg/	yL)									
Solide Total Dissolved (TDS)		ΨN	L	AN	<u> </u>	NA	_	NA	_	AN

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Table 22	1	Summary of Groundwater Data (Continued)	round	dwater Dat	a (C	ontinued)				
					19				-	
4	Sample Name Date	MW-11 Oct-97		MW-12 Oct-97		MW-13 Oct-97		MW-1T Nov-96		MW-1AT Nov-96
	Sample Type Site CAS No.	Investigation Tan		Investigation Tan		Investigation Tan	<del></del>	Investigation Tan		Investigation Tan
Total Metals (mg/L)					L		L		-	
Antimony .	7440360	0.029	V	0.028	L	0.044	_		-	
Arsenic	7440382	0.22	_	0.0025	V	0.002	_	1.39	V	0.003
Barium	7440393	0.056	v	0.056	٧	0.056	_	0.0378	_	0.021
Calcium	7440702	AN	_	NA		NA NA	_	NA		NA
Chromium	18540299		v	0.011	v	0.011	1	0.033	1	0.0059
Iron	15438310	0.73	į	1.4		0.42	_		1	
Lead	7439921		٧	0.003	v	0.003	_	0.0018	81	0.0013
Magnesium	7439954	NA		NA		NA		NA		NA
Manganese	7439965	0.14		0.27		0.19				
Mercury	7439976	0.0002	v	0.0002	v	0.0002	v	0.00003	V	0.00003
Selenium	7782492	0.0034	v	0.0033	v	0.0033	v	0.0014	V	0.0014
Silver	7440224	< 0.011	٧	0.011	٧	0.011	v	0.0007	٧	0.0007
Thallium	7440280			0.0025	v	0.0022	_			
Zinc	7440666			0.16		0.032			_	
Water Quality Parameter (m	(T/St									
Solids, Total Dissolved (TDS)		NA		NA		NA		NA	_	NA

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Summary of Groundwater Data (Continued)

	7				The second		_			
Ø	Sample Name	MW-2T		MW-3T		MW-4T		MW-5T		MW-SAT
01	Date Sample Type Site	Nov-96 Investigation Tan		Nov-96 Investigation Tan		Nov-96 Investigation Tan		Nov-96 Investigation Tan		Nov-96 Investigation Tan
	CAS No.		_		_				_	
Fotal Metals (mg/L)										
Antimony	7440360				_			,		
Tenic	7440382	0.0658	٧	0.0025 J	v	0.0028 J	v	0.0025 J	<u>v_</u>	0.0025 J
larium	7440393	0.1		0.0627	V	0.0993		0.0303		0.112
alcium	7440702	NA	l	NA		NA	W	YA Y		NA
Chromium	18540299	0.0139		0.0504		0.0024		0.05		0.0054
COL	15438310									
Lead	7439921 <	0.001		0.0016	V	0.001		0.0011	v	0.001
fagnesium	7439954	NA NA		NA		NA		NA		NA
Manganese	7439965								_	
Aercury	7439976 <	0.00005		0.00004	v	0.00004	V	0.00003	v	0.00003
elenium	7782492	0.0019	V	0.0014	v	0.0014	٧	0.0023	٧	0.0042
Silver	7440224	0.0007	v	0.0007	v	0.0007		0.0007	v	0.0007
Thallium	7440280						_		_	
Zinc	7440666				_					
Water Quality Parameter (mg/L)						1				
		NA	L	NA	L	NA		NA		¥Z

Table 22

			<u> </u>								
Sa	Sample Name	T9-WM		TC-AM		MW-7AT		MW-8T		MW-9T	
San	Sample Type	Investigation Tan		Investigation		Investigation		Investigation		Investigation	
	CAS No.		_	0		p	_	1			
			L				L		L		
	7440360		L		L				L		
	7440382	0.0025 J	٧	0.0025 J	v	0.0025 J		0.513		0.0487	_
	7440393	0.0446		0.0545		0.209		0.035		0.11	
	7440702	NA	_	NA		NA		NA		NA	
	18540299	0.0044		0.0015		0.0019		0.0242	1	0.006	
î	15438310				ï						
	7439921	0.001	٧	0.001		91000	v	0.001	٧	0.001	
	7439954	NA	_	NA		NA	_	NA	_	NA	
	7439965		_								_
	7439976 <	0.00005	ν	0.00003	٧	0.00003	v	0.00004	٧	0.00004	_
	7782492		٧	0.0018	v	0.0014	y	0.0014	v	0.0014	
	7440224 <		٧	0.0007	v	0.0007	v	0.0007	V	0.0007	
	7440280		_						_		
	7440666						_		_		
Water Quality Parameter (mg/L)		1									1
Solids, Total Dissolved (TDS)		NA	L	AN	L	ΝĀ	L	AN	ŀ	NA	

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Summary of Groundwater Data (Continued)



STL Chicago 2417 Bond Street University Park, IL 60466

Tel: 708 534 5200 Fax: 708 534 5211 www.stHnc.com

June 5, 2002

Mr. David Meiri The RETEC Group, Inc. 8605 W. Bryn Mawr Ave., Suite 301 Chicago, IL 60631

RE: ComEd - Waukegan Revised Metals Data Job# 209723

Dear Mr. Meiri:

The enclosed revised metals data is for the project and job number listed above. As requested, Antimony has been added.

These analyses were performed to meet the requirements for the IEPA SRP Rev. 2 - IIIB. If you have any questions, please contact me at 708-534-5200.

Sincerely,

Severn Trent Laboratories

Eric A. Lang
Project Manager

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Enclosure

The results presented in this report relate only to the analytical testing and conditions of sample at receipt. This report pertains to only those samples actually tested. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.



# SEVERN TRENT LABORATORIES ANALYTICAL REPORT

JOB NUMBER: 209723

% Prepared For:

The RETEC Group Inc. 8605 W. Bryn Mawr Ave. Suite 101 Chidago, IL 60631

Project: ComEd. - Waukegan

Attention: David Meiri

7:""Date: 06/05/2002

Signature

Name: Eric A. Lang

Title: Project Manager

E-Mail: elang@stl-inc.com

Date

STL Chicago

2417 Bond Street

University Park, IL 60466

PHONE: (708) 534-5200

FAX..: (708) 534-5211

STL Chicago is part of Severn Trent Laboratories, Inc.

STL Chicago is a part of Severn Trent Laboratories, Inc.

# Severn Trent Laboratories - Chicago METALS CASE NARRATIVE

Client: The RETEC Group Inc.
Project ID: COMED - Wankegan

Date Rec'd: 05/15/02

STL#: 209723

1. This narrative covers the metals analysis for samples received in the above Job # 209723.

Method Rcfs: USEPA,SW-846

- 2. All analyses were performed within the required holding times.
- 3. All Initial and Continuing Calibration Verification (ICV/CCV's) were within control limits.
- 4. All Initial and Continuing Calibration Blanks (ICB/CCB's) were within control limits.
- All Preparation/Method Blanks were below Reporting Limits (RL) except for Calcium. Calcium in the samples were greater than 10X the blank concentration. Therefore, reanalysis was not performed.
- 6. All ICP Interference Check Samples (ICSA and ICSAB) were within control limits.
- 7. Laboratory Control Sample (LCS) recoveries were within the 80-120% control limits.
- 8. Matrix was performed on samples 19 & 21...

All Scrial dilution analysis were within control limits...

All Matrix spike (MS/MSD) recoveries were within the 75-125% control limits (control limits are not applicable when the sample concentration exceed the spike added concentration by a factor of 4 or more).

All Duplicate results were within the 20% Relative Percent Difference (RPD) control limits for sample concentration greater than 5X the CRDL or +\- the CRDL for sample concentration less than 5X the RL.

Mani S.Iyer

Metals Section Manager

5723/02



SAMPLE LW.F, OR.WAILOW Oste: 06/05/2002

Job Number.: 209723 Customer...: The RETEC Group Inc. Attn.....: Jing Shen Gabriel

Project Number...... 20002196 Customer Project ID.... COMED - VAUKEGAN Project Description...: ComEd - Waukegan

Laboratory Sample ID	Customer: Semple ID	- Sample Hetrix	Date ::	fine Sampled	Date Received	Time Received
209723-1	MW-14-050902 ·	Water	05/09/2002	12:55	05/15/2002	11:30
209723-2	HW-10-050902	Water	05/09/2002	12:15	05/15/2002	11:30
209723-3	MY-11-050902	Water	05/09/2002	13:45	05/15/2002	11:30
209723-4	NW-12-050902 .	Water	05/09/2002	11:20	05/15/2002	11:30
209723-5	MW-13-050902	Water	05/09/2002.	10:30	05/15/2002	11:30
209723-6	MV-4-051002 .	Water	05/10/2002	09:00	05/15/2002	11:30
209723-7	MW-101-051002	Water	05/10/2002	12:00	05/15/2002	11:30
209723-8	MW-GB2-051002	Water	05/10/2002	10:10	05/15/2002	11:30
209723-9	MW-G85-051002	Water	05/10/2002	11:30	05/15/2002	11:3D
209723-10	MW-6-051002	Water	05/10/2002	12:30	05/15/2002	11:30
7723-11	Mir-102-051002	Water	05/10/2002	12:00	05/15/2002	11:30
209723-12	<b>ผ</b> ห-9-051002	Water	05/10/2002	15:30	05/15/2002	11:30
209723-13	MW-5-051302	Water	05/13/2002	10:10	05/15/2002	11:30
209723-14	MW-5A-051302	Water	05/13/2002	09:20	05/15/2002	11:30
209723-15	MV-3-051302	Vater	05/13/2002	13:40	05/15/2002	11:30
209723-16	MV-1-051302	Vater	05/13/2002	16:35	05/15/2002	11:30
209723-17	MV-1A-051302	Water	05/13/2002	17:35	05/15/2002	11:30
209723-1B	MU-2-051302	Water	05/13/2002	15:45	05/15/2002	11:30
209723-19	ми-7-051402	Water	05/14/2002	10:35	05/15/2002	11:30
209723-20	HV-7A-051402	Water	05/14/2002	09:30	05/15/2002	11:30
209723-21	MV-8-051302	Water	05/13/2002	14:45	05/15/2002	11:30
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								Date:	Date: 06/05/2002		
Custome Date Sa Time Sa	CUSTOMER: The RETEC Group Ind. 25.56.754.624.624.624.624.624.624.624.624.624.62	Sec. Programme of the contract	Laboratory Sample 10: 209723-1 Date Received 05/15/2002 Time Received 11:30	: 00400 14	Laboratory Sample 10: 209722 Date Received 05/15/	10: 209723-1 05/15/2002		S.ATHE	Jing She	A SATTHE LING Shen Gebriel Services	
TEST METHOD	ARANHETER/TEST DESCRIPTION CONTRACTOR		SAMPLE RESULT OF FLAGS	o FtAtis	《 · · · · · · · · · · · · · · · · · · ·	BK.	OILUTION MITS	STIM)	BATCH	OT DATE/TIME	TECH
160.1	Solids Solids		870		6.4	10	_	T/8u	52290	05/16/02 1223 jmk	i E
7041	Antimony (GFAA) Antimony		0.0030	>	0.0025	0.0030		J/But	53699	06/05/02 1027 daj	<del>Q</del>
60108	Hetals Analysis (ICAP Trace) Arsenic Calciun Iron Hagnesium	X L	0.39 160 2.1 58 0.15	=	0.0052 0.024 0.040 0.012 0.0077	0.010 0.10 0.050 0.10 0.010		1/8± 1/8± 1/8± 1/8±	52302 52302 52302 52302 52302	05/17/02 1546 05/17/02 1546 05/17/02 1546 05/17/02 1546 05/17/02 1546	0000 FEET PE
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\* In Description = Dry Wgt.



L A	BORATORY	<del>⊢</del>	T RESUL	σ ⊢		Date:00	Date:06/05/2002		
如此的所作的語言	PROJECT COMEN'S WAKENNING STATES STATES THE THE PROJECT STATES THE THE STATES STATES TO SENTENCE STATES STA	COMED	(AuxebA)	*X 44 00		S ATTER	Jing Shen	Jep Leb	
		Lab Dat Tim	Laboratory Sample 10: 209723-2 Date Received: 05/15/2002 Time Received: 11:30	(D: 209723-2 05/15/2002 11:30					
PARAMETER/TEST DESCRIPTION	* SANPLE/RESULT	a FLAGS.	S. S. HOUSE	Section of the section		UNITS	BATCH	of soldertive	THE TECH
Solids, Total Dissolved (TDS) Solids, Total Dissolved (TDS)	260		6.4	01	-	mg/L	22290	05/16/02 1227 Jmk	1227
	0.0030		0.0025	0.0030	-	mg/L	23484	06/02/02 2019 daj	2019
Metals Analysis (ICAP Trace) Arsenic Calcium Iron Magnesium Hanganese	110 5.3 23 0.18	=	0.0052 0.024 0.040 0.012 0.00071	0.010 0.10 0.050 0.10	ش بت بت ب	1/8w 1/8w 1/8w 1/8w	\$2302 \$2302 \$2302 \$2302 \$2302	05/17/02 05/17/02 05/17/02 05/17/02	1552 1552 1552 1552
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* in nescription = Dry Wat.	- &	Page 3							

Customer sample   D. Mr-11-05092	CUSTOMER: The	CUSTOMER: The REIEC Group Inc. 1970 5 70 100	Prince Provect	: COMED	-UAUTZEANE 1. S.C.		A STATE OF	A ATTHE	ATTH: Jing Shen	Gabriel	# (Jan)
Solids, Text Dissolved (TDS) 1100 4.9 10 1 mg/L 52290 55/16/02 1231 Antimory (dAA) Antimory (dAA	Custome Date Sa Time Sa Sample	-050902 -2002		La 15	boratory Sample te Received	10: 209723-3 : 05/15/2002 : 11:30					
Solids, Total Dissolved (TBS) Solids, Total Dissolved (TBS) Solids, Total Dissolved (TBS) Solids, Total Dissolved (TBS) Solids, Total Dissolved (TBS) Solids, Total Dissolved (TBS) Solids, Total Dissolved (TBS) Antimory (GRA) Antimo	Z TEST METHOD	S. C. PARAMETER/TEST, DESCRIPTION JOS SAND	SAMPLE RESULT	d FLAGS	Car Line		DILUTION	Similar.	BATCH O	- DATE/TIME	TÉCH
Antimory (GFAA) Autimory (GFAA	160.1		1100		6.4		-	1/Sea	52290	05/16/02 123	Ä
Hetals Analysis (ICAP Trace)  Archive	7041	Antimony (GFAA) Antimony	0.0030	5	0.0025	0.0030		mg/L	53533	06/03/02 1309	<u>£</u>
	60108	Metals Analysis (ICAP Trace) Arsenic Calcium Iron Hognesium	210 210 2.4 63	=	0.0052 0.024 0.040 0.012 0.00071	6.010 0.050 0.050 0.050		1/6u 1/6u 1/6u 1/6u 1/6u	52302 52302 52302 52302 52302	05/17/02 1555 05/17/02 1555 05/17/02 1555 05/17/02 1555 05/17/02 1555	1111
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CUSTONER: The		4	COMED							
	CUSTONER: The REFEC Group Inc	PROJECT SALES		WADKEGAM > 1	TO SELVE SELVE SERVICE CONTROL OF THE SELV	1. S. C.	ATTRA	Jing Sher	a tabidet.	
Customer Date Sam Time Sam Sample M	Customer Sample ID: MM-12-050902 Date Sampled: 05/09/2002 Time Sampled: 11:20 Sample Hatrix: Water	#	Lat Da	Laboratory Sample 10: 209723-4 Date Received 05/15/2002 Time Received: 11:30	10: 209723-4 : 05/15/2002 : 11:30					
TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	a FLAGS	Section Section	Service of District	อาเบราด	LURITS	BATCH	OT OATE/TINE	조
160.1	Solids, Total Dissolved (TDS) Solids, Total Dissolved (TDS)	1600		6*7	01	-	T/Bu	52290	05/16/02 1235	12
7041	Antimony (GFAA) Antimony	0.0030	3	0.0025	0.0030	-	mg/L	53484	06/02/02 2056 daj	22
60108	Netals Analysis (ICAP Trace) Arsenic Calcium Tron Hagnesium	0.023 330 4.6 17 0.26	<b>=</b>	0.0052 0.024 0.040 0.012 0.0071	0.010 0.10 0.050 0.10 0.10		7/8# 7/8# 7/8# 7/8#	52302 52302 52302 52302 52302	05/17/02 05/17/02 05/17/02 05/17/02 05/17/02	1605 1605 1605 1605 1605
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	Job Humber: 209723	LABORATOR	7 1 E	ST RESULT	s -		Date:0	Date: 06/05/2002		
CUSTOMER: The	CUSTONER: The RETEC Group Inc.) (1) (1) (1) (1)	The state of the s	CONED	Wikecali			ATTHE	Jing She	Gabriel .	- 1 - 1 - 1
Custone Date St Time St Sample	Customer Sample 1D: MW-13-050902 Date Sampled: 05/09/2002 Time Sampled: 10:30 Sample Matrix: Water		Lat Dad Tín	Laboratory Sample 1D: 209723-5 Date Received: 05/15/2D02 Time Received: 11:30	1D: 209723-5 05/15/2002 : 11:30					
TEST METHOD	PARAMETER/TEST DESCRIPTION SCORES	SAMPLE RESULT	O FLAGS	S. C. POL.	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	PILUTION	.mits	BATCH	OT BATE/TIME	TECH
160.1	Solids, Total Dissolved (TDS) Solids, Total Dissolved (TDS)	200		6.4	10	-1	1/600	52290	05/16/02 1239 lak	, je
7041	Antimony (GFAA) Antimony	0.0030		0.0025	0.0030		1/Sea	53533	06/03/02 1322 da	, 43 N
60108	Hetals Analysis (ICAP Trace) Arsenic Calcium Hagnesium Harganese	0.010 55 0.083 3.7	=	0.0052 0.024 0.040 0.012	0.010 0.050 0.050 0.010	4m 4m 4m 4m 4m 4m	1/02 1/02 1/03 1/03 1/03 1/03 1/03 1/03 1/03 1/03	52302 52302 52302 52302 52302	05/17/02 1611: 05/17/02 1611 05/17/02 1611 05/17/02 1611	
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Customer Sample   Dr. HV-4-051002	USTONER: The	CLISTONER: The RETEC Group Inc.		dillyno	Populeria contra distributi de la la la la la la la la la la la la la	報告のなる		S. SATTHE	Jiro Shen	Gabriel	35
Solids, Total Dissolved (TDS) Solids, TDS Solids, TDS	Custome Date Sz Time Se Sample			12 g g	boratory Sample ii te Received me Received	0: 209723-6 .: 05/15/2002 .: 11:30					**1
Solids, Total Dissolved (TDS)  Antimony (GFA)	TEST HETHOD	PARAYETENTIEST DESCRIPTI		d FLAGS	100 Sept. 100 Se		OTLUTION	*UNITS	BATCH	T COATE/FIR	F
Antimony (GFAA)  Antimo	160.1	Solids, Total Dissolved (TDS) Solids, Total Dissolved (TDS)	006		6.4	Ot	-	mg/L	\$2290	05/16/02 1	243
Hetels Analysis (ICAP Trace)  Arsanic Carlos 140 0 0 0.034 0.009 1 mg/L 52302 05/17/02 1617 0.034 0.00 1 mg/L 52302 05/17/02 1617 0.040 0.050 1 mg/L 52302 0.05/17/02 1617 0.05/17/02 1617 0.05/	7041	Antimony (GFAA) Antimony		3	0.0025	0.0030	-	mg/L	23484	06/02/02 2	121 daj
	60108	Hetals Analysis (IGAP Trace) Arsenic Celcium Ifron Nagnesium Manganese			0.0052 0.024 0.040 0.012 0.0071	0.010 0.10 0.050 0.10 0.10		7/6# 7/6# 7/6# 7/6# 1/6#	52302 52302 52302 52302 52302	05/17/02 1 05/17/02 1 05/17/02 1 05/17/02 1	617 lar 617 lar 617 lar 617 lar 617 lar
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otal Dissolved (TDS) 660 (GFAA) alysis (ICAP Trace) 600 140 15.3 10.44

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	Job Number: 209723	ABORATOR	<b>+</b>	EST RESULT	<b>S</b> ⊢		Date:0	Date: 06/05/2002		
CUSTONER: The	CUSTONIERS THE RETEC Group (ne. 1) The Control of t	A C. A. PROJECT	OE CO	. NAUKETAN D			ATTIVE	II ng Shen	Te piqeo	
Customer Date San Time San	Customer Sample 10: MV-GB2-051002 Date Sampled: 05/10/2002 Time Sampled: 10:10 Sample Matrix: Water			Laboratory Sample 1D: 209723-8 Date Received: 05/15/2002 Time Received: 11:30	10: 209723-8 05/15/2002 11:30					
TEST METHOD	PADAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q FLAGS	3 100	Sec. of Re	DILUTION	WITE		BATCHE OT DATE/THE	TECH
160.1	Solids, Total Dissolved (TDS) Solids, Total Dissolved (TDS)	E/5		6.4	10	-	mg/L	52290	05/16/02 1251	卓
7041	Antimony (GFAA) Antimony	0.0030	<b>5</b>	0.0025	0.0030		mg/L	53484	06/02/02 2158 daj	8
60108	Metals Analysis (ICAP Trace) Arsenic Calcium Iron Hagnesium	0.010 92 2.4 37 0.26	= 	0.0052 0.024 0.024 0.040 0.0071	0.010 0.10 0.050 0.10 0.010		1/6w 18/1 18/1 18/1	52302 52302 52302 52302 52302	05/17/02 1630 05/17/02 1630 05/17/02 1630 05/17/02 1630 05/17/02 1630	FFFF
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	Job Number: 209723	ABORATOR	<b>&gt;-</b>	F 88	ESULT	v		Date:06	Date: 06/05/2002			
CUSTOMER: The RETEC	Group Inc. 2.5%	AND SECTION OF SECTION	8	En Livingen	W. F. 7.		The Maria Maria	ATTINE	ATTRE JING SHEN GOOFTELN SELVEN	Gabriel.	30	70 y
Customer Date Sat Time Sat Sample P	Customer Sample 10: MW-685-051002 Date Sampled: 05/10/2002 Time Sampled: 11:30 Sample Matrix: Water			Laboraton Date Recei Time Recei	Laboratory Semple 10: 209723-9 Date Received: 05/15/2002 Time Received: 11:30	209723-9 05/15/2002 11:30						
TEST METHOD	PARAMETER/TEST DESCRIPTION	SANPLE RESULTS	O	FLAGS : N. S. HOLE . S.	302	PILUTION	олгилом	THILLS	BATCH 0	DT DATE	OATE/TIME	теся
160.1		640				£	-	1/6u	52290	05/16/	05/16/02 1255 jak	菄
7041	Antimony (GFAA) Antimony	0.0030	3		0.0025	0.0030	-	mg/L	53484	06/02/	06/02/02 2235 daj	- iĝ
80109	Metels Analysis (ICAP Trace) Asenic Calcium Iron Magnesium	0.0085 110 2.5 32 0.29			0.0052 0.024 0.040 0.012 0.0071	0.010 0.050 0.10 0.10		7/5u 1/5u 1/5u 1/5u 1/5u	52302 52302 52302 52302 52302	05/17/02 05/17/02 05/17/02 05/17/02	1650 1650 1650 1650 1650	
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	L Job Humber: 209723	ABGRATOR	<b>≻</b>	ST RESUL	<i>y</i> r ⊢		Date:04	Date: 06/05/2002	8	
cústoner: Ine	this jokers. The refrect droup inches ( )	E PROJECT	COMEG	Contract covers - Wunderskill - Contract Covers - Wilder	A PART AND N	300 M	100	Jng She	Jing Shert Gabriel	
Custome Date Su Time Su Somple	Customer Sample 10: MH-6-051002 Date Sampled: 05/10/2002 Time Sampled: 12:30 Sample Matrix: Vater		101	Laboratory Sample ID: 209723-10 Date Received: 05/15/2002 Time Received: 11:30	10: 209723-10 05/15/2002 11:30					
TEST. METHOD	TEST HETHOUS NO CHRANIETEK/TESTIDESTRIPTIONE TO STORY	SAMPLEARESULT	q FLASS			OTLUTION	wirs	BATCH OT	T OKTEZTINE	1€CH
160.1	Solids, Total Dissolved (TDS) Solids, Total Dissolved (TDS)	1500		4.9	Dt.	-	mg/L	52290	.05/16/02 1259 jmk	ji
7041	Antimony (GFAA)	0.0030		0.0025	0.0030	<u></u>	1/Bu	53484	06/02/02 2248 daj	daj
80109	Metals Analysis (ICAP Trace) Arsenic Calcium Iron Magnesium Munganese	0.010 240 0.050 42 1.0	2 2	0.0052 0.024 0.040 0.012 0.012	0.010 0.10 0.050 0.10 0.10		1/8/L 11/8/L 11/8/L	52302 52302 52302 52302 52302	05/17/02 1657 05/17/02 1657 05/17/02 1657 05/17/02 1657 05/17/02 1657	
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	t to December of Pre Litt		Page 11							-

	Job Number: 209723						Date:0	Date: 06/05/2002		
CUSTOMER: JThe	CUSTOMER: Jib. RETEC Group Inching Security Security Projects: COMED: MADRED MA	Survey & PROJECT	COMED.	. Импосевам	A STANTON	12.2.3.5.03.	ATTHE	Jing Ste	n Gabriel	
Custome Date 59 Time Sa Sample	Customer Sample 10: HW-102-051002 Date Sampled: 05/10/2002 Time Sampled: 12:00 Sample Hatrix: Water		1,01	Laboratory Sample 1D: 209723-11 Date Received: 05/15/2002 Time Received: 11:30	10: 209723-11 : 05/15/2002 : 11:30					
TEST RETHOD	PARAMETER/TEST DESCRIPTION	SAMPLÉ RESULT	o FLAGS	\$ \$70t \$3.5	S.G. S.R.E. S. BILLISTION	DIEUTION	WITS	BATCH	от ватестне	TECH
1.091	Solids, Total Dissolved (TDS) Solids, Total Dissolved (TDS)	1100		6.4	0ţ	-	mg/L	52290	05/16/02 1303 Jrak	莨
7041	Antimony (GFAA) Antimony	0.0030		0.0025	0.0030	-	mg/L	53484	06/02/02 2312 daj	
60108	Metals Analysis (ICAP Trace) Arsenic Calcium Iron Hagnesium	0.010 230 0.050 4,0 0.98	3 3	0.0052 0.024 0.040 0.012 0.012	0.010 0.10 0.10 0.10		#8/r #8/r #8/r #8/r	52302 52302 52302 52302 52302 52302	05/17/02 1703 05/17/02 1703 05/17/02 1703 05/17/02 1703 05/17/02 1703	
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		DATE/TUBE 2 TECH 05/16/02 1307 jmk 06/02/02 2337 dej	2 1709 Lar 2 1709 Lar 2 1709 Lar 2 1709 Lar 2 1709 Lar		
200	Control of the Saberiel	BATCH ON CONTEXTINE P TECH 52290 05/16/02 1307 Jmk 53484 06/02/02 2337 daj	05/17/02 05/17/02 05/17/02 05/17/02 05/17/02		
Date:06/05/2002	SOU (C.S.)	P 3 W1 W1	52302 52302 52302 52302 52302 52303		*
0		MOLE NO.	7/68 17/68 17/68 17/68 17/68		
		PULITION 1			·
S L	0: 209723-12 :: 05/15/2002	10	0.010 0.10 0.050 0.050	100 110 110	* 1 1
ST RESUL	Laboratory Somple (D: 209723-12 Date Received: 05/15/2002 Time Received: 11:30	6.4 6.4	0.0052 0.024 0.040 0.012 0.00071		H
Y	100 N	G FLAGS	=	74	44
ABORATOR	A PROVIECTS	1500 a.0030	0.014 170 3.4 3.9 0.58		
23	45.71				3
723	-05 1002 0/2002 0	ETEK/JES), DESERIPH Issolved (TDS)	Metals Analysis (ICAP Trace) Arsenic Calcium Iron Magnesium Manganese		
Job Number: 209723	CUSTOMER: The RETEC Group The.  Customer Sample ID: MW-9-051002  Date Sampled 05/10/2002  Time Sampled 15:30  Sample Matrix Water	Solids, Total D Solids, Total D Solids, Total D Antimony (GFAA)	Metals Analysi Arsenic Calcium Iron Maganese		
	CUSTOMER: The Customer Date San Time San	160.1 704.1	60108		

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Controver Sample   Discreption   Discrepti		Job Number: 209723	A # U # A I U # A	- -		n -		Date: 0	Date: 06/05/2002		
Semple   Dr. Nu-5-05/302   Laboratory Sample   Dr. Nu-5-05/302   Laboratory Sample   Dr. Nu-5-05/302   Laboratory Sample   Dr. Nu-5-05/302   Laboratory Sample   Dr. Nu-5-05/302   Laboratory Sample   Dr. Nu-5-05/302   Laboratory Sample   Dr. Nu-5-05/302   Laboratory Sample   Dr. Nu-5-05/302   Laboratory   Dr	STONER: The		TOSTONIA ST. TOSTONIA	COMED	Uniberate	がないない	3705		Jing Sher		3.
Solids, Total Dissolved (TDS) Solids, TDS Solids	Customel Date Sar Time Sar Sample )	- Sample ID: Mu-5-051302 mpled: 05/13/2002 mpled: 10:10 matrix: Water		1 0 L	boratory Sample I te Received	0: 209723-13 : 05/15/2002 : 11:30					
Solids, Total Dissolved (1D5) Solids, Total Dissolved (1D5) Solids, Total Dissolved (1D5) Solids, Total Dissolved (1D5) Solids, Total Dissolved (1D5) Solids, Total Dissolved (1D5) Solids, Total Dissolved (1D5) Solids, Total Dissolved (1D5) Antimory Antimory Heats Analysis (1CAP Trace)  O.0030 U 0.0030 U 0.0052 O.010 T mg/L 52202 GS/17/02 1715 T/7/02 17	EST METHOD.	PARAMETER/TEST DESCRIPTION OF SECONS	SAMPLE RESULT	d FLAGS	24 TOH 16 TO	SENSE RESERVE	раготия	WITS			TECH
Antimory (GFAA) Antimory Antimory Antimory Antimory Antimory Hetels Analysis (ICAP Trace)  Antimory Hetels	160.1	Solids, Total Dissolved (TDS) Solids, Total Dissolved (TDS)	1200		6.4	10		mg/L	52290	05/16/02 131	
Hetals Analysis (ICAP Trace)	7041	Antimony (GFAA) Antimony	0.0030		0.0025	0.0030	-	1/6a	53434	06/02/02 234	<del>-</del>
	60108		0.010 300 9.9 49 49		0.0052 0.024 0.040 0.012 0.00077	0.010 0.10 0.050 0.10 0.10	eepet.	#8/L #8/L #8/L #8/L	52302 52302 52302 52302 52302		
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	Job Humber: 209723	ABORATOR	Y TE	ST RESU	ULTS		Date:0	Date: 06/05/2002	M1-1268364001 101	3
Custome Custome Date Sa Time Sa Sample	CUSTOWER: The RETEC Group Inc. Constant Supplies to 1975 Constant Sumple 10: MJ-5A-051302 Date Sampled 05/13/2002 Time Sample Matrix: Water	A Section of the sect	1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	Laboratory Sample ID: 209733-14 Date Received 05/15/2002	Laboratory Sample ID: 209723-14 Date Received: 05/15/2002 Time Received 11:30		ATTES JING SHED GABERAL	200 200 200 200 200 200 200 200 200 200		
TEST KETHOO	TEST HETHOO'S VIEW DANNETBYTEST, DESTRIBITION (A) ON SOME SAMPLE RESULT	SAMPLE RESULT	a FLÄGS		No. of the second	PILUTION	STIME	BATCH	TO DATE/FINE - TECH	TECH
160.1	Solids, Total Dissolved (TDS) Solids, Total Dissolved (TDS)	1700		6.5	10	-	T/Ba	52290		真
7041	Antimony (GFAA) Antimony	0.0036		0,0025	0,0030	_	mg/L	53484	06/03/02 0002	- da j
60108	Metals Analysis (ICAP Trace) Arsenic Calcium Iron Hagnesium	0.010 210 1.4 100 0.55	±	0.0052 0.024 0.040 0.040 0.012	0.010 0.10 0.050 0.10		7/60 1/60 1/60 1/60 1/60	52302 52302 52302 52302 52302	05/17/02 1721 05/17/02 1721 05/17/02 1721 05/17/02 1721 1271 20/1/02	
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JSTONER: The	CUSTOMER: The RETEC Group Effer of (1904)		% 3 < PRDJECT:	COMED	CONED - MELICERAN OF SERVICE S	学のなるな	75	- Arries	Jing She	ung shen (albrig)	ii.
Custome Date Su Time Su Sample I	Customer Sample 1D: MH-3-051302 Date Sampled 05/13/2002 Time Sampled 13:40 Sample Matrix Water			Lab	Laboratory Sample 10: 209723-15 Date Received: 05/15/2002 Time Received: 11:30	10: 209723-15					
TEST METHOD	TEST METHOD :   \$150 - STANMETER/TEST DESIRIPTIONS STANSSES	DESCRIPTION OF STATE OF	SAMPLE RESULT	Q FLAGS	NOE, S. L.	MOLLATION STREET	BILUTION	UNITS	BATCH	OT BATE/TIME	TECH
160.1	Solids, Total Dissolved (TDS)	10S)	1500		6.4	10	1	mg/L	52290	05/16/02 1318	툿
7041	Antimony (GFAA) Antimony		0.0030	a	0.0025	0.0030		1/6u	53484	06/03/02 0026	- <del>da</del>
60108	Metals Analysis (ICAP Trace) Arsenic Calcium Iron Magnesium Manganese	(9)	0.010 240 2.0 82 0.29	±	0.0052 0.024 0.040 0.012 0.09077	0.010 0.10 0.050 0.10 0.10		7/6# 1/6# 1/6# 1/6# 1/6#	52302 52302 52302 52302 52302	05/17/02 1728 05/17/02 1728 05/17/02 1728 05/17/02 1728 05/17/02 1728	E E E E
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	Job Number: 209723	ABORATOR	× ⊢	ST RESUL	<b>∵</b>		Date:0	Date:06/05/2002		
USTOMER:, The	CUSTOMERS, The REFEC Group Local States in the States of t	TARREST SECURITION OF THE PROPERTY SECURITION	CONED	Table Table		TANK AND AND AND AND AND AND AND AND AND AND	19.79	Jing She	ATTHE JIGS Sten Gabriel	yi.
Custome Date Sa Time Sar Sample	Customer Sample 1D: MW-1-051302 Date Sampled: 05/13/2002 Iime Sampled: 16:35 Sample Hatrix: Water		100 10	Laboratory Sample 10: 209723-16 Date Received: 05/15/2002 Time Received: 11:30	10: 209723-16 : 05/15/2002 : 11:30				× .	
	S.C. S. S. S. S. S. S. S. S. S. S. S. S. S.	T median in the latest	12		1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	ALL DE LEGIS	. mrrs	PATOR	OT MAYEVTIME	TÉCH
160.1	Solids, Total Dissolved (TDS) Solids, Total Dissolved (TDS)	1600		6.4	2 P		40		196	美
7041	Antimony (GFAA) Antimony	0.0061		0.0025	0.0030	-	1/Sw	53484	06/03/02 0038 daj	- Gaj
60108	Metals Analysis (ICAP Trace) Arsenic Cacium Iron Maganese	310 0.050 77 0.080	=	0.0052 0.024 0.040 0.012	0.010 0.10 0.050 0.10 0.10		7/60 1/60 1/60 1/60 1/60 1/60	52302 52302 52302 52302 52302	05/17/02 1734 05/17/02 1734 05/17/02 1734 05/17/02 1734 05/17/02 1734	11111
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USTONER: Th	The state of the s	į				֡	-	Han Cha	Mar. 45. 4. 1.4. 1.4.	
	CUSTONER: The REFEC Group Inc.	A STATE OF PROJECT	100 E	PROJECT: COMED - WARREAN	ATTHE JING Shen Gabriel		ALIM:	alle falle	n Gabriel	5
Custom Date S Time S Sample	Customer Sample 1D: MW-1A-OS1302 Date Sampled: 05/13/2002 Time Sampled: 17:35 Sample Matrix: Water		T O F	Laboratory Sample 1D: 209723-17 Date Received: 05/15/2002 Time Received: 11:30	1b: 209723-17 : 05/15/2002 : 11:30					
TEST METROD	PARAHETEK/TEST DESCRIPTION	SAMPLE RESULT	Q FLAGS	THE PERSON NAMED IN	1	PILUTION	CNITS	BATCH	OT DATE/TRE	TECH
160.1	Solids, Total Dissolved (TDS) Solids, Total Dissolved (TDS)	1000		6.4	10	-	mg/L	52470	05/20/02 1433 jmk	冥
7041	Antimony (GFAA) Antimony	0.0030	n	0,0025	0.0030	-	mg/L	53484	06/03/02 0051 daj	- E
60108	Metals Analysis (ICAP Trace) Arsenic Galcium Iron Hagnesium	0.010 230 0.25 46 0.38	= -	0.0052 0.024 0.20 0.012 0.00071	0.010 0.16 0.25 0.10 0.010	eenee	7/56 128/1: 128/1: 128/1:	52302 52302 52429 52302 52302	05/17/02 1740 05/17/02 1740 05/20/02 1448 05/17/02 1740 05/17/02 1740	
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Customer Sample   District Company   Laboratory Sample   District Company   Laboratory Sample   District Company   Laboratory Sample   District Company   Laboratory Sample   District Company   Laboratory Sample   District Company   Laboratory Sample   District Company   Laboratory Sample   District Company   Laboratory Sample   District Company   Laboratory Sample   District Company   Laboratory Sample   District Company   Laboratory Sample   District Company   Laboratory Sample   Laboratory Sample   Laboratory Sample   Laboratory Sample   Laboratory Sample   Laboratory Sample   Laboratory Company   Laborator		Job Humber: 209723	LABORATORY	TES	T RESUL			Date: 0	Date: 06/05/2002		
Second   Color   Col	CUSTOMER: The	e RETEC Group Inc.	A PROJECTS	C)	Микесан		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ATTIC	Jing She	a-Gabrief	1.55
Solida, Total Dissolved (TDS)   1500   49   10   1   68/1.00   152470   10   10   11   68/1.   10   11   10   10   10   10   10	Custom Date Si Time Si Semple	er Sample ID: KW-2-051302 ampled: 05/13/2002 Ampled: 15:45 Matrix: Water		Cat Tin	oratory Sample & Received	10: 209723-18 : 05/15/2002 : 11:30				29	
Solids, Total Dissolved (TDS)  Solids, Total Dissolved (TDS)  Solids, Total Dissolved (TDS)  Solids, Total Dissolved (TDS)  Antimory (EFA)  An	TEST METHOD	PARAMETERATEST DESTRICTION (1915)	SAMPLE RESULT		9		POLITICA	4-04(15)	BATCH	п ратё	4 44
Antimory (UEAA) Antimory (UEAA	160.1	Solids, Total Dissolved (TDS) Solids, fotal Dissolved (TDS)			6.4		-	1/83	52470	05/20/05	1436
Hetals Analysis (ICAP Trace)  O.025  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Arsenic Category  Argyl  A	7041	Antimony (GFAA) Antimony		5	0.0025	0.0030	940	mg/L	53484	06/03/05	0103
	60108	Metals Analysis (ICAP Trace) Arsenic Calcius Iron Hegnesiun	0.025 310 1.2 78 7.0	=	0.0052 0.024 0.040 0.012 0.0071	0.010 0.10 0.050 0.10		7/80 1/60 1/61 1/61 1/80 1/80	52302 52302 52302 52302 52302	20/71/20 20/71/20 20/71/20 20/71/20	
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Job Humber: 209723	CUSTOWER: The RETEC Group Inc. 200 (1902) CONTROLL CONED. WALKEGAN CONTROLL CONED. WALKEGAN CONTROLL C	PARAMETER/TEST DESCRIPTION CONTROLS SAMPLE	-	Antimony (GFAA)	Metols Analysis (ICAP Trace) Arsenic Calcium Iron Magnesium Anganese			
ATORY TE	PROJECT; COMED.	SAMPLE RESULT   Q FLAGS	96	0.0030	0.010 U H 440 0.51 29 0.44			1
ST RESUL	Leboratory Sample ID: 209723-19 Date Received: 11:30	<b>10</b>	6.4	0.0025	0.0052 0.024 0.040 0.012 0.012			
₩ ₩	10: 209723-19 05/15/2002	N. S. RL.	10	0.0030	0.010 0.10 0.050 0.10 0.10	==		
		GIEVTION		<b>-</b>	6- 6- 6- 6- 6-		B	
Date:06,	ATTHE	UNITS	1/64	mg/L	7/6w 1/6w 1/6w 1/6w	1 1	19)	
Date:06/05/2002	Jing Shen	ватся от	52470	53533	52302 52302 52302 52302 52302	7.3		
	ATTN: Jing Shen Gabriel	DT DATE/THE	05/20/02 1439 jak	06/03/02 1334 daj	05/17/02 1807 05/17/02 1807 05/17/02 1807 05/17/02 1807 05/17/02 1807	4 1		
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Job Number: 209723

Date: 06/05/2002

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J	동기	Customer Sample 1D: M4-7A-051402 Date Sampled 05/14/2002 Time Sampled 09:30 Sample Matrix: Water
I	USTOMER: The RETEC Grow	
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	TEST NETHOO PARAMETER/TEST DESCRIPTION	CRIMION SOUTH TO	SKNPLE RESULT	<u> </u>	AGS	G FLAGS - TO VIEW HOLVES	1000	PILUTION	N. UNITS		BATCH OT COATE/TIME		TECH
Solids, Tot Solids, Tot	Solids, Total Dissolved (TDS) Solids, Total Dissolved (TDS)	22	1100			6.7	 01		1/6u	52470	02/50/0	05/20/02 1442 Jmk	뀰
Antimony (GFAA) Antimony	GFAA)	7	0.0030	э		0.0025	0,0030		mg/l	53533	0/20/90	06/03/02 1442 daj	įę
Metals And Calcium Iron Hagnesium Mangarese	Metals Analysis (ICAP Trace) Arsenic Calcium Iron Manganese		0.010 140 4.7 46 0.67	5	<b>-</b>	0.0052 0.024 0.040 0.012 0.012	0.010 0.050 0.050 0.010	for the fac for fire	7/6m 1/6m 1/6m 1/6m 1/6m	52302 52302 52302 52302 52302	05/17/02 05/17/02 05/17/02 05/17/02 05/17/02	828 828 828 828 828	
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	JOO RUIDEL: CUVICS							ממיבי מכן ככן בתפני		
CUSTONER: The	CLISTONER: The RETEC Group Inc. 18 18 18 18 18 19 19 19 19 19	E N. S. C. Proviects	COMEG	B. H. S. Prindicts control tutagening the second se			, ATTR	Jing She	n Gabriel 🖔	<b>经过货</b>
Custome Date Sa Time Sa Sample	Customer Sample 10: M4-8-051302 Date Sampled: 05/13/2002 Jime Sampled: 14:45 Sample Matrix: Water		Lat Dar Tin	Laboratory Sample ID: 209723-21 Date Received: 05/15/2002 Time Received: 11:30	D: 209723-21 .: 05/15/2002 .: 11:30					
TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	d FLAGS	200	18 18 18 18 18 18 18 18 18 18 18 18 18 1	PILLITION	e junis	BATCH	DT DATE/TIME.	TECH
160.1	Solids, Total Dissolved (TDS) Solids, Total Dissolved (TDS)	1100		6.4	10	1	mg/L	25470	05/20/02 1444 Jack	44 Jack
7041	Antimony (GFAA) Antimony	0.0035		0.0025	0.0030	-	mg/L	53484	06/03/02 0259 daj	S9 daj
60108	Metals Analysis (ICAP Trace) Arsenic Calcium Iron Hagnesium	0.95 180. 2.4 70 0.13	=	0.0052 0.024 0.040 0.012 0.0071	0.010 0.10 0.050 0.10 0.010	** ** ** **	1/6u 1/8/1 1/8/1 1/8/1	52302 52302 52302 52302 52302	05/17/02 05/17/02 165/17/02 05/17/02 165/17/02	1401 (nr. 1401 (nr. 1401 (nr. 1401 (nr.
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Job	Number: 209723	RATORY	CK	RONI	CLE	Date:	06/05/2002		
CUSTOMERS THE RET	EC Group The	PROJECT	COMED	~ NAUKEO	AI .		ÁTTN: Jing She	(Gab) (e	i (s
Lab ID: 209723-1	Client ID: MW-14-050902			cvd: 05/		Sample	Date: 05/09/2	002	
METHOD	DESCRIPTION				PREP BT	#(5)	DATE/TINE A	HALYZED	DILUTION
3010A	Acid Digestion (ICAP)	100	1	52083			05/16/2002	0930	
3020A(H)	Acid Digestion with H202 (GFAA)		1	53292			05/30/2002	1720	
3020A(H)	Acid Digestion with H202 (GFAA)		2	53634			06/04/2002	1830	
7041 EDD	Antimony (GFAA)		1	53699	53634		06/05/2002	1027	
	Electronic Data Deliverable		1 -	52786				102.0	
60108 PKG MET	Hetals Analysis (ICAP Trace)		_ !	52302	52083		05/17/2002	1546	
160.1	PKG MET (METALS) Solids, Total Dissolved (TDS)		1	52290	52290		05/16/2002	1223	
Lab ID: 209723-2	Client ID: MW-10-050902		Dave De	ands DE A	45/2002	Carrol o			
METHOD	DESCRIPTION			cvd: 05/	PREP BT		Date: 05/09/2		DILHTIN
3010A	Acid Digestion (ICAP)		1	52083	THE DI	H(a)	05/16/2002	0930	DILUTION
3020A(H)	Acid Digestion with H202 (GFAA)		i	53292			05/30/2002	1720	
7041	Antimony (GFAA)			53484	53292		06/02/2002	2019	
60108	Metals Analysis (ICAP Trace)		i	52302	52083		05/17/2002	1552	
160.1	Solids, Total Dissolved (TDS)		i	52290	52290		05/16/2002	1227	
Lab ID: 209723-3	Client 1D: HW-11-050902		Date Re	cvd: 05/	15/2002	Sample	Date: 05/09/20	002	
METHOD	DESCRIPTION		RUN#	BATCH#	PREP BT		DATE/TIME AT		DILUTION
3010A	Acid Digestion (ICAP)		1	52083			05/16/2002	0930	
3020A(H)	Acid Digestion with H202 (GFAA)		1	53292			05/30/2002	1720	
7041	Antimony (GFAA)		1	53533	53292		06/03/2002	1309	
6010B	Metals Analysis (ICAP Trace)		1	52302	52083		05/17/2002	1559	
	Solids, Total Dissolved (TDS)		1	52290	52290		05/16/2002	1231	·
Lab 1D: 209723-4	Client ID: MW-12-050902			cvd: 05/			Date: 05/09/20		
METHOD 3010A	DESCRIPTION				PREP BT	#(S)	DATE/TIME A		DIFALION
3D2OA(H)	Acid Digestion (ICAP)		1.				05/16/2002	0930	
7041	Acid Digestion with H202 (GFAA) Antimory (GFAA)		1 1	53292	F7303		05/30/2002	1720	
60108	Metals Analysis (ICAP Trace)		1	53484	53292 52083		06/02/2002	2056	
160.1	Solids, Total Dissolved (TDS)		1	52302 52290	52290		05/17/2002 05/16/2002	1605 1235	
Leb ID: 209723-5	Client ID: MV-13-050902		Date Ve	cvd: 05/	15/2002	Sample	Date: 05/09/20	102	
METHOD	DESCRIPTION				PREP BT		DATE/TIME AN		DILUTION
3010A	Acid Digestion (ICAP)		11	52083	45		05/16/2002	0930	
3020A(H)	Acid Digestion with H202 (GFAA)			53292			05/30/2002	1720	
7041	Antimony (GFAA)		i	53533	53292		06/03/2002	1322	
6010B	Metals Analysis (ICAP Trace)	*	i	52302	52083		05/17/2002	1611	
160.1	Solids, Total Dissolved (TDS)		i	52290	52290	- 4	05/16/2002	1239	
Lab ID: 209723-6	Client ID: HW-4-051002	27		cvd: 05/			Date: 05/10/20		
METHOD	DESCRIPTION				PREP BT	#(S)	DATE/TIME AN		DILUTION
3010A	Acid Digestion (ICAP)		1	52083			05/16/2002	0930	
3020A(H)	Acid Digestion with H202 (GFAA)		1	53292			05/30/2002	1720	
7041 60108	Antimony (GFAA)		1	53484	53292		2002/20/90	2121	
	Metals Analysis (ICAP Trace)		1	52302	52083		05/17/2002	1617	
160.1	Solids, Total Dissolved (TOS)		. 1	52290	52290		05/16/2002	1243	
Lab ID: 209723-7 METHOD	Client ID: HW-101-051002	-			15/2002		Date: 05/10/20		B 04 1444
3010A	DESCRIPTION				PREP BT	#(5)	DATE/TIME AN		DILUTION
3020A(H)	Acid Digestion (ICAP)		- 1 -	52083			05/16/2002	0930	
7041	Acid Digestion with H202 (GFAA) Antimony (GFAA)		- 1	53292	E7702		05/30/2002	1720	
6010B	Metals Analysis (ICAP Trace)		1	53484 52302	53292 52083		06/02/2002 05/17/2002	2146 1623	
			,	25205	15007		02/11/2002	1063	



Job	L A B C	RATORY	CHI	RONI	CLE	Date:	06/05/2002		
CUSTOMER'S The RET	EC Group Inc	PROJECT	COHED	VÂUKE	WI SE		ATTN: Jing Shen G	abj fe	
Lab ID: 209723-7 METHOD	Client ID: MW-101-051002 DESCRIPTION				15/2002 PREP BT		Date: 05/10/2002 DATE/TIME ANAL		DILUTION
160.1	Solids, Total Dissolved (TDS)		1	52290	52290		05/16/2002 1	247	
Lab ID: 209723-8	Client ID: MW-GB2-051002		Date Re	cvd: 05/	15/2002	Sample	Date: 05/10/2002	2	
METHOD	DESCRIPTION		RUN#	BATCH#	PREP BT	#(S)	DATE/TIME ANAL		DILUTION
3010A	Acid Digestion (ICAP)		1	52083				930	
3020A(H)	Acid Digestion with   H202 (GFAA)		1	53292				720	
7041	Antimony (GFAA)		1	53484	53292			2158	
6010B	Metals Analysis (ICAP Trace)			52302	52083			1630	
160.1	Solids, Total Dissolved (TDS)		1	52290	52290		05/16/2002 1	1251	
Lab 10: 209723-9	Client ID: MM-GB5-051002		Date Re	cvd: 05/	/15/2002	Sample	Date: 05/10/2002 DATE/TIME ANAL	2	
HETHOD	DESCRIPTION		RUN#	BATCH#	PREP BT	#(S)	DATE/TIME ANAL	YZED	DILUTION
3010A	Acid Digestion (ICAP)		1	52083			05/16/2002	<b>)930</b>	
3020A(H)	Acid Digestion with H202 (GFAA)		1	53292				1720	
7041	Antimony (GFAA)		1	53484	53292			2235	
6010B	Metals Analysis (ICAP Trace)		- 1	52302	52083			1650	
160.1	Solids, Total Dissolved (TDS)		1	52290	52290		05/16/2002	1255	
Lab ID: 209723-10	Client ID: MW-6-051802		Date Re	evd: 05/	/15/2002	Sample	Date: 05/10/2002	2	
METHOD	DESCRIPTION				PREP BT		DATE/TIME ANAI		DILUTIO
3010A	Acid Digestion (ICAP)		1	52083			05/16/2002	930	
3020A(M)	Acid Digestion with H202 (GFAA)		1	53292			05/30/2002	1720 -	
7041	Antimony (GFAA)		1	53484	53292			2248	
6010B	Hetals Analysis (ICAP Trace)		1	52302	52083			1657	
160.1	Solids, Total Dissolved (TDS)		1	52290	52290		05/16/2002	1259	
Lab ID: 209723-11			Date Re	cvd: 05,	/15/2002 PREP BT	Sample	Date: 05/10/2002		
METHOD	DESCRIPTION		RUH#	BATCH#	PREP BT	#(S)	DATE/TIME ANAI		DILUTIO
3010A	Acid Digestion (ICAP)		1	52083				0930	
3020A(H)	Acid Digestion with H202 (GFAA)		1	53292				1720	
7041	Antimony (GFAA)		1	53484	53292			2312	
60108 160.1	Metals Analysis (ICAP Trace)		1	52302	52083 52290			1703 1303	
100.1	Solids, Total Dissolved (TDS)			52290			03/16/2002	1202	
	Client ID: HW-9-051002		Date Re	cvd: 05,	/15/2002 PREP BT	Sample	Date: 05/10/200		
METHOD	DESCRIPTION		RUN#	BATCH#	PREP BT	#(5)	DATE/TIME ANAI		DILUTIO
3010A	Acid Digestion (ICAP)		1	コといのコ				0930	
3020A(M)	Acid Digestion with H202 (GFAA)		1	53292	E7000			1720	
7041 60108	Antimony (GFAA)		•	53484 52302	53292 52083			2337 170 <del>9</del>	
160.1	Hetals Analysis (ICAP Trace) Solids, Total Dissolved (TDS)			52290	52290			1307	
	Client ID: HW-5-051302				/15/2002		Date: 05/13/2007		
METHOD	DESCRIPTION				PREP OT	#(\$)	DATE/TINE ANA		DITUTIO
3010A	Acid Digestion (ICAP)	0.00	. 1	52083 53292				0930 1720	
3020A(H)	Acid Digestion with H202 (GFAA)		1		E7202			2349	
7041 60108	Antimony (GFAA)			53484 52302	53292 52083			1715	
160.1	Metals Analysis (ICAP Trace) Solids, Total Dissolved (TDS)		1	52290	52290			1310	
lab 10. 200777-44	Client ID: NV-5A-051302		Bake #-	and of	/4E /2002	Cample	Date: 05/13/200	2	
LAD 10: 209/23-14	DESCRIPTION				/15/2002 PREP <b>8</b> T		DATE/TIME ANA		DILUTIO
301DA	Acid Digestion (ICAP)		RUN#	52083	FREP 51	4/2)		0930	MEDITO
3020A(H)	Acid Digestion (1CAP) Acid Digestion with R202 (GFAA)		- 1	53292				1720	
7041	Antimony (GFAA)		1	53484	53292			0002	
	MINIMALL CALLES			22404	JJETE		201021 FOOE	DUCE	



Job	Number: 209723	ORY CH	RONI	CLE	Date: (	06/05/2002	* 1
JSTOMER; The RETE	C Group Tre	OJECT, CÓNED	HAUKEG	Ú .		ATTN: Jing Shen Gabi	ial Maria
b ID: 209723-14	Client ID: MW-5A-051302 DESCRIPTION	Date Re	cvd: 05/	15/2002	Sample	Date: 05/13/2002	mire il
METHOD	DESCRIPTION	#HUR	BATCH#	PREP BT	#(S)	DATE/TIME ANALYZE	
60108	Metals Analysis (ICAP Trace) Solids, Total Dissolved (TDS)		52302	52083 52290		05/17/2002 1721 05/16/2002 1314	
160.1	solids, idtal Dissolved (IDS)		.52290	32290		05/16/2002 1314	
bb 10: 209723-15	Client ID: MW-3-051302	Date Re	cvd: 05/	15/2002	Sample	Date: 05/13/2002	
METHOD	DESCRIPTION	RUN#		PREP BT	#(S)		
3010A	Acid Digestion (ICAP)	1	52083			05/16/2002 0930	
3020A(H)	Acid Digestion with H202 (GFAA)	1	53292	ETODO		05/30/2002 1720	
7041	Antimony (GFAA)	1	53484 52302	53292 52083		06/03/2002 0026 05/17/2002 1728	
60108 160.1	Antimony (GFAA) Hetals Analysis (ICAP Trace) Solids, Total Dissolved (TDS)		52290	52290		05/16/2002 1318	
100.1							•
	Client ID: MW-1-051302	Date Re	cvd: 05,	/15/2002	Sample	Date: 05/13/2002 DATE/TIME ANALYZE 05/16/2002 0930	
	DESCRIPTION	RUN#	BATCH#	PREP BT	#(5)	DATE/TIME ANALYZE	
3010A	Acid Digestion (ICAP)	1	52083			05/16/2002 0930	
3020A(H)	Acid Digestion with HZUZ (GFAA)	!	53292	E#202		05/30/2002 1720 06/03/2002 0038	
7041 6010B	ARTIMORY (GRAA)	1	53484 52302	53292 52083		06/03/2002 0038 05/17/2002 1734	
160.1	Acid Digestion with H202 (GFAA) Antimony (GFAA) Hetals Analysis (ICAP Trace) Salids, Total Dissolved (TDS)	+	52290	52290		05/16/2002 1322	
						03/10/2002 (322	•
ab ID: 209723-17	Client 1D: XW-1A-051302	Date Re	cvd: 05,	/15/2002	Sample	Date: 05/13/2002	
HETROD	DESCRIPTION	RUN#	BATCH#	PREP BT	#(S)	DATE/TIME ANALYZE	
3010A	Acid Digestion (ICAP)	1	52083			05/16/2002 0930	
3020A(H)	Acid Digestion with H202 (GFAA)		53292	£7207		05/30/2002 1720	
1 OB	Antimony (GFAA)	1	53484 52302	53292 52083		06/03/2002 0051 05/17/2002 1740	
6010B	Motels Anglysis (ICAP Irace)		52429	52083		05/20/2002 1418	
160.1	Acid Digestion (ICAP) Acid Digestion with H202 (GFAA) Antimony (GFAA) Hetals Analysis (ICAP Trace) Hetals Analysis (ICAP Trace) Solids, Total Dissolved (TDS) Client ID: MW-2-051302	i	52470	52470		05/20/2002 1433	-
				445 43003		D-A- 05/47/2002	
WELHOD 10: 50AL52-10	Client ID: HW-2-051302 DESCRIPTION Acid Digestion (ICAP) Acid Digestion with H202 (GFAA) Antimony (GFAA)	Date Ke	CVO; UD,	13/2002 DDED DT	Sample	DATE/TIME ANALYZ	ED DILUTIO
3010A	Acid Disection (ICAD)	KUN#	SOUS	FREF DI	4(3)	05/16/2002 0930	
3020A(M)	Acid Disection with H202 (GFAA)	- 1	53707			05/30/2002 1720	
7041	Antimony (GFAA)	i	53484	53292		06/03/2002 0103	
6010B	Hetals Analysis (ICAP Trace)	i	52302	52083		05/17/2002 174	6
160.1	Hetals Analysis (ICAP Trace) Solids, Total Dissolved (IDS)	. 1	52470	52470		05/20/2002 143/	6
ab ID: 209723-19	Filena to MI 7 051/07	Date Re RUN#	05	/15 /2002	Comel o	Date: 05/14/2002	
METHOD	Client ID: MW-7-051402 DESCRIPTION ·	pate ne	DATCH#	PREP BT	#(S)	DATE/TIME ANALYZ	ED DILUTIO
3010A	Acid Digestion (ICAP)	1	52083	t start - Bri	# ( U )	05/16/2002 093	
3020A(H)	Acid Digestion with H202 (GFAA)	i -	53292			05/30/2002 172	
7041	Antimony (GFAA)	i	53533	53292		06/03/2002 133	
6010B	Metals Analysis (ICAP Trace) Solids, Total Dissolved (TDS)	1	52302	52083		05/17/2002 180	7
160.1	Solids, Total Dissolved (TDS)	i	52470	52470		05/20/2002 143	9
-b to 200727-30	Cliera In. 181 74 051/87	D-00 D-	OE	/15/2002	Cornl o	Date: 05/14/2002	
ab ID: 209723-20 METHOD	Client ID: HN-7A-051402 DESCRIPTION			PREP BT		DATE/TIME ANALYZ	ED DILUTIO
3010A	Acid Digestion (ICAP)	1		rner bi	4/2/	05/16/2002 093	
3020A(H)	Acid Digestion with H202 (GFAA)	i	53292			05/30/2002 172	
7041	Antimony (GFAA)	i	53533	53292		06/03/2002 144	
6010B	Hetala Analysis (JCAP Trace)	i	52302	52083		05/17/2002 183	8
160.1	Solids, Total Dissolved (TDS)	1	52470	52470		05/20/2002 144	2
ab in 200727-24	Client the Mt-9-051703	Dane B		/15 /2002	Samel a	Date: 05/13/2002	
.ab ID: 209723-21 METHOD	Client ID: MW-8-051302 DESCRIPTION			/15/2002 PREP BT		Date: 05/13/2002 DATE/TIME ANALYZ	ED DILUTIO
3010A	Acid Digestion (ICAP)	KUN#	52084	FREE DI	#(4)	05/16/2002 093	
	COLO DISCOLIUII LIUMF/					/ (=/ DTV= T/0	-



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Job	Number: 209723	LABORATOR	Y CHRO	NICLE	Date: 06/05/2002	
CUSTOMER: The RET	EC Group Inc.	PROJEC	Te CONED - V	NUKEGAN -	ATTN: Jing Shen Gebrie	UKCE
Lab ID: 209723-21 METHOD 302DA(H) 7041 6010B 160.1	Client ID: MM-8-05130 DESCRIPTION Acid Digestion with H2 Antimony (GFAA) Metals Analysis (ICAP T Solids, Total Dissolved	202 (GFAA) Trace)	RUN# BA* 1 533 1 534 1 523	: 05/15/2002 S ICH# PREP BT #0 292 484 53292 502 52084 470 52470	Sample Date: 05/13/2002 (S) DATE/TIME AHALYZED 05/30/2002 1720 06/03/2002 0259 05/17/2002 1401 05/20/2002 1444	DILUTION
				_		



						<u>*                                      </u>	
Job N	umber.: 209723	QUAL	.   T Y C O }	ITROL R	ESULTS	Report Date.: D6/0	5/2002
CUSTOMER: The RETE	c group the 💥 🤄	2017年1日 (2016) 日本大学年	PROJECT: CO	IEÓ * WAUKEGAN		ATTN: Jing Shen Ga	briel
ас Туре	Descripti	on	Re	ag. Code	Lab ID	Dilution Factor	Date Time
Test Method Method Description		(ICAP Trace	=)	Equipment Cod Batch		Analys	t: lar
LCS Labor	atory Control Sam	n Kari	HQ2	ISPKOD1	52084		05/17/2002   1355
Parameter/T	est Description	Units	QC Result	QC Result	True Value	Orig. Value QC Cal	c. * Limits
rsenic		ing/L	0.09382		0.10000	0.00520 U 94	X 80-120
alcium		ing/L	9.80366		10,00000	0.12164 98	X 80-120
ron		ng/L	0.93480		1.00000	0.03960 U 93	% 80-120
agnesium anganese		mg/L mg/L	9.76219 0.49343		10.00000	0.01240 U 98 0.00071 U 99	% 80-120 % 80-120
ECS Labor	atory Control Sam	ię z jeżnie	M02	SPK001	52083		05/17/2002 3540
Parameter/T	est Description	Units	QC Result	OC Result	True Value	Orig. Value QC Cal	
rsenic		mg/L	0.09233		0.10000	0.00520 U 92	% 80-120
alcium		mg/L	9.57914		10.00000	0.10943 96	% 80-120
ron		mg/L	0.95683		1.00000	0.03960 U 96	X 80-120
a i un		mg/L	9.53843		10.00000	0.01240 U 95	% 80-120
ese		mg/L	0.48181		0.50000	0.00071 U 96	X 80-120

Page 27 \* X=X REC, R=RPD, A=ABS Diff., D=X Diff.



	b Number.: 209723	A U P	LITY CON	TROL R	ESULTS	Report Date.:	06/05/2002	
CUSTOMER: The RI	ETEC Group Inc.		PROJECT: COME	D - HAUKEGAN		ATTN: Jing She	n Qabriel	e Caran
OC Type	Descript	ion		g. Code	UJ deJ	Dilution Fact		Time
Test Method Method Descript	: 60108 ion.: Metals Analysis	s (ICAP Trac	e) E	quipment Cod	de: 1CP4 : 52302	An	malyst: imm	
	thod Blank	A CEST	5208	A total a served	52084	######################################	di adama di Tana	02 1348
Parametel Arsenic alcium Iron lagnesium langanese	r/Test Description	mg/L mg/L mg/L mg/L mg/L	0.00520 U 0.12164 0.03960 U 0.01240 U 0.00071 U	OC Result	True Value	Orig. Value QC	Calc. * 1	inits
NB Ne	thod Blank		32083	arija;	\$2083		05/17/20	l02 1534
Parameter Arsenic Calcium Iron Magnesium Manganese	r/Test Description	mg/L mg/L mg/L mg/L mg/L	0.00520 U 0.10943 0.03960 U 0.01240 U 0.00071 U	QC Result	True Value	Orig. Value QC	Celc. * (	imits

Page 28 \* X=X REC, R=RPD, A=ABS Diff., D=X Diff.



Jo	b Number.: 209723	Q U A	LITY CO	N T R O L — R	ESULTS	Report Date.	.: 06/05/	2002
CUSTONER: The R	Elec group inc.		PROJECT; C	HED - WAÜKEĞAN	komuta	PATTH JUDG	hen Gabr	
9С Туре	Descript	on		leng. Code	Lab ID	Dilution Fa	ctor	Date Tim
Test Method Method Descript	: 60108 ion.: Hetals Analysis	(ICAP Trac	e)	Equipment Cod Batch		텧	Analyst.	: lmr
MONTH No.	thod Dupt cate				209723-21		£	5/17/2002 · 14
Paramete	r/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	* Limits
Arsenic Catolum Iron Iagnesium Ianganese		mg/L mg/L mg/L mg/L mg/L	0.93588 180.66220 2.39463 69.52227 0.12985			0.95337 182.50579 2.43912 70.03379 0.13114	1.9 1.0 1.8 0.7	R 20.0 R 20.0 R 20.0 R 20.0 R 20.0
NO. S. C. T. He	thod Dupl Cate				209723-19		· · · · · · · · · · · · · · · · · · ·	5/17/2002 18
Paramete	r/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	Limits
irsenic Calcium Iron		mg/L . mg/L mg/L mg/L	0.00520 448.70983 0.54135 29.87940	U		0.00520 U 441.28961 0.50622 29.31705	1.7 6.7 1.9	R 20.0 R 20.0 R 20.0

Page 29 \* %=% REC, R=RPD, A=ABS Diff., D=% Diff.



det	Number.: 209723	QUAI	TTY CON	TROL RI	SULTS	Report Date.	.: D6/05/200	2
CUSTOMER: The RE	let Group trick (2007)		PROJECT E COM	ED NAUKEGAN	MANIE STA	ATTHE JIM	Shen Gabriel	WALL AL
QC Type	Descripti	on	Re	ag. Code	Lab 10	Dilution F	actor Da	te Time
Test Method Method Description	: 60108 on.: Metals Analysis	(ICAP Trace		Equipment Cod Batch			Analyst:	lmr .
植名的岩质	rix Spike	2153)	MEDICAL SPECIMENS	SPKOOT Z	209723-31		Marile See Section 1994	7/2002 142
Parameter,	/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	* Limits
Arsenic Calcium Iron		mg/L mg/L mg/L mg/L	1.03970 191.09469 3.35241 79.22657 0.61831		0.10000 10.00000 1.00000 10.00000 0.50000	0.95337 182.50579 2.43912 70.03379 0.13114	86 91 92	75-125 75-125 75-125 75-125 75-125 75-125
Med 18 19 18 18 18 18 18 18 18 18 18 18 18 18 18	rix Spike	final file.	Was and the state of the	osekooj 4	209723-19	Orio. Value	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7/2002 181 * Limits
Hanganese Hat Parameter	r(x.spike /Test Description	Units	QC Result	GC Result	True Value	Orig. Value	QC Calc.	* Limits
Hanganese	eri variti in zanasti.	Units  mg/L mg/L	Was and the state of the	Arrest Table County	7rue Value 0.10000 10.00000	0.00520 U 441.28961	9C Calc.	* Limits  % 75-125  % 75-125
HS Parameter Arsenic	eri variti in zanasti.	mg/L	OC Result	Arrest Table County	True Value	0.00520 U	9C Calc.	* Limits % 75-125

Page 30 \* %=% REC, R=RPD, A=ABS Diff., D=% Diff.



Job	Q U A L Number.: 209723	ITY CONTROL R	ESULTS	Report Date.: 06/0	5/2002	
CUSTONER: The RE	TED Group the	PROJECT COHED - WALKEDA		ATTN: Jing Shen Ga	ir (elk)	77.79.01S
QC Type	Description	Reag. Code	Lab ID	Dilution Factor	Date	Time

Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	* Limits	1
Arsenic	mg/L	1.03410	1.03970	0.10000	0.95337	81 6.0	% 75-125 R 20	4
Calcium	mg/L	188.82199	191.09469	10.00000	182.50579	63 30.9	X 75-125 R 20	4
Iron	mg/L	3.32933	3.35241	1.00000	2.43912	89 2.2	% 75-125 R 20	
Kagnes i um .	mg/L	78.75788	79.22657	10.00000	70.03379	87 5.6	X 75-125 R 20	4
Hanganese	mg/L	0.61804	0.61831	0.50000	0.13114	97 0.0	% 75-125 R 20	

	Parameter/Test Description	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	* Limits
Arsenic		mg/L	0.10019	0.09717	0.10000	0.00520 U	100 3.0	X 75-125 R 20
alcium		mg/L	456.18167	455.86425	10.00000	441.28961	149 2.0	% 75-125 R 20
ron	•	mg/L	1.45919	1.42854	1.00000	0.50622	95 3.2	% 75-125 R 20
lagnes i u		mg/L	39.66265	39.31974	10.00000	29.31705	103 3.0	X 75-125 R 20
langanes	e	mg/L	D.94164	0.93478	0.50000	0.44310	100 2.0	X 75-125 R 20

. Page 31 \* X=X REC, R=RPD, A=ABS Diff., D=X Diff.



Job Number.: 209723 QUALITY CONTROL RESULTS Report Date.: 06/05/2002									
CUSTOMERS The RETI	C Group Inc.	4.5	PROJECT: CO	IED Z WAUKEGÁN	MARKET A	ATTN: Jing	Shen Qabr	ini (Estat)	1,13
QC Type	Description			ag. Code	Lab ID	Dilution F	actor	Date Ti	ne
Test Method Method Description	: 6010B n.: Hetals Analysis	(ICAP Trace	2)	Equipment Cod Batch			Analyst.	: Umr	
	ol oliviton ( )				209723-21	e prema		5/17/2002	
rarametery insenic cateium iron lagnesium tangenese	Test Description	Mg/L mg/L mg/L mg/L mg/L	0.18648 35.24085 0.46822 13.80694 0.02573	QC Result	True Value	0.95337 182.50579 2.43912 70.03379 0.13114	2.2 3.5 4.0 1.4 1.9	D 10.0 D 10.0 D 10.0 D 10.0 D 10.0 D 10.0	_
sp seri	at privition 🐫 🔆			1600	209723-19	E HARS	o notice	5/17/2002 1	832
Parameter/ Arsenic Calcium Iron Aspnesium	Test Description	mg/L mg/L mg/L	9C Result 0.00520 0 86.66983 0.09265 6.05761	GC Result	True Value	0.00520 U 441.28961 0.50622 29.31705	1.8	0 10.0	
nagnes i un Hanganesa		mg/L mg/L	0.08930			0.44310	3.3 0.B	D 10.0	

Page 32 \* X=X REC, R=RPO, A=ABS Diff., D=X Diff.



		Job Humber	.: 209723			11/4				e.: 06/05/8		
C	JSTONER Th	e RETEC Gro	up line.		PROJECT: CO	HED 4 HAUKEGA)		ATTN:	Jing	Shen Gebr	et E	
: 14	athod Descr	iption 56	ide. Total	Dissolved (TDS Dissolved (TDS		Batch Equipment Cod	52290 Re:			Abelyst, Test Cod	nik TDS	Ç.
)Ç	Leb ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	* Limits	Date	Tie
IB .Cs D	52290 52290 209723-16 209723-16	IO1KSTTS1B	mg/L	4,90000 U 242,00000 1636,00000 1876,00000		250.00000 250.00000	4,90000 U 1628,00000 1628,00000	97 0.5 99		X 80-120 R 20.0 X 75-125	05/16/2002 05/16/2002 05/16/2002 05/16/2002	120
H	est Method. ethod Descr ursbeter.	iption₄: So So	0.1 lids, foral lids, [ntal	Dimsolved (YDS Dimsolved (IDS		Batch Equipment Cod	52470 le			Anelyst Test Code		7/5/ 2/3/ 2/3/
c	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	* Limits	Date	Tin
IB .CS ID	52470 52470 209723-19 209723-19	101KSTTS18	mg/L	4.90000 U 240.00000 1942.00000 2246.00000		250,00000	1952.00000 1952.00000	96 0.5 118		X 80-120 R 20.0 X 75-125	05/20/2002 05/20/2002 05/20/2002 05/20/2002	140
	itnog Descr	iption An	EIMONY (CIFA	V no.	3. 3.	Batch Equipment Co	¢ 53484 8 AAB			Analyst Tast Code	.: dej .: 88	15
C .	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F '	Limits	Date	Tin
	53292 53292	53292 MOZESPKOO2	mg/L mg/L	0.00250 U 0.05032		0.05000	0.00250 U	101		K 80-120	06/05/2005	160 161
:: 244	:INOC: DRSCC	iption:- An	rimonus/GEA	11.8 2.4 2.4 2.4 2.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3		Batch Equipment Cod	53533 e 2 AAB		Y.	Analyst Test Code	. daj . sa	
C	Lab ID	Reagent	Units	QC Result	QC Result	True Velue	Orig. Value	OC Calc.	F	Limits	. Date	Tin
D IS ISD	209723-19 209723-19 209723-19	MOZESPKOOZ MOZESPKOOZ		0.00250 U 0.05531 0.05655	0.05531	0.05000 0.05000	0.00250 U 0.00250 U 0.00250 U			X 75-125 X 75-125 R 20		141
. Ke	at Hethod. thod Descr Trameter	iption. An	(1) Climony (QFA		JUST	Batch Equipment Cod	53699 e: ANB			Analyst. Test Code	.: da] .: \$6	
C	Lab ID	Reagent	Units	QC Result	QC Result	True Value	Orig. Value	QC Calc.	F	Limits	Date	Tim
ISD	209723-1	MOZESPKOOZ MOZESPKOOZ MOZESPKOOZ	mg/L mg/L	0.05233 0.05089 0.05590	0.05089	0.05000 0.05000 0.05000	0.00250 U 0.00250 U 0.00250 U	102		80-120 75-125 75-125 75-125		110
₿ D_	53634 723-1	53634	mg/L mg/L	0.00250 U 0.00250 U			0.00250 บ				06/05/2002 06/05/2002	

Page 33 \* X=X REC, R=RPD, A=ABS Diff., D=X Diff.



# OUNLITY ABSURANCE NETHODS REFERENCES AND HODES Report Date: 06/05/2002

REPORT COMMENTS

- 1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
- 2) Soil, sediment and sludge sample results are reported on a "dry Height" basis except When analyzed for landfill disposal or incineration parameters. All other solid matrix samples are reported on an "as received basis unless noted differently.
- 3) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
  4) The test results for the noted snalytical method(s) meet the requirements of HELAC. Lab Cert. 1D# 100201
- 5) Arizona Environmental Laboratory License number AZ0603.
   6) According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.

Glossary of flags, qualifiers and abbreviations (any number of which may appear in the report) Inorganic Qualifiers (Q-Column)

- Analyte was not detected at or above the stated limit.
- Not detected at or above the reporting limit.

  Result is less than the RL, but greater than or equal to the method detection limit.

  Result is less than the CRDL/RL, but greater than or equal to the IDL/MDL.

  Result was determined by the Method of Standard Additions.

- AFCEE: Result is less than the RL, but greater than or equal to the method detection limit. Inorganic Flags (Flag Column)
- ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,MRL: Instrument related QC exceed the upper or lower control limits.
- LCS, LCD, NO: Batch QC exceeds the upper or lower control limits. MSA correlation coefficient is less than 0.995.
- 4
- MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
- н
- SD: Serial dilution exceeds the control limits.

  MB, EBJ, EBZ, EB3: Batch QC is greater than reporting limit or had a negative instrument reading lower than the absolute value of the reporting limit.

  MS, MSD: Spike recovery exceeds the upper or lower control limits.

  AS(GFAA) Post-digestion spike was outside 85-115% control limits.
- Organic Qualifiers (Q Column)
  U Analyte was not detected at or above the stated limit.
- Compound not detected. HD
- - Result is an estimated value below the reporting limit or a tentatively
- identified compound (TIC).
- C
- Result was qualitatively confirmed, but not quantified.

  Peaticide identification was confirmed by GC/MS.

  The chromatographic response resembles a typical fuel pattern.

  The chromatographic response does not resemble a typical fuel pattern.
- Result exceeded calibration range, secondary dilution required.
- AFCEE:Result is an estimated value below the reporting limit or a tentatively identified compound (TIC) Organic Flags (Flags Column)
- MB: Batch QC is greater than reporting limit.
  - LCS, LCD, ELC, ELD, CV, MS, MSD, Surrogate: Batch QC exceeds the upper or lower control limits. EB1, EB2, EB3, MLE: Batch QC is greater than reporting Limit
- Concentration exceeds the instrument calibration range A
- Concentration is below the method Reporting Limit (RL)
- Compound was found in the blank and sample. Ð
  - Surrogate or matrix spike recoveries were not
  - obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D.
- H Alternate peak selection upon analytical raview
- indicates the presence of an interfence, recovery is not calculated.
- М Manually integrated compound.



STL Chicago

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OUARTY ASSURANCE METHODS
                                                     REFERENCES AND HOTES
                                                                Report Date: 06/05/2002
        The lower of the two values is reported when the % difference between the results of two GC columns is
        preater than 25%.
            Post Digestion Spike (GFAA Samples - See Note 1 below)
Designation given to identify a specific extraction, digestion, preparation set, or analysis set
AS
Batch
CAP
             Capillary Column CCB Continuing Calibration Blank
            Continuing Calibration Verification Confirmation analysis of original
CCV
CF
            Confirmation analysis of original Confirmation analysis of A2 or D2 Confirmation analysis of A2 or D2 Confirmation analysis of A3 or D3 Low Level Standard Check - GFAA; Hercury Low Level Standard Check - ICP Calibration Verification Standard
C1
C2
C3
CRA
CRI
CV
DIL Fec
            Dilution Factor - Secondary dilution analysis
D1
            Dilution 1
D2
D3
            Dilution 2
            Dilution 3
DLFac
            Detection Limit Factor
            Distilled Standard - High Level
Distilled Standard - Low Level
DSH
DSL
DSH
            Distilled Standard - Medium Level
EB1
            Extraction Blank 1
EB2
            Extraction Blank 2
            DI Blank
EB3
            Hethod Extracted LCS
Hethod Extracted LCD
ELC
ELD
            Initial calibration
Initial Calibration Blank
ICB
ICV
             Initial Calibration Verification
IDL
             Instrument Detection Limit
ISA
             Interference Check Sample A - ICAP
ISB
             Interference Check Sample B - ICAP
            The first six digits of the sample ID which refers to a specific client, project and sample group Lab ID An 8 number unique laboratory identification Laboratory Control Standard Duplicate Laboratory Control Standard With reagent grade water or a matrix free from the analyte of interest
Job No.
LCD
LCS
            Hethod Blank or (PB) Preparation Stank
EM
MD
            Method Duplicate
Method Detection Limit
HOL
MLE
            Medium Level Extraction Blank
MRI
            Hethod Reporting Limit Standard
HSA
            Hethod of Standard Additions
MS
            Matrix Spike
MSD
            Matrix Spike Duplicate
ΝD
            Not Detected
PREPF
            Preparation factor used by the Laboratory's Information Management System (LIMS) Post Digestion Spike (ICAP)
PDS
            Re-analysis of original
A1
A2
            Re-analysis of Di
            Re-analysis of D2
A3
            Re-analysis of D3
RO
            Re-extraction of dilution
RE
            Re-extraction of original
RC
            Re-extraction Confirmation
RL
            Reporting Limit
RPD
            Relative Percent Difference of duplicate (unrounded) analyses
            Relative Response Factor
```

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STL Chicago

## AUALLTY ABSURANCE RETHODS REFERENCES AND NOTES Report Date: 06/05/2002

Retention Time Retention Time Window Sample ID A 9 digit number unique for each sample, the first six digits are referred as the job number Seeded Control Blank RTW SCB Serial Dilution Serial Dittorn
Unseeded Control Blank
Second Source Verification Standard
Solid Laboratory Control Standard(LCS)
pH Calibration Check UCS SSV SLCS PHC pH Laboratory Control Sample
pH Laboratory Control Sample Duplicate;
pH Sample Duplicate
Flashpoint Sample Duplicate LCSP LCDP MOPH MDFP LCFP G1 G2 Flashpoint LCS Gelex Check Standard Range 0-1 Gelex Check Standard Range 1-10 Gelex Check Standard Range 10-100 Gelex Check Standard Range 100-1000 G3 Note 1: The Post Spike Designation on Batch QC for GFAA is designated with an "S" added to the current abbreviation used. EX. LCSS=LCS Post Spike (GFAA); MSS=MS Post Spike (GFAA)

Lab Lot# 2 723	Within Hold Tiene Preson Hellisteed (Yes) No. No. Ma. Mr. (The) No. No. No. No. No. No. (Sec.) Mo. COC. He present (Sec.) Mo. COC. He present		
5 0			Magnesida arjenic an
Consa Pete McCauley Longan; Consed Attess  More (312) 394-4470  For: Out:			RECENCION COMBAN  STATEMENTS  STATEMENTS  STATEMENTS  STATEMENTS  STATEMENTS  STATEMENTS  A CALM Territation of 100 mm Territation o
14.8.3k31 6.31	Matulu Comp/Grab Metals Colog	x	O 2. TIME O 9 3 2.  THE TREATVARDS Key C, Coal to 4: 2304, Coal to 4: 304, Coal to 4: 304, Coal to 5: 305, Coal to 6: 307, Coal to 6: 308, Coal to 6: 308, Coal to 6: 309, Coa
COMPACT DENIGHMENT COMPACT RETECTION BY BUT MAY BE TO CHANGE THE GO PRINK (1713) 114 - 9905 FRE (1713) 114 - 9805 FRE (1713) 114 - 9805 FRE (1713) 114 - 9805	1/59-22 0 feedood TAT	2/0/0/5	COMPANY RETEC DATES [15] COMPANY COMPANY DATE 1. Plessic 2. Way via 3. Steine Phasic 4. Antes Glass 5. Wichmort Glass 6. Other 6. Other
		Mw-14-050902	Matrix Key  SE - Sedirent SO - Solid  L - Andreh  M - Woe  0 - Wee
SEVERNI TREN SBRVICES ST. Chleage 2417 Bond Speet University Perk, 160466 Phore: 7086345200 Fax: 7086345200	Polic Name: Cost Hogs est Location: Polic Eric Manage Mana		RELINQUISHED BY W.W. = Wasterasker W = Solid S. = Solid S. = Solid R. = Wastelanens OL = Ca A = Ser

Lab Lot# 209723		CATCHER OF TAXABLE CONTRACTOR	Ample (abulte sm) COC Vegras (Inc.) Me COC (m) present	Additional Analyses / Remarks							9.		Sliste offse	- क्षाड्रीह्ना इक्ट	Date Rec
													Sales III	COMPANY	EDWIENS.  ** calcum, iron, magnasum,  Marganase, artenic, and  autimany  minet sobosions. P.c.
Combat Perfe Mis Carellers  Corrange Corres Corres Corres  Mobress  Fox (312)394-4470  Fox (312)394-4470													13	*	un, iron, anable, my
													RECEIVED BY	RECENED BY	COMMENTS. ** ** Calcum, I Morganal antimony antimony
Combat David Meiri Company RETEC Address 8605 W. Brandhamhes 450 Chicko IL 60681 Proce (773) 714-9906 Fax (773) 714-9805			4ena) 80:09	Comp,	X	X	× }	XX XX	X	X			15/02 THE 0932	TIME	Preservative Key H2C Cod to 4* H2SO4, Cod to 4* HM32, Cod to 4* HM32, Cod to 4* HM434, Cod to 5* HM544, Cod to 5* HM544, Cod to 5* HM544, Cod to 5* HM544, Cod to 5* HM545, Cod to 5* HM55, Cod to 5* HM55, Cod to 5* HM56, Co
Combet David Meir Company: RETEC Advises Bloof W. Bengal Chicks It 60681 From: (773) 714-9805 From: (773) 714-9805	4€	, D	14 TAT	Sampling Ma	M_5121	1345 W	1720			(7) 9/a/			S	DATE	N M + M W
Contact David M Concern: RETEC Chicko IL 6 Proc: (773) 714-9 Fro: (773) 714-9	変数が	Project Number:	Hard Copys // /	Sam		20/6/5	19/0/	5/10/2	dista				CONFANT RETEC		Container Kay  1. Pastic  2. YON Yel  2. Strile Plastic  4. Arrher Class  5. Welrnouth Glass  6. Cher
				Client Sample ID	206050	206050	206050-	05/002	2001.50	2-02/002			COMPANY	ANKHINCO	er ingest
	VG. Koure	er Tonner	IL Llang	Sar	MW-10-050902	MW-11-050902	MW-[2-050902	M.M - 4-051002	MW-101-051002	MW-682		1	x Beck	5	Matric Key SE - Set nert SE - Sol-Solic DS - Durr Sed DL - Durr lique L - Leadure W - W - W
SEVERN TRENT SERVICES 571 Chicago 571 Chicago 571 Chicago 671 Bond Street Linkersity Part, It. 60466 Prone, 708-534-5200 for 708-534-5210	R. Rodr. guild/G.	Project Name:	Project Location.	OSW-SW (Lucy Lucy Control Cont	: II.		4 ×		100	8			<b>Д на санапонга</b>	RELINQUISHED BY	MW - Tatteater W - Fatteater W - Fatte W - Solid St - Solid DL - G

Lab Lot# 209723	The state of the s	Miles Laborit and COO Agric  (No.) No. COO particion  Additional Analyses / Remarks						5/18/6- 0852 8/15/02 "HESO	Date Received 5 / 15 / 02  Courter: El. Hand Delivered El- Bill of Lading  Studies 10633
gazna da sana sasana s								COMPANY	* Codouen, Iron, Magnesium, * Morragnale, arrenic, and antimouny en Terresconde.
Pete McCauley ComEd (12) 394-4470								K &	Paloum, Iron, M managanase, an himsony an himsony
means Pere								RECEIVED BY	Mondon and Seen Terl Border or
Ac. 3k 301		60103 Pdo		XX × X	X X	XX XX		TINE 0932	active Key by by by by by by by by by by by by by
Meiri Scharthander Bright 46.81 ( 4605) 1-9805 1-9805		xintaM	3	33	W 053	W 01.00		ट्रीद्	Fressor 1. +5, 5001, 502, 503, 40, 1001, 5
- 기 및 역 다 구 기 Q	9 Sm B. Kerp	Tembord TAT	5/0/27 (130	5/10/02 1230	5/10/02/1530 W			RETEC CATES	Container Key Perst, VOL Vial Sar e Past c Arrher Gans Werent Gans Cohe
Control Contro	Signature: 12.		Sample 10 35-051062	51002	5/002	051302		COLPANY RET	2년 - 기성 64 4 4 10
3,	omey	IL Canz	MW-66	MW-6-057002	MW-9-05/002	MW-54-651302		a Beel	Matrix Key SE. Scient SD. Sold DS. Boun Scid DI Tractus Y: - Y.:ce 0 - Y: - O
SEVERNI TRIIN. SERVICES STL Chicago 2417 Bord Steet University Park, 'L 60466 Phoye: 7085346200 Fac. 7085346201	Recht G. Koup		5W 2 2	<b>Q</b>	C		2	RELINQUISHED BY	W. + Washington W Washingto

Lab Lot# 209723				Additional Analyses / Remarks								15/00 OF 15	Date Rocelynd 5 / 15 Counter: E.C. Hand Dell
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## Appendix C

Supplemental Tier 1 Screening Values from Illinois EPA



"Connie Sullinger" <Connie.Sullinger@e pa.state.ii.us>

03/30/01 10:46 AM

To: <dmorgan@thermoretec.com>

cc: "Tim Murphy" <Tim.Murphy@epa.state.il.us>
Subject: Griess-Pfleger Tannery and General Boiler sites

Per our meeting yesterday, I am providing you with the following information. We have not developed objectives for beta-BHC. Use the objective for endrin and total the concentrations of the endrin compounds (i.e., endrin aldehyde). The following are the objectives for 2-butanone:

Migration to Class I Groundwater: 17 mg/kg
Migration to Class II Groundwater: 17 mg/kg
Industrial/Commercial Ingestion: 1,000,000 mg/kg
Industrial/Commercial Inhalation: 22,000 mg/kg
Construction Worker Ingestion: 410,000 mg/kg
Construction Worker Inhalation: 140 mg/kg
Class I Groundwater Objective: 4.2 mg/l
Class II Groundwater Objective: 4.2 mg/l

In addition, I want to clarify an issue that was discussed in the meeting. In the discussion of the ingestion exposure route, you asked about statistical approaches. I am not sure that I made it clear that if you have a normal or lognormal data set, you should use the USEPA Concentration Term Guidance that specifies how to calculate the RME concentration using the t statistic and "H" statistic. In the event that the distribution is determined to be nonparametic (i.e., using a procedure such as the Shapiro Wilk), procedures such as the nonparametic bootstrap t can be used for calculating a concentration term.

. David Morgan 04/10/01 10:57 AM To: 'Connie Sullinger' < Connie. Sullinger@epa.state.il.us> cc: 'Tim Murphy' <Tim.Murphy@epa.state.il.us>, peter.b.mccauley@ucm.com, David\_Lewis@metcalfeddy.com

Subject: Re: Griess-Pfleger Tannery and General Boiler sites

## Connie

I reviewed IRIS for Beta BHC (also known as Beta HCH) and there are oral CSFs and inhalation URFs for this compound. There is physical-chemical data for this compound in the Soil Screening Guidance User's Guide. Do you want us to calculate Tier 1 screening values for this compound and submit the calculated values to you or will you calculate them?

David Morgan ThermoRetec Consulting Company 3040 William Pitt Way Pittsburgh, Pennsylvania 15238 Phone: (412) 826-3340 Fax: (412) 826-3409 dmorgan@thermoretec.com "Connie Sullinger" < Connie. Sullinger@epa.state.il.us>



"Connie Sullinger" <Connie.Sullinger@e pa.state.ll.us> 03/30/01 10:46 AM

To: <dmorgan@thermoretec.com>
cc: "Tim Murphy" <Tim.Murphy@epa.state.il.us> Subject: Griess-Pfleger Tannery and General Boiler sites

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"Connie Sullinger" <Connie.Sullinger@e pa.state.il.us> 04/16/01 09:49 AM

To: <DMorgan@thermoretec.com>

cc:

Subject: Re: Griess-Pfleger Tannery and General Boiler sites

We do not calculate objectives based upon cancer for Class C carcinogens, only A and B carcinogens. You can include the information if you wish.

>>> "David Morgan" <DMorgan@thermoretec.com> 04/10/01 09:57AM >>>

### Connie

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David Morgan ThermoRetec Consulting Company 3040 William Pitt Way Pittsburgh, Pennsylvania 15238 Phone: (412) 826-3340 Fax: (41

Phone: (412) 826-3340 Fax: (412) 826-3409

dmorgan@thermoretec.com

"Connie Sullinger" <Connie.Sullinger@epa.st

To:

<dmorgan@thermoretec.com>
 ate.il.us>

cc:

Subject:

<Tim.Murphy@epa.state.il.us>

c: "Tim Murphy"

Griess-Pfleger Tannery and General Boiler sites

03/30/01 10:46 AM

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Appendix D

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## Appendix D

Supplemental Tier 1 Screening Values Calculated by RETEC

This appendix provides the results of calculating Tier 1 screening values for soil and groundwater for the pesticide beta-BHC, also known as beta-HCH.

The toxicological parameters used in this evaluation are presented in Table 1. Beta-BHC is considered a potential carcinogen by the United States Environmental Protection Agency (USEPA) and USEPA provides an oral cancer slope factor (CSF) and inhalation unit risk factor (URF) for this constituent on its Integrated Risk Information System (IRIS) website (USEPA, 2001). Values for benzene and toluene are provided in Table 1 as well. Tier 1 screening values were calculated for benzene and toluene and compared to values in the Tier 1 look up tables in Tiered Approach to Corrective Action Objectives or TACO (IPCB, 2000) as a check of the methodology. It should be noted that the Tier 1 screening values in the proposed revisions to TACO (IPCB, 2000) were used as opposed to the Tier 1 screening values in the currently approved version of TACO (IPCB, 2001).

Tables 2 and 3 present the results of calculating Tier 1 screening values for ingestion and inhalation exposures associated with soil in a residential setting. Equations S1 and S2 (ingestion of soil), S4 and S6 (inhalation of volatiles) and S11 and S13 (inhalation of dust) from Appendix C of TACO were used. To solve equations S4 and S6, the volatilization factor (VF) is needed. Also, equation S29 for calculating the soil saturation limit, Csat, is needed. Table 4 presents the results of calculating VF and Csat for the industrial/commercial worker.

The values of solubility, melting point, organic carbon partition coefficient, Henry's law constant, vapor phase diffusivity and water phase diffusivity were provided in USEPA's Soil Screening Guidance (USEPA, 1996) for all three constituents.

Table 5 presents results for benzene and toluene for the residential setting along with the Tier 1 screening values from the look up tables in Appendix B of TACO. The results are the same when expressed at the same number of significant figures as the values in the Tier 1 look up tables.

Tables 6 and 7 present the results of calculating Tier 1 screening values for ingestion and inhalation exposures associated with soil for an industrial/commercial worker. Equations S1 and S3 (ingestion of soil), S4 and S6 (inhalation of volatiles) and S11 and S13 (inhalation of dust) from Appendix C of TACO were used. As before, to solve equations S4 and S6, VF and Csat are needed. Table 8 presents the results of calculating VF and Csat for the industrial/commercial worker.

Table 9 presents results for benzene and toluene for the industrial/commercial worker along with the Tier 1 screening values from the look up tables in Appendix B of TACO. The results are the same when expressed at the same number of significant figures as the values in the Tier 1 look up tables.

Tables 10 and 11 present the results of calculating Tier 1 screening values for ingestion and inhalation exposures associated with soil for a construction worker. Equations S1 and S3 (ingestion of soil), S5 and S7 (inhalation of volatiles) and S12 and S14 (inhalation of dust) from Appendix C of TACO were used. Table 12 presents VF and Csat for the construction worker.

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Table 9 also presents results for benzene and toluene for the construction worker along with the Tier 1 screening values from the look up tables in Appendix B of TACO. The results are virtually the same when expressed at the same number of significant figures as the values in the Tier 1 look up tables.

Table 13 presents the calculated groundwater screening values based on ingestion exposure for a resident for Class I groundwater. Equation S23 in Appendix C of TACO was used to calculate the groundwater screening values based on carcinogenic effects and this equation was modified to calculate the groundwater screening values for noncarcinogens effects. The Tier 1 groundwater screening value in Table E of Appendix B of TACO for benzene and toluene are the MCLs for these constituents (see Table 13), so the values in the lookup tables in TACO differ from these calculated Tier 1 screening values. However, the calculations in Table 13 are believed to be correct. It should be noted that equation S23 in TACO is used to calculate Health Based Limits (HBLs) in the Soil Screening Guidance (USEPA, 1996) and these HBLs are cited in TACO as one source of groundwater screening values used to calculate the soil component of the groundwater ingestion exposure route. Furthermore, the Soil Screening Guidance provides a HBL of 0.00005 mg/L for beta-BHC, which, to one significant figure, is the same as the value calculated in Table 13, 0.000047 mg/L. This provides evidence that the calculations in Table 13 are correct.

Table 14 presents the calculated groundwater screening values based on ingestion exposure for a resident for Class II groundwater. It was assumed that the Tier 1 screening value for Class II groundwater would be 5 times greater than the Tier 1 screening value. This is the case for benzene, but not for toluene.

Table 15 presents the calculated Tier 1 screening values for the soil component of the groundwater ingestion route using equations S17 and S18 from Appendix C of TACO. Table 16 presents results for benzene and toluene for Class I and Class II groundwater. The results are the same when expressed at the same number of significant figures as the values in the Tier 1 look up tables.

### References

- IPCB, 2000. Proposed Amendments to Tiered Approach to Corrective Action Objectives, 35 Illinois Administrative Code 742, First Order, Illinois Pollution Control Board, July 27.
- IPCB, 2001. Tiered Approach to Corrective Action Objectives, 35 Illinois Administrative Code 742, Illinois Pollution Control Board, January 6.
- USEPA, 1996. Soil Screening Guidance: User's Guide, United States Environmental Protection Agency, Office of Solid Waste and Emergency Response, Publication 9355.4-23.
- USEPA, 2001. Integrated Risk Information System, <a href="https://www.epa.gov/ngispgm3/iris/index.html">www.epa.gov/ngispgm3/iris/index.html</a>, United States Environmental Protection Agency.

Table 1 Toxicological Parameters

		Can	ter Toxic	Cancer Toxicity Parameters		Chronici	Joncancer	Toxicity Parameters	meters	Subchronic Nor	Noncancer	Toxicity Pari	metera
		CSFe		URF		RIDco	0	RAC	9	ROSE	•	RVCs	8
Constituent	CAS No.	(me/ha-der/f/-1	Seums	(ug/m3)~-1	Seures	(mg/kg-dey)	Source	(moun)	Source	(mp/kg-day)	Seures	(Mohta-day)	Seurce
Petticides													
Bets BHC	319157	1.8E+00	222	5.35-04	#RIS								
Miscellancous													
Ветино	7(4)2	5.5E-02	52	7.BE-06	27								
Tolume	COMMOI		_		_	20E-01	2	4.0E-01	ij	20E+00	ELAST	9 SE-01	STBC, 1999

CSFo = oral cancer slope factor
URF = Inhistion unit risk factor
RIDco = chronic oral reference stose
RIDco = chronic behaltion reference concentration
RIDco = subchronic oral reference does
RICc = subchronic inhistiation reference concentration

RIS = Integraled Risk Information System
LEST = Health Effects Assessment Stimmary Tables
NCEAPY = LOSEPA's National Center for Environmental Assessment provisional value
STSC = Superfund Technical Support Center for Environmental Assessment provisional value
STSC = Superfund Technical Support Center
STSC = Superfund Technical Support Center
Sprans = results for spranse asset to in encorpy fearureace used
Systems = results for spranse tased
chronic = chronic value used as autochronic value

# Table 2 Calculated Residential Tier 1 Screening Values for Ingestion of Soil

Input Parameters

			İ
Cancer		Noncarcer	Incer
2	16-06	PHT.	-
soll-adj		Psoi (mg/day)	200
F (days.lyr)		EF (days/yr)	55
Tc (years)	2	ED (years)	9
		BW (Pg)	ŧ
		ATor Assess	4

Calculated Parameters

Cancer Cantituent (meks)	Moncancer (meks)	Overall
	(mpAc)	frankel
1		
Sela BHC 0.36	¥	90'0
Miscellancous		
	ş	4
Toknens	15,643	15,643

TR a target fisk level Fsort-adj a adjusted soil Intake factor EF = exposure (requency ATC = averaging lime (cancer)

THO = target hazard quotent Efraci = soil trgestion rate EF = toposure troquency ED = exposure transion BW = body weight AToc = averaging time (noncancer)

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Table 3 Calculated Residential Tier 1 Screening Values for Inhalation Exposures Associated with Soil

Input Parameters

Cancar		Nonc	Moncancer
R	15.06	THO	-
F (days/yr)	95	EF (days/r)	350
O (years)	8	ED (wages)	8
Tc (years)	2	ATnc (years)	8
EF (m3/lg)	1.32E+09	32E+09[PEF (m3/la)	1,32E+09

Calculated Parameters

		Inhelado	n of Volatilized C	nemicals			nhaletton of Dust		Inhalation
	Ϋ́	Cancar	Монсантевр	Cast	Overall	Cancer	Noncancer	Overall	Overall
Constituent	(mS/kg)	(ma/kg)	(mg/kg)	fragilies	(trigiles)	(44,019)	(molta)	(mp/kg)	fregitel
Pesticides Rais BHC	1.35+08	6.0	ΨN	1 000 000	O#	R 1FeM	400	R 15+03	909
Miscellanenus	1		:		}	1		!	;
Benzene	2.7E+03	0.6	2	699	90	4.1E+05	ž	4.1E+05	88
Total	3.9€+03	¥	1,637,5	654	654.1	MA	5.5€+08	5,5€+06	654.1

THO a targot hazard quotient
EF = exposure frequency
ED = exposure durate
Afror = everaging time (noncentual)
PEF = particulate emission factor

Table 4

Variable Name	Value	Units	Description
DF	-	1 unitless	diblion factor
Ó.C	68.81	63.31 g/m'-4 / Kg/m?	inverse dispension factor; white from TACO
2.	1.5	L.S g/cm²	bulk soil density, de fault value from TACO
enti	0.15	0.15 Lwat/Leoil	water-falled sail porouity; default value in TACO
70	200 m	á	source thickness; effectively infinite
ž.	265	265 g/cm²	soil perticle density
Poc	9.006	0.006 Kg-cc/Kg-soil	fraction capazio carbon; definit from TACO
H.	30.0 yr	×	exposure interval
	9.46B+08 sec	900	
<u> </u>	10000	10000 cm²/tn²	convenion factor
GP2	14	41 mol/atm-m"	conversion Sector
MPcut	30	30 °C	melting point cut-off

Intermediate System Variables

Variable Name		Value Units	Units	Description
	1 4	0.43	0.43 L-pore/L-toil	total soil porouity
	1 2	0.23	0.28 LeinLeoil	air-filled soil poroeity

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# Soil Volatilization Model for Resident (Cont'd)

		3 C	best Made of						46		
		,	nthu Amma								
	Source	Transport	Exposure Pt.	Adjusted	Solubility	Melting	Org. Carbon	Koc	Henry's Law	Vapor Phase	Water Phase
	Concentrat	Factor	Concentrat	Soll Sat.	In Water	Polix	Part Coef.	Type	Constant	Diffusivity	Diffusivity
				Calt				t = nonioniz. org.			
	ő	(1NF)	ő	Castadj	s	ď	Koc	2 = tonitz org.	I	À	ρw
Chemical	(mg/Kg)	(Mg/m)	(mg/m²)	(mg/)(g)	(mg/L)	(57	(mg/Kg/mgf.) 1=fnargunk	3 = fnorgante	(atta-m7mol)	(cm/s)	(cm1s)
Pestirides											
Beta BHC	-	7.638-07	7.63B-07	1.00B+06	2,408-01	315	1.26E+03		1 7.43E-07	1.42B-02	7.348-06
Miscellaneous											
Benzene	-	3.71B-04	3.71B-04	8.69B+02	1.756+03	5.5	5.89B+01		1 5.55B-03	8. B0B-02	9.80B-06
Toluene	_	2.55B-04	2.55B-04	6.54E+02	5.26B+02	-94.9			1 6.64B-03		

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			Intermedial	Intermediate Variables			Transport	Soll Saturation Limit	ation Limit
	Henry's Law	Soil-Water	Apparent	Аувпав	Meximum	Volatilization	Factor	Celculated	Adjusted
	Constant	Partition	Diffusivity	Plux Factor	Flux Factor	Factor		Soll Sat,	Soll Sat.
	*	Coefficient						Calt	Link
	¥	Кр	Da	FFB	FF.m	VFon	(IVF)	Csat	Csatad
Chemical	(dimensionists)	(DYG)	(cm/fin)	(a-million-g)	(g-edim'e)	(Mehr)	(Mohm?)	[mg/Kg]	(mg/Kg)
estirides									
Bets EHC	3.05E-05	7.56E+00	9.09B-09	S.25E-05	3.173-01	7.638-07	7.63B-07	1.84E+00	1.00B+06
Hiscellancous									
Bertzene	2.28B-01	3.53B-01	2.15B-03	2.55B-02	3,178-01	3.71B.04	3,71B-04	1.69B+02	8.69B+02
Toforne	2728-01	1.09E+00	1.01B-03	1.758-02	3.178-03	2.55B-04	2.55B-04	6.54B+02	6 54B+02

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Table 5 Summary of Calcutated Tier 1 Screening Values for Residential Scenario to Values in Lookup Tables

		Residential	entlal	
	re Duj	ingection	Inhalation	rtlon
Constituent	Leotup Table [mg/kg]	Calcufuled	Lookup Tobio (mg/Lg)	Calcutated
Miscellageous	5	121	970	3
Toluene	16,000	16,00	650	650

FACORCASSISO TerrunyAtum ON RupWay and Appared C Bup Tur 1 ReluciTACO Tur 1.44

## Input Parameters

Noncancer	-	25	93	52	2	22
Hone	THO	Raol (mg/day)	EF (days/yr)	ED (years)	BW (kg)	ATric (years)
	15.06	S			2	
Cancer	TR	Racil (mg/day)	EF (days/yr)	ED (years)	BW (hg)	ATc (years)

# Calculated Parameters

	Cancer	Honcanear	Overall
Constituent	(me/kg)	(me/ful)	(neve)
Pesticides Bala BHC	32	\$	32
Miscellaneous.	ı.	!	
Benzens	호	ž	호
Toluene	ş	408,800	408,800

TR = targot risk level
Ruod = soid logestion rale
EF = supceare frequency
ED = soposure duration
BW = body weight
ATC = sveraging time (cancae)

THO = target hazard quotient
Recil = act larget hazard quotient
EF = account inquency
ED = account a drazion
BW = body weight
Afric = averaging time (noncancer)

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Table 7 Calculated Industrial/Commercial Worker Tier 1 Screening Values for Inhalation Exposures Associated with Soil

Input Parameters

Cancer		Nonc	Kencancer
TR.	1E-06	DHD.	-
EF (days/yr)	250	EF (days/yr)	250
ED (years)	25	ED (years)	20
ATc (years)	20	ATric (years)	ន
PEF (m3/lg)	1.24E+09 PEF (	PEF (m3/lg)	1,24E+09

Calcutated Parameters

		Inhalation	s of Volatificed Ch	emicals			shalstlon of Dust		Inhetation
	. V₽	Cancer	Noncencer	Cest	Overall	Cancar	Koncancar	Overall	Oversil
Constituent	(mg/g)	(mg/kg)	(me/kg)	[mg/kg]	(mayba)	(mo/lg)	[mg/kg]	(44,00)	tmerkel
Pasticides									
Beta BHC	1.5E+06	11.5	ž	1,000,000	11.5	9.6E+03	ž	9.6E+03	11.5
Miscellancous									
Benzene	3.1E+03	9,1	ž	963	197	6.55+05	ž	6,5€+05	1.6
Tolinene	4.5E+03	¥	2,609.7	654	654.1	ş	7.2E+08	7.2E+08	654.1

TR = farget risk tevel
EF = exposure forquency
ED = exposure foreidon
ATe = averaging time (cancer)
VF = votatization factor

THQ is largel hazard quollerk
EF = exposure frequency
ED = exposure durable
ATC = everaging time (noncancer)
PEF = particulals emission factor

Table 8

Verlable Name	Value Units	Description
ρΩ	1 wither	dilution factor
26	15.81 g/m2-4/Kg/m2	that inverse dispersion factor, value from TACO
2	1.5 g/cm²	bulk soil desaily, default value from TACO
auti	0.15 Lwet/Leal	it water-filled soil perceity, default value in TACO
P	200 m	source thickness, effectively infinite
ž.	265 g/cm <sup>5</sup>	soil particle density
(Joe	0.006 Kg-oc/Kg-toil	icil fraction arganic carbon; default from TACO
L	25.0 yr	exposure interval
	7.88E+01 sec	
ਰੌ	10000 cm³/m³	onvenion factor
CF2	41 moVelm-m	ecoversion factor
MPcui	30 %	mething point cut-off

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'ariable Name		Value Units	Unita	Description
	1	0.4	0.43 Lpore/Leal	total and perceify
	e e	0.7	0.28 LeinLeoil	air-filled sail peroeity

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Table 8

Chemical-Specific Variables	52			,							
		Input and O	1 Output Values					Chemical Properdes	Ues		
	Source	Transport	Exposure Pt.	Adjusted	Solubility	Melting	Org. Carbon	Koc	Herry's Law	Vapor Phase	Water Phase
	Concentrat	Factor	Concentrat	Soll Sat.	in Water	Point	Part. Coef.	Type	Constant	Olffusivity	Diffusivity
				Lmk				1 = nonlents org.			
	ő	(1MF)	5	Csatadj	v	ď₩	Koc	2 - tests. org.	Ξ	à	*6
Chemical	(mg/Kg)	(Mg/m <sup>-</sup> )	(mg/m)	(mp/Kg)	(mg/L)	ĵ	(mp/Kg/mp/L) 3=inorganic	3 = Inorganic	(atm-m/mol)	(cm7s)	(crn1/s)
Pesticides											
Beta Billic	-	6.70B-07	6.708.07	1.00B+06	2.40B-01	315	1.26B+03		1 7.438-07	7 1.428-02	7.343-06
Miscelluncous											
Benzene	-	3.265-04	3.26B-04	1.69E+02	1.75B+03	5,5	5.89日+01		1 5.55B-03	3 8.10B-02	9.80E-06
Toluene	-	2.24B-04	224B-04	6.54B+02	5.26B+02	-94.9	1.\$2B+02	i	1 6.64B-03	3 B.70B-02	8.60B-06

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Table 8

			Intermedia	rdemediate Variables			Transport	Soll Saturation Limit	ation Limit
	Henry's Law	Soll-Water	Apperent	Average	Maximum	Volatilization	Factor	Calcutated	l `
	Constant	Partition	Diffusivity	Flux Factor	Flux Factor	Factor		Soli Sat.	Soll Sat,
		Coefficient						THE THE	
	¥	Κp	å	FFB	FFm	VFon	(1NF)	Caat	
Chemical	(dmension; see)	(SYQ)	(casts)	(g-solikute)	(a-mga-d)	(Popin?)	(Mg/m)	(B)/Gut	(mg/Kg)
Pesteldes									
Bets EHC	3.058-05	7,56B+00	9.09B-09	5.75B-05	3.818-01	6.708-07	6.70B-07	1.848+00	1.00B+06
Miscellancous									
Benzene	228B-01	3.533-01	2.158-03	2.79B-02	3.81E-01	3.26B-04	3.26B-04	8.69B+02	£.69B+02
Tolucie	2.72B-01	1.09E+00		1.92B-02	3.81B-01	2.24B-04			6 54 8 + 02

Table 9 Summary of Calculated Tier 1 Screening Values for Industrial/Commercial Worker and Construction Worker to Values in Lookup Tables

		industria/VCommerc	nercial Worker			Construction Worker	on Worker	
	Robeston	nop	Inhalation	ltien	Ingestion	tion	Intralation	tlon
	Lookup Table	Calculated	Lookup Tehto	Calculated	Loekup Teble	Calculated	Lankup Toble	Catculated
Constituent	(hg/kg)	(mg/kg)	(metra)	(me/us)	(mg/kg)	(moke)	(maying)	(ma/kg)
Mirelingspug			,	,	83			<b> </b>
Benzene	<u>ş</u>	<u>\$</u>	9.	1.6	2,300	2700	22	23
Toluene	410,000	410,000	950	650	410,000	410,000	42	41

# Table 10 Calculated Construction Worker Tier 1 Screening Values for Ingestion of Soil

Input Parameters

Cancer		Non	Cancer
TR	15-06	돼	-
(Reol (mg/day)	480	Real (mg/day)	480
EF (daya/r)	8	EF (days/yr)	8
ED (years)	-	ED (years)	-
BW (vg)	ę	BW (kg)	R
ATc (years)	70	ATnc (years)	0,115

Calculated Parameters

	Cancar	Noncancer	[[EJBAQ
Constituent	(mg/hg)	(pro/hg)	(mayba)
Prsticides			
Seta BHC	8	2	8
Viscellantous			!
anzanet	2,258	\$	2,258
Taluene	ž	408,090	408.090

TR = largel risk fevel
| Raol| = aod ingastion rate
| EF = exposure functions | EF |
| ED = exposure functions |
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THQ = larget hazard quotient
Racil # soit hypetion rate
EF = exposure inequency
ED = exposure duration
BW = body weight
ATnc = everaging time (noncancer)

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Table 11 Calculated Construction Worker Tier 1 Screening Values for Inhalation Exposures Associated with Soil

Input Parameters

Cancer		Nonce	Moncencer
2	1.00E-08	THO	-
F (days/n)	8	EF (days/vt)	8
D (years)	-	(ED (years)	-
Te (years)	2	ATric (years)	0.115
EF (m3/kg)	1,32E+08 PEF (	PEF (m3/m)	1,32E+08

Calculated Perameters

		Inhalatio	n of Votaülked Ch	nemicate			Inhelation of Dust		Inhalation
	VF	Cancer	Noncancer	Ceat	Overall	Caficer	Moncancer	Overell	Overall
Constituent	(m3/kg)	move	(puelly)	(more)	[mg/fri]	(mg/kg)	(meAte)	(meyri)	(Profest)
Pesticides									
Bata BHC	1.0E+04	16.3	≨	1,000,000	16.3	2.1E+05	ş	2.1E+05	163
Micellancous						!		!	į.
Benzene	215+01	23	ž	230	23	1.4E+07	ž	1.4E+07	23
Tolyana	3.05.+01	ş	40.7	654	40.7	ž	1.86+08	1.8E+08	40.7

TR = target risk level
EF = exposure frequency
ED = exposure duration
AT = everaging lime (cancer)
VF = volatilization factor

THQ = target hazard quotiend
EF = exposure frequency
ED = exposure durations
ATG = averaging time (noncancer)
PEF = particulate emission factor

Table 12

Variable Name	Velue	Units	Description
å		1 unittees	diluien factor
20	15.31	25.31 gdm. s / Kg/m2	inverse dispersion factor, value from TACO
2	2.1	1.5 g/cm²	bulk soil dessity, default value from TACO
and a	0.15	0.15 Lwet/Leoil	water-filled soil percetty; default wabse in TACO
10	200	200 rn	source thickness; effectively infinite
8.	265	2.65 g/cm²	soal particle density
- Jose	0.00	0.006 Kg-oc/Kg-soil	fraction organic cerbon; default from TACO
H	0.1 yr	£	exposure interval
	3.63E+06 sec	200	
	10000	10000 cm²/m²	convenion factor
G23		41 moVetm-m²	convertion factor
MPost	20	30 10	melting point cut-off

Intermediate System Variables

n = 0.43 L'poce/L-soil total soil poresity n= 0.28 Leis/L-soil sis-filled soil poresity	Variable Name		Value	Units	Description
0.28 Lainfacil		-4	0.43	L-pore/Leail	total soil peresity
		ě	0.28	LeinLeoil	air-filled soil porosity

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Table 1

# Soil Volatilization Model for Construction Worker (Cond

Chemical-Specific Variables

		Input and O	Output Values					Chamical Properties	las		
	Source	Transport	Exposure Pt.	Adjusted	Solubility	Melting	Org. Carbon		Henry's Law	Vapor Phase	Water Phase
	Concentrat.	Factor	Concentrat	Soll Sat.	In Water	Point	Part Coef	Type	Constant	Diffusivity	Olffusivity
				Cmit				1 = novioniz. org.			
	ತೆ	(1NF)	ő	Castadi	w	AP.	Koc	2 = lonk, org.	Ξ	à	À
Chemical	(cytom)	(Mg/m)	(mgm)	(may)(g)	(mg/L)	(0)	(mprice) a - inequale	3 = fnorguric	(ath-m/htol)	(cmTs)	(cm1s)
Perticides											
Bete BRC	-	9.113-06	9.ELB-06	1.00B+06	2.408-01	315	1.26B+03	•	7,43B-07	1.4ZB-02	7.34E.06
Miscellaneous											
Bentene	-	4.808-03	4,80B-03	8.69E+02		5.5	5.19B+01	-	\$.55B-00	8.10B-02	9.80B-06
Toluene	_	3.30E-03	3.308-03	6.54B+02	5,26B+02	949		-	6.648-03		

Table 12

			Intermediate	te Variables			Transport	Soil Saturation Limit	ton Limit
	Henry's Law	Soll-Water	Apparent	Average	Maximum	Volatilization	Factor	Calculated	Adjusted
	Constant	Partition	Diffusivity	Flux Factor	Flux Factor	Factor		Soll Set.	Soll Sat,
		Coefficient						LIMIK	Limit
	ቴ	χ	O.	FF	FFm	VFon	(1NF)	Csat	Csatadj
Chemical	(dimension)	(מארט)	(ctn7s)	(g-soffmile)	(g-solibn's)	(Mg/m²)	(Mg/m)	mp/Kg)	(D)(D)(D)
Pesteldes			900	£3					
Beta BHC	3.05B-05	7,56B+00	9.09B-09	8.47B-04	8.27B+01	9.638-06	9.88E-06	1.84B+00	1.008+06
Miscellancous									
Benzene	2.28E-01	3.53B-01	215B-03	4.12B-01	8.27B+01	4.80B-03	4.10B-03	8.69E+02	8.69B+02
Toluene	2.72B-01	1.09E+00		2.83E-01	8.Z7E+01	3.30B-03	3.30B-03		6.54B+02

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Table 13 Groundwater Objective for Caculating the Soil Component of the Groundwater Ingestion Exposure Route (Class I)

Input Parameters

Connec		Mane	Moneathean
i a contra		1	
<u> </u>	1,005-05	THG	-
Rw (L/day)	7	Rw (May)	81
F (davs/vr)	350	EF (days/n)	360
D (vegta)	8	ED (years)	8
W (la)	2	BW (10)	2
ATC (vegrs)	70	ATric (years)	ද

Calculated Parameters

_	Cancer	Moncancer	Overall	Tier 1 Screening Value	Groundwaler
				in Lookup Table	Objective
Constituent	(helt	744	(mg/L)	(mett)	Tak.
Perticiples					
Beta BHC 0.	0.000047	2	0.000047	ž	0.000047
_	0.0015	<b>½</b>	00015	0005	0.005
Toluna	ş	7.3000	7.3000	1	

TR a target rak level
Blw a groundwaler ingraction rate
EF a exposure intregency
ED a exposure duration
BW a body weight
ATc a averaging time (cancer)

THQ = larget hazard quotlend
FW = groundwater ingestion rate
EF = appoure inequency
ED = expoure inequency
ED = expoure duration
EW = body weight
ATnc = averaging time (noncarner)

# Calcutated Parameters

	Calculated Ter 1	flar 4 SchannonValre	Gminnheater
	Value	for the Parket	- Ph. P
Constituent	[mg/L]	the state of	7er
Pasticidas			
Beta BHC	0.00024	¥	0.00024
Miscellaneous			
Benzene	0,025	5200	0.025
Toknama	S	2.5	25

ConEASSIST Terroryfism Obj Replays malappers C Day The 1 Assessance The 1,34s

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Input Parameters

Ingestion	0.002	0.3	0.13	5.7	20
	oc (kg-OC/lg)	2	a	ው (የ <sub>ዓያ</sub> ሊ)	L.

Calculated Parameters

	200	<u>_</u>	×	Koverall		Class   Orgundwate	_	ਲ	ass II Groundwate	
	i	:	!		COWEY	Š	J	CDW-6V	Š	3
Constituent	CAse .	Chronistordens	(176)	(vi6ees)	- FINANTI	(me/L)	(mg/hg)	(max)	(Mary	(mg/lus)
Pasticides										
Beta BHC	1.25E+03	3.05E-05	2.52E+00	27	0,000047	0.00095	0,0026	0.00024	0.0047	0.013
Miccellaneous			-	-	1000	-	7000	2	-	0.17
Senzene	5.BSE+01	2.28E-01	-186-0-1	Š,	cono.	2	50.7	3	- 9	ş
Toluene	1.82E+02	2,725-01	3.64E-01	85.0	-	8	22	525	8	B

foc = Inaction organic carbon

my = water-lifted soil porosity

na = air-lifted soil porosity

pb = dry soil buffs density

DF = dinflon lactor

Koc = organic carbon partition coefficient

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		Soil Component of	onent of			Oroundwater C	Component of	
		Groundwater Ingestion	r Ingestion		20	undwater ing	Groundwater Ingestion Exposure	5
	Class	1_	Class P	= 7	Cleas !	or Calculating	HOUSE TOT CERCULATING THE BOIL COMPONENT	Sometif Time
Constituent	Leakup Tobio (mg/hg)	Calculated (me/kg)	Leekup Table (metho)	Calculated (mg/kg)	Lesitop Table breftel	Calculated (mg/kg)	Leebup Table (mg/kg)	Calcutated freePat)
Miscellaneous								
Benzene Toluene	500	5003	0.017	71.0	0.005	0,005	0.025	0.025

### Appendix E

Development of Screening Values for Essential Nutrients

#### **Development of Screening Values for Essential Nutrients**

#### 1.0 Introduction

The purpose of this document is to evaluate the potential toxicity of the essential nutrients calcium, magnesium, potassium and sodium to people and ecological receptors. In the case of humans, toxicological information is reviewed, where available, and upper bound acceptable daily intakes (UADI) are estimated. Since these chemicals are essential nutrients, they are inherently nontoxic at low levels of exposure where low levels are very high relative to intakes of chemicals that are considered toxic. Using these UADIs, screening levels are calculated for soil based on incidental ingestion and water based on the assumption that the water is used as a drinking water source. It is important to remember that since these chemicals are essential to the proper functioning of the body, daily exposure is necessary, so these screening levels must be interpreted with caution.

In the case of ecological receptors, screening levels are presented, where possible, for water based on potential adverse effects to aquatic organisms. In applying these screening levels, it must be remembered that these chemicals are also essential to the functioning of most living things. Thus, while some organisms are adversely affected by elevated concentrations, other organisms will thrive in an environment with these elevated levels. Therefore, reducing concentrations of these nutrients below dietary thresholds for this latter group of organisms will result in adverse effects. Therefore, these screening levels should also be interpreted with caution.

#### 2.0 Human Health Screening Values

#### 2.1 Overview of Chemical and Toxicological Data

In developing human health screening values for the essential nutrients, a review of the available pharmacological and toxicological data was made. The data that were gathered include solubility information as well as dietary nutrient requirements. A chemical's solubility is a measure of the amount of the chemical that will dissolve in water. The solubility of a chemical is dependent upon the form that it is present in. None of the essential nutrients considered in this evaluation are present in their pure elemental form in nature, but generally take the form of mineral salts or hydroxides. These forms and their associated solubilities are discussed in greater detail below for each essential nutrient.

Since these chemicals are essential to the functioning of the body, they are generally not the subject of toxicological or epidemiological studies. However, they are the subject of extensive nutritional evaluation. Thus, dietary nutrient requirements for each essential nutrient are the primary sources of information compiled and reviewed for this paper. Beginning in 1941, the National Academy of Sciences published recommended dietary allowances (RDAs) for nutrients essential for human health. Recent efforts to revise the approach to establishing and applying RDAs has resulted in the Institute of Medicine Food and Nutrition Board's Standing Committee on the Scientific Evaluation of Dietary Reference Intakes (DRI Committee) concluding that the RDAs should be replaced in their entirety by a new set of values termed the dictary reference intakes (DRIs).

According to the DRI Committee, DRIs are reference values to be used in planning and assessing diets for healthy populations as well as for other purposes (IM, 1997). The DRIs encompass the estimated average requirement (EAR), the RDA, the adequate intake (AI), and the tolerable upper intake level (UL). The EAR is the nutrient intake value adequate to meet the nutritional needs of 50 percent of a specified life stage and gender group, where life stage is generally the age of an individual but also accounts for the nutritional requirements of pregnant and lactating women. The EAR is expressed as a daily value averaged over time (usually at least one week) and is used in determining the RDA. The RDA is the average daily dietary intake level that is sufficient to meet the nutritional needs of 97 to 98 percent of individuals in a life stage and gender group. The RDA for a nutrient is a value to be used as a goal for dietary intake by healthy individuals. If insufficient data are available to calculate the EAR (and subsequently to determine the RDA), no RDA will be set and an AI will be developed based on the data available. The Al is based on observed or experimentally determined estimates of the average nutrient intake by a group of healthy people and can be used as a goal for the nutrient intake of individuals. The UL is defined as the highest level of daily nutrient intake from food, water and supplements that is likely to pose no risks of adverse health effects to most individuals in the general population. The UL is not intended to be a recommended level of intake but is intended to connote a level of intake that can be tolerated biologically. There may be insufficient data on which to develop a UL for some nutrients, however this does not mean that there is no potential for adverse effects resulting from high intake. The available DRIs for each of the essential nutrients included in this evaluation are discussed in greater detail below for each chemical.

#### 2.2 Calcium

2.2.1 Overview of Pharmacological/Toxicological Data

The CRC Handbook of Chemistry and Physics (CRC Handbook) states that calcium is the fifth most abundant element in the earth's crust making up about 3% by weight (Lide, 1993). It is an essential constituent of leaves, bones, teeth and shells and occurs abundantly in nature in the carbonate or limestone form (CaCO<sub>3</sub>). The carbonate form is responsible for hardness in water. Other common forms of calcium in nature include carbide (CaC<sub>2</sub>) and chloride (CaCl<sub>2</sub>). Elemental carbon decomposes in water to form the hydroxide Ca(OH)<sub>2</sub>. The solubilities of these forms of calcium in water vary considerably from the relatively low soluble carbonate form (14 mg/L at 25 °C) to the relatively soluble chloride form (745,000 mg/L at 20 °C) (Lide, 1993).

According to the DRI Committee, calcium accounts for 1 to 2 percent of adult human body weight, primarily found in teeth and bones (IM, 1997). Though much information is available regarding the nutritional effects of calcium, the DRI Committee concluded that insufficient evidence was available to derive EARs (and subsequently RDAs). Therefore, AI values were developed for each life stage and gender group. In addition to the AIs, ULs have been determined for calcium. Several adverse health effects are related to excess intake of calcium (primarily from nutritional supplements). The most widely studied and biologically important are: kidney stone formation (nephrolithiasis), the syndrome of hypercalcemia and renal insufficiency with and without alkalosis (historically referred to as milk-alkali syndrome), and the interaction of calcium with the

absorption of other essential minerals (IM, 1997). Since the purpose of this evaluation is to develop an UADI, the ULs were used for this purpose. The ULs for calcium for each life stage group are given in the table below (IM, 1997).

Life Stage Group	Tolerable Upper Intake Level, UL (g/day)
0 through 6 months	Not determinable
7 through 12 months	Not determinable
1 though 3 years	2.5
4 through 8 years	= 2.5
9 through 18 years	2.5
19 through 70 years	2.5
> 70 years	2.5
Pregnancy: < 18 years	2.5
19 through 50 years	2.5
Lactation: < 18 years	2.5
19 through 50 years	2.5

Consistent with the methodology in the Tiered Approach to Corrective Action Objectives (TACO) (IPCB, 2001), UADIs were developed for children ages 1 through 6 and adults. The selected UADIs were 2.5 g/day or 2,500 mg/day for both age groups.

# 2.2.2 Derivation of Human Health Screening Values Soil

Since the UADI has units of mg/day, the following equation is used to estimate the intake of calcium from incidentally ingested soil:

$$I = IR_s \cdot CF \cdot C_s$$

where:

I = intake (mg/day)

 $IR_s = ingestion rate of soil (mg/day)$ 

CF = conversion factor

 $= 10^{-6} \text{ kg/mg}$ 

C<sub>s</sub> = concentration of calcium in soil (mg/kg)

If the intake is kept below the UADI, then the maximum allowed soil concentration is determined by setting I to UADI in the above equation and solving this equation for  $C_3$ .

$$C_s = UADI/(IR_s \cdot CF)$$

Based on the soil ingestion rates given in TACO (IPCB, 2001), the ingestion rate of 200 mg/day was used for children ages 1 through 6 years and the ingestion rate of 100 mg/day was used for adults. An ingestion rate of 480 mg/day from TACO (IPCB, 2001) was used for construction workers, although it is not clear that the UADI is applicable to these workers because their exposure is assumed to occur over a short period of time (30 days) and the UADI may reflect much longer duration exposures. The human health screening values for calcium in soil are 12,500,000 mg/kg for children, 25,000,000 mg/kg for adults and 5,200,000 mg/kg for construction workers (see Table 1). Since these concentrations

exceed the physical limit for calcium in soil (1,000,000 mg/kg), any concentration of calcium in soil is acceptable.

**Drinking Water** 

Since the UADI has units of mg/day, the following equation is used to estimate the intake of calcium from incidentally ingested drinking water:

 $I = IR_w \cdot C_w$ 

where:

I = intake (mg/day)

IR<sub>w</sub> = ingestion rate of drinking water (L/day)

Cw = concentration of calcium in drinking water (mg/L)

If the intake is kept below the UADI, then the maximum allowed drinking water concentration is determined by setting I to UADI in the above equation and solving this equation for C<sub>w</sub>.

 $C_w = UADI/IR_w$ 

Based on the drinking water ingestion rates given in the EPA Region III Risk-Based Concentration Table (USEPA, 1999), the ingestion rate of 1 L/day was used for children ages 1 through 6 years and the ingestion rate of 2 L/day was used for adults. The human health screening values for calcium in drinking water are therefore 2,500 mg/L for children and 1,250 mg/L for adults.

#### 2.3 Magnesium

2.3.1 Overview of Pharmacological/Toxicological Data

The CRC Handbook reports that magnesium is the eighth most abundant element in the earth's crust and is an important element in both plant and animal life (Lide, 1993). Elemental magnesium is not found in nature, but rather in combined forms such as magnesite (MgCO<sub>3</sub>), dolomite and other minerals. Magnesium in water decomposes to the hydroxide form (Mg(OH)<sub>2</sub>). This hydroxide form (milk of magnesia) as well as the chloride, sulfate and citrate forms are used in medicines. The naturally occurring forms of magnesium in water have low solubilities (hydroxide form - 9 mg/L at 18 °C, magnesite form - 106 mg/L), while the citrate form is relatively soluble (200,000 mg/L at 25 °C) (Lide, 1993).

The DRI Committee states that the magnesium content of the human body is approximately 25 g of which between 50 and 60 percent resides in bone in the normal adult (IM, 1997). Magnesium is a required component for more than 300 enzyme systems (IM, 1997). In determining DRIs for magnesium, the DRI Committee concluded that insufficient information was available to derive EARs for infants (ages 0 through 12 months) and therefore established AIs for this life stage group. For all other life stage groups, sufficient information was available to derive EARs and subsequently RDAs. The DRIs for each life stage group are presented in the table below (IM, 1997).

Life Stage Group	EAR	mg/day)	RDA (	mg/day)	Al (m	ig/day)
	Male	Female	Male	Female	Male	Female
0 through 6 months		THE HAT			30	30
7 through 12 months					75	75
1 through 3 years	65	65	80	80		1.
4 through 8 years	110	110	130	130		260
9 through 13 years	200	200	240	240		
14 through 18 years	340	300	410	360		
19 through 30 years	330	255	400	310		100,150
31 through 50 years	350	265	420	320		+
51 through 70 years	350	265	420	320		
>70 years	350	265	420	320		
Pregnancy: < 18 years		335		400		
19 through 30 years		290		350		
31 through 50 years		300		360		
Lactation: < 18 years		300		360		
19 through 30 years		255	0.81	310	-1.7	
31 through 50 years		_265		320		

There is no evidence of adverse effects from the consumption of naturally occurring magnesium in foods, however, adverse effects from magnesium containing supplements may include diarrhea (IM, 1997). Therefore, ULs were developed which represent intake from a pharmacological magnesium supplement and do not include intake from food and water, as do the ULs for calcium above. The ULs for magnesium based on supplementary magnesium in the diet are given in the table below (IM, 1997).

Life Stage Group	Tolerable Upper Intake Level, UL (mg/day)
0 through 6 months	Not determinable
7 through 12 months	Not determinable
1 though 3 years	65
4 through 8 years	110
9 through 18 years	350
19 through 70 years	350
> 70 years	350
Pregnancy: < 18 years	350
19 through 50 years	350
Lactation: < 18 years	350
19 through 50 years	350

Consistent with TACO, UADIs were developed for children ages 1 through 6 and adults. The conservatively selected UADIs were 65 mg/day for children and 350 mg/day for adults.

#### 2.3.2 Derivation of Human Health Screening Values

#### Soil

Based on the equations and intake assumptions presented previously, human health soil screening values were calculated for magnesium. The human health screening values for

magnesium in soil are 325,000 mg/kg for children, 3,500,000 mg/kg for adults and 730,000 mg/kg for construction workers (see Table 1). Since the concentration for adults exceeds the physical limit for magnesium in soil (1,000,000 mg/kg), any concentration of magnesium in soil is acceptable for an adult. It must be remembered that these values apply to magnesium in supplements and may not be relevant to the form of magnesium in soil.

#### **Drinking Water**

Based on the equation and intake assumptions presented previously, human health drinking water screening values were calculated for magnesium. The human health screening values for magnesium in drinking water are 65 mg/L for children and 175 mg/L for adults. It must be remembered that these values apply to magnesium in supplements and may not be relevant to the form of magnesium in water.

#### 2.4 Potassium

#### 2.4.1 Overview of Pharmacological/Toxicological Data

The CRC Handbook reports that potassium is the seventh most abundant element in the earth's crust, making up approximately 2.4% by weight (Lide, 1993). Potassium is an essential nutrient for plant growth and is found in most soils. Elemental potassium is never found free in nature, but it readily found in mineral forms. Most of the mineral forms are relatively insoluble, and as with other metals of the alkali group, potassium decomposes in water to the hydroxide form. The solubility of potassium hydroxide ranges between 1,070,000 mg/L at 15 °C and 1,780,000 mg/L at 100 °C (Lide, 1993).

Potassium is an essential element for the human body involved in both electrical and cellular functions (NLM, 2001). The DRI Committee has not established DRIs for potassium however, the U.S. Food and Drug Administration (FDA) provides a reference value for nutrition labeling for potassium of 3,500 mg/day (USFDA, 1999). MedlinePlus, a service of the National Library of Medicine and the National Institutes of Health, indicates that some experts recommend a potassium intake of between 2,000 and 2,500 mg/day (NLM, 2001). MedlinePlus also states that the average American diet provides between 2,000 and 6,000 mg/day of potassium (NLM, 2001). The UADI should be the lowest dose that could cause adverse effects. In the absence of such data, the highest reported acceptable level is used as the UADI. Therefore, a value of 3,500 mg/day was used as the UADI for potassium for children ages 1 through 6 and adults.

# 2.4.2 Derivation of Human Health Screening Values Soil

Based on the equations and intake assumptions presented previously, human health soil screening values were calculated for potassium. The human health screening values for potassium in soil are 17,500,000 mg/kg for children, 35,000,000 mg/kg for adults and 7,300,000 mg/kg for construction workers (see Table 1). Since these concentrations exceed the physical limit for potassium in soil (1,000,000 mg/kg), any concentration of potassium in soil is acceptable.

**Drinking Water** 

Based on the equations and intake assumptions presented previously, human health drinking water screening values were calculated for potassium. The human health screening values for potassium in drinking water are 3,500 mg/L for children and 1,750 mg/L for adults.

#### 2.5 Sodium

#### 2.5.1 Overview of Pharmacological/Toxicological Data

The CRC Handbook reports that sodium is the sixth most abundant element on earth, comprising approximately 2.6% of the earth's crust (Lide, 1993). The most common form of sodium is common salt or sodium chloride (NaCl), however it is present in many other minerals. As with other members of the alkali group, sodium decomposes in water to form the hydroxide form. Most forms of sodium are relatively soluble and range from 357,000 mg/L of NaCl at 0 °C to 3,470,000 mg/L of NaOH at 100 °C (Lide, 1993).

Sodium is an essential element for the human body involved in regulating blood pressure and blood volume and in the functioning of muscles and nerves (NLM, 2001). The DRI Committee has not established DRIs for sodium however, the FDA provides a reference value for nutrition labeling for sodium of 2,400 mg/day (USFDA, 1999). MedlinePlus indicates that the National Research Council of the National Academy of Sciences recommends an approximate daily range of 1,100 to 3,300 mg/day (NLM, 2001). MedlinePlus also states that the average intake in the United States is between 4,000 and 5,000 mg/day of sodium (NLM, 2001). The UADI should be the lowest dose that could cause adverse effects. In the absence of such data, the highest reported acceptable level is used as the UADI. Therefore, a value of 3,300 mg/day was used as the UADI for sodium for children 1 through 6 years and adults.

## 2.5.2 Derivation of Human Health Screening Values

Based on the equations and intake assumptions presented previously, human health soil screening values were calculated for sodium. The human health screening values for sodium in soil are 16,500,000 mg/kg for children, 33,000,000 mg/kg for adults and 6,900,000 mg/kg for construction workers (see Table 1). Since these concentrations exceed the physical limit for sodium in soil (1,000,000 mg/kg), any concentration of sodium in soil is acceptable.

**Drinking Water** 

Based on the equations and intake assumptions presented previously, human health drinking water screening values were calculated for sodium. The human health screening values for sodium in drinking water are 1,100 mg/L for children and 550 mg/L for adults.

#### 3.0 Surface Water Screening Values for Ecological Effects

#### 3.1 Overview

The nutrients calcium, magnesium, potassium, and sodium are present in surface water at varying concentrations in natural systems as a result of natural mineral weathering. In Illinois freshwater streams, average concentrations of calcium range from 30 to 100

mg/L, 5 to 10 mg/L for magnesium, 1 to 5 mg/L for potassium, and 10 to 20 mg/L for sodium,; however, concentrations of these ions can vary depending on the waterbody type (typically higher in lakes and ponds) and flushing rates (USGS, 2001a; 2001b). They can also be considerably higher in groundwater, because groundwater is in contact with minerals over a prolonged time and therefore greater solubilization generally occurs in groundwater as compared to surface water.

In this section, screening values are identified for aquatic organisms (e.g., fish, aquatic invertebrates, and algae) for calcium, magnesium, potassium, and sodium based on laboratory toxicity tests using the freely dissolved forms of these ions. There is a high degree of uncertainty associated with these values since so few toxicity data are available for these common ions. Each screening value is based on the toxicity observed in a single organism (i.e., Daphnia magna), and as such, the screening values do not confer protection to the entire aquatic community. However, since the screening values represent the lowest chronic value identified in the literature, the values are most likely very conservative.

There is additional uncertainty associated with any screening level developed for these constituents, because they are essential nutrients to most organisms and a level that is toxic to one organism could be a level that is inadequate for another organism. In particular, if the naturally occurring level exceeds the screening level, then the entire aquatic community will have adapted to this "elevated concentration", so reducing the concentration of the nutrient could adversely affect the local community. Thus, scientific judgment must be employed when applying these screening levels.

#### 3.2 Calcium

Suter and Tsao (1996) proposed a screening value of 116 mg/L for calcium. The screening value is based on the lowest chronic value identified in the literature and is based on tests reporting chronic toxicity to *Daphnia magna* exposed to CaCl<sub>2</sub> '2H<sub>2</sub>O. At 116 mg/L, a 16% reduction in reproduction was observed. The confidence in the screening value is low.

#### 3.3 Magnesium

Suter and Tsao (1996) proposed a screening value of 82 mg/L for magnesium based on the lowest chronic value identified in the literature. The screening value is based on tests reporting chronic toxicity to *Daphnia magna* exposed to MgCl<sub>2</sub> 6H<sub>2</sub>0. At 82 mg/L, a 16% reduction in reproduction was observed. The confidence in the screening value is low.

#### 3.4 Potassium

Suter and Tsao (1996) proposed a screening value of 53 mg/L for potassium based on the lowest chronic value identified in the literature. The screening value is based on tests reporting chronic toxicity to *Daphnia magna* exposed to KCl. At 53 mg/L, a 16% reduction in reproduction was observed. The confidence in the screening value is low.

#### 3.5 Sodium

Suter and Tsao (1996) proposed a screening value of 680 mg/L for potassium in based on the lowest chronic value identified in the literature. This value is based on exposure to freshwater organisms. The screening value is based on tests reporting chronic toxicity to Daphnia magna exposed to NaCl. At 680 mg/L, a 16% reduction in reproduction was observed. The confidence in the screening value is low.

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Table 1

Intake Parameters	
Soil ingestion rate	
Child	200 ma/day
Adult	100 mg/day
Construction worker	480 mg/day
Conversion factor	1.E-06 kg/mg
Orinking water ingestion rate	rate
Child	1 L/day
Adult	2 L/day

Toxicological Data and Screening Levels

	naddo	pperbound Acceptable Daily Intake (UADI)	ole Daily Ir	itake (UADI)			Screening Levels	es.	
		Child		Adult		Soil		Drinking Water	Water
Chemical	Value mg/day	Basis	Value mg/day	Basis	Child	Adult ma/ka	Con. Work.	Child ma/l	Adult
Calcium	2,500		2,500	UL	12,500,000	25,000,000	5,200,000	2,500	1,250
		level (UL)							
Magnesium	65	UL for	တ္ထ	UL for	325,000	3,500,000	000'082	65	175
		supplementary		supplementary					
		- Bw		Mg					
Potassium	3,500	highest	3,500	highest	17,500,000	35,000,000	7,300,000	3.500	1,750
ox I		recommended		recommended					
		intake		intake					
		reported in		reported in					
		literature		literature					
Sodium	3,300	highest	3,300	highest	16,500,000	33,000,000	6,900,000	3.300	1.650
•		recommended		recommended					
		intake		intake					
		reported in		reported in					
		literature		literature					

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	Value	Basis
Chemical	mg/L	
Calcium	116	LCV from Daphia magna toxicity studies
Magnesium	82	LCV from Daphia magna toxicity studles
Potassium	53	LCV from Daphia magna toxicity studies
Sodium	089	LCV from Daphia magna toxicity studies
0-4-0-		

LCV = Lowest Chronic Value

Appendix F

#### Appendix F

Calculation of Tier 2 Screening Values for Selected Constituents

This appendix provides the results of calculating Tier 2 screening values for the soil component of the groundwater ingestion exposure route for the following constituents: methylene chloride, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, carbazole, pentachlorophenol, beta-BHC, 4,4'-DDT, and dieldrin. In a Tier 2 evaluation, the additive effects of multiple noncarcinogenic chemicals acting on the same target organ should be considered. However, all of the chemicals included in this Tier 2 evaluation are considered carcinogenic. For this evaluation, a site-specific organic carbon content of 5.13% was used to estimate Tier 2 screening levels for the soil component of the groundwater ingestion exposure route.

Table 1 presents the calculation of a pH-specific organic carbon to water partitioning coefficient  $(K_{oc})$  for pentachlorophenol. The estimation of the  $K_{oc}$  involved two calculations as outlined in the Technical Background Document to the Soil Screening Guidance (USEPA, 1996). First, the extent of ionization was calculated with the following equation.

$$f_{n, acid} = [HA]/([HA] + [A-]) = (1 + 10^{(pH-pKa)})^{-1}$$

where:

 $f_{n, acid}$  = fraction of neutral species present for organic acids (unitless)

[HA] = equilibrium concentration of organic acid (mol/L)

[A-] = equilibrium concentration of anion (mol/L)

pKa = acid dissociation constant (unitless)

Second, the Koc was calculated using the following equation.

$$K_{oc} = K_{oc,n} * f_n + K_{oc,i} * (1 - f_n)$$

where:

Koc = soil organic carbon to water partition coefficient (L/kg)

 $K_{oc,n}$  = partition coefficient for the neutral species (L/kg)

 $f_n$  = fraction of neutral species present for acids or bases

K<sub>oc,i</sub> = partition coefficient for the ionized species (L/kg)

In Table 1, the Koc for pentachlorophenol was calculated based on a site-specific pH of 7.8.

Table 2 presents the calculated Tier 2 screening values for the soil component of the groundwater ingestion route for soil using equations from Appendix C of TACO (IPCB, 2001). In Table 2, the column labeled K<sub>d</sub>, the soil to water partitioning coefficient, is calculated from equation S-19. K<sub>overall</sub>, the overall soil to water partitioning coefficient, is calculated from equation S-17. C<sub>gw-sv</sub>, groundwater screening values, were obtained from Appendix B, Table F of TACO for all constituents except beta-BHC. The value for beta-BHC is provided in Appendix C of this report. C<sub>w</sub>, the target soil leachate concentration, is calculated from equation S18. Finally, C<sub>s</sub>, the Tier 2 screening value for the soil component of the groundwater ingestion exposure route, is calculated from equation S17.

#### References

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USEPA, 1996. Soil Screening Guidance: Technical Background Document. Office of Solid Waste and Emergency Response, Washington, D.C. EPA/540/R-95/128.

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Constituent: Pentachlorophenol

	-		
Value	4.8	19953	398
Parameter	ja P	5	ci.

Results

pH (unitless)	f <sub>n</sub> (unitless)	K. (L/kg)	K <sub>oc</sub> from Table 42 of USEPA (1996) (L/kg)
/alidation			
4.9	0.4427		9055
	0.0099	592	592
8	0.0006		410
7.8	0.0010	418	

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Table 2 Tier 2 Screening Values for the Soil Component of the Groundwater Ingestion Exposure Route

Input Parameters

arameter	Value	Parameter
ac (kg-OC/kg)	0.0513	K (mýr)
W	0.3	i (m/m)
ia i	0.13	(E) P
th (kg/L)	1.5	l (m/yr)
	20	(E)

Calculated Parameters

	Koc	Ή	РУ	Koverall	Cgw-sv	Cw	S	
Chemical	(L/kg)	unitless	(Ukg)	unkless	(mg/L)	(mg/L)	(mg/kg)	
VOCs Methylene Chloride	1.17E+01	8.98E-02	6.00E-01	0.8	0.00500	0.10000	0,081	
SVOCs PAHs							_	
Benzo(a)anthracene	3.98E+05	1.37E-04	2.04E+04	20,417.6	0.00010	0.00200	41	
Benzo(b) fluoranthene	1.23E+06	4.55E-03	6.31E+04	63,099.2	0,00010	0.00200	126	
Benzo(a)pyrene	1.02E+06	4.63E-05	5.23E+04	52,326.2	0.00020	0.00400	209	
Carbazole	3.00E+03	3.55E-06	1.54E+02	154.1	0.00400	0.08000	12	
Pentachlorophenol	4.185+02	1.00E-06	2.14E+01	21.6	0.00100	0.02000	0.43	
Pesticides								
beta-BHC	1.26E+03	3,05E-05	6.46E+01	64.8	0.00005	0.00100	0.065	
4,4*-DDT	2.63E+06	3,32E-04	· 1.35E+05	134,919.2	0.00030	0.00600	809.5	
Dieldrin	2.145+04	6.19E-04	1.10E+03	1,098.0	5.00E-06	0.00010	0.11	
foc = fraction organic carbon aw = water-filled soil possity	K = hydraulio conductivity i = gradical	tivity	Koc = organis curbon partition coofficient F ** dimensionless Henry's law cunstant	partition coofficient ary's law constant				

d = thickness of groundwater L - length of source I = infiltration rate nw - water-filled soil poroeity na a sir-filled soil perceity pb = dry soil bulk density DF = dilution factor

Cgw.yv = groundwater screening value

Koverell - overall soil to water and sir partition coefficient

Kd - soil to water partition coefficient

Cw = target soil Jeachate concentration Cs = sereoning value for the soil component of the groundwater ingestion exporure route

Appendix G

Calculation of Acute Action Level for Arsenic

Project No. CEDI4-15159-000
Page 1 of 2
Client Comta Date Oct 31, 200
Site Tannery By DJM
Subject Ars, CAcute Tax, App. JAG



# Arsenic Acute Toxicity

Cs = THI

$$\left[ \left( \frac{IR_{s} * CF * ABS_{i}}{BW \cdot RFD_{o-a}} \right) + \left( \frac{SA \cdot AF \cdot CF \cdot ABS_{d}}{BW \cdot RFD_{d-a}} \right) \right]$$

Project No. CEDI4-15159-000	Page 2 of 2
Client Contd	Date Oct 31, 2001
site Tanneru	By DIM
Subject Ars. Acute Tox.	App. JAG



THI = 1

IRs = 
$$480 \text{ mg/mg}$$
 day

 $CF = 10^{-6} \text{ kg/mg}$  (conversion factor)

 $ABS_i = 0.8$  for assenic

 $BW = 70 \text{ kg}$ 
 $SA = 3300 \text{ cm}^2/\text{day}$ 
 $AE = 6.5 \text{ mg/m}^2$ 
 $ABS_d = 0.03$  for assenic

$$C_{s} = \frac{1}{\left[\frac{480 \, \text{mg/kg} \cdot 10^{-6} \, \text{kg/mg} \cdot 0.8}{70 \, \text{kg} \cdot 0.005 \, \text{mg/kg-obs}}\right] \cdot \left(\frac{3300 \, \text{cm}^{2} \cdot 0.5 \, \text{mg/kg} \cdot 0.02}{70 \, \text{kg} \cdot 0.005 \, \text{mg/kg-obs}}\right)}$$

$$= \frac{1}{\left[1.1 \, \text{x} \cdot 10^{-3} \, \text{kg/mg} + 1.4 \, \text{x} \cdot 10^{-4} \, \text{kg/mg}\right]}$$

$$= \frac{1}{1.24 \, \text{x} \cdot 10^{-3} \, \text{kg/mg}}$$

$$\approx 800 \, \, \text{mg/kg}$$

Appendix H

tor a second Tier 3 Evaluation for Area 1B

#### 1.0 Introduction

This appendix presents Tier 3 screening values and forward risk calculations for the current on-site maintenance worker and future on-site outdoor worker at Area 1B of the Tannery Site from ingestion, dermal contact and particulate inhalation exposure to surface and subsurface soil based upon central tendency exposure (CTE) and reasonable maximum exposure (RME) scenarios.

Five constituents were identified in surface or subsurface soil that exceed the Industrial/Commercial Tier 1 screening values for soil ingestion, calculated according to TACO (IPCB, 2001). These constituents include arsenic, benzo(a)anthracene (BaA), benzo(a)pyrene (BaP), benzo(b)fluoranthene (BbF), and dibenz(a,h)anthracene. Additionally, similar acting chemicals were evaluated according to TACO, Section 742.915(h). Table F in Appendix A of TACO (IPCB, 2001) identifies the lungs as the target organ for arsenic for the inhalation route. Beryllium, cadmium and nickel are the only other constituent detected at the site that are identified in Table F as acting on the same target organ group as arsenic (lungs). Therefore, Tier 3 screening values and risk calculations were also calculated for beryllium, cadmium and nickel for the inhalation pathway only.

Likewise, Table F in Appendix A of TACO (IPCB, 2001) identifies the gastrointestinal system as the target organ for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene. Chrysene and indeno(1,2,3-cd)pyrene are the only other constituent detected at the site that are identified in Table F as acting on the same target organ group as benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene (gastrointestinal system). Therefore, Tier 3 screening values and risk calculations were also calculated for chrysene and indeno(1,2,3-cd)pyrene.

The screening equations and risk calculations presented in this memo are derived using guidance from U.S. EPA's Risk Assessment Guidance for Superfund (RAGS), Part A (1989); Massachusetts Guidance for Disposal Site Risk Characterization (1995); Illinois Pollution Control Board Tiered Approach to Corrective Action Objective (TACO) (IPCB, 2001); U.S. EPA's Region IV Human Health Risk Assessment Bulletins – Supplement to RAGS (1995); U.S. EPA's Soil Screening Guidance (1996); U.S. EPA's Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites (2001); U.S. EPA's Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure (1993) and a Memorandum from U.S. EPA Toxicologist Robert Benson (1998). Although Tier 3 screening values and risk calculations were derived in a similar manner as the Tier 2 screening values, they are not identical to Tier 2 equations for the following reasons:

- The Tier 3 screening values and risk calculations incorporate innovations in risk assessment not found in Tier 2 screening value equations (IPCB, 2001), such as a modified method of assessing inhalation exposure using receptorspecific inhalation rates and exposure times.
- The Tier 3 screening values and risk calculations incorporate dermal exposure to soil, which is not included in the Tier 2 screening value (SSL) equations (IPCB, 2001).

- The Tier 3 screening values and risk calculations incorporate chemicalspecific oral and dermal absorption factors (when available), which are not included in the Tier 2 screening value equations (IPCB, 2001).
- The Tier 3 screening values and risk calculations incorporate a fraction of ingestion and dermal contact based upon expected industrial activity patterns and the fraction of the site that is contaminated.

#### 2.0 Noncancer Tier 3 Screening Values and Risk Calculations

The Tier 3 evaluation identifies a CTE scenario, which incorporates average exposure assumptions into the screening values and risk calculations. In addition, Tier 3 calculations were evaluated for a RME scenario, which incorporates upperbound exposure assumptions into the screening values and risk calculations. U.S. EPA's Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure (1993) provides guidance on how to identify appropriate CTE and RME exposure assumptions for a particular receptor. This guidance also provides standard default exposure assumptions, which were implemented into the Tier 3 screening values and forward risk calculations for this site. CTE and RME exposure assumptions for the current on-site maintenance worker (MW) are presented in Tables 1 and 2, respectively. CTE and RME exposure assumptions for the future on-site outdoor worker (OW) are presented in Tables 3 and 4, respectively.

#### 2.1 Ingestion Calculations

Noncancer Tier 3 screening values and risk calculations related to incidental ingestion of soil are calculated using a modified version of the Tier 1 and 2 screening equation (equation [1]), which is presented below.

$$\frac{THQ \circ BW \circ AT \circ 365 \frac{d}{yr}}{\frac{1}{RfD_o} \circ 10^{-6} \frac{kg}{mg} \circ EF \circ ED \circ IR_{toll}}$$

2.1.1 Tier 3 Ingestion Noncancer Screening Value

The Tier 3 screening value calculation has been modified from the above Tier 1 and 2 calculation to account for the oral absorption and fraction of ingestion. The Tier 3 screening value calculation is presented below (modifications are in bold):

IRsoil = Ingestion Rate [CTE = 20 mg/day (both receptors); RME = 50 mg/day (both receptors)]

FI = Fraction Ingested [CTE = 10% (both receptors); RME = 20% (both receptors)]

EF = Exposure Frequency (CTE MW = 36 days/year; RME MW = 72 days/year; CTE OW = 219 days/year; RME OW = 250 days/year)

ED = Exposure Duration [CTE = 5 years (both receptors); RME = 25 years (both receptors)]

ABSo = Oral Absorption Factor (chemical-specific or default of 1), unitless

RfDo = Oral Reference Dose (chemical-specific), mg/kg-day

The CTE and RME input parameters for the Tier 3 soil ingestion screening value for the current maintenance worker are presented in Tables 1 and 2, respectively. The CTE and RME input parameters for the Tier 3 soil ingestion screening value for the future outdoor worker are presented in Tables 3 and 4, respectively. Chemical-specific input parameters (e.g., oral absorption factor, oral reference dose) are presented in Table 5.

2.1.2 Tier 3 Ingestion Noncancer Risk Calculation

The Tier 3 risk calculation has been modified from the above Tier 1 and 2 calculation to account for the oral absorption and fraction ingestion. The Tier 3 risk calculation is presented below (modifications are in bold):

Tier 3 Ingestion
Noncancer Risk
(unitless) =

[Csoil x IRsoil x FI x 10<sup>6</sup> kg/mg x EF x ED x ABSo x (1/RfDo)]

 $[BW \times AT_{NC} \times 365 \text{ d/yr}]$ 

### where:

Csoil = Concentration in soil (chemical-specific), mg/kg

IRsoil = Ingestion Rate [CTE = 20 mg/day (both receptors); RME = 50 mg/day (both

receptors)]

FI = Fraction Ingested [CTE = 10% (both receptors); RME = 20% (both

receptors) [

EF = Exposure Frequency (CTE MW = 36 days/year; RME MW = 72 days/year;

CTE OW = 219 days/year; RME OW = 250 days/year)

ED = Exposure Duration [CTE = 5 years (both receptors); RME = 25 years (both

receptors)]

ABSo = Oral Absorption Factor (chemical-specific or default of I), unitless

RfDo = Oral Reference Dose (chemical-specific), mg/kg-day

BW = Body Weight (70 kg, CTE and RME, both receptors)

AT<sub>NC</sub> = Averaging Time, noncancer [CTE = 5 years (both receptors); RME = 25 years (both receptors)]

[3]

The CTE and RME input parameters for the Tier 3 soil ingestion risk calculation for the current maintenance worker are presented in Tables 1 and 2, respectively. The CTE and RME input parameters for the Tier 3 soil ingestion risk calculation for the future outdoor worker are presented in Tables 3 and 4, respectively. Chemical-specific input parameters (e.g., oral absorption factor, oral reference dose) are presented in Table 5.

### 2.2 Dermal Contact Calculations

2.2.1 Tier 3 Dermal Contact Noncancer Screening Value

Noncancer Tier 1 and 2 screening equations related to dermal contact with soil are not presented in the (SSL) screening equations (IPCB, 2001). Therefore, the Tier 3 dermal screening equation is presented below. Per request by Illinois EPA (personal conversation with Tom Hornshaw, April 25, 2002), quantitative dermal evaluation for PAHs should not be calculated. Instead, dermal contact with PAHs is accounted for by assuming the quantitative results from ingestion (e.g., dermal risk = ingestion risk; dermal screening value = ingestion screening value).

Tier 3 Dermal
Contact Noncancer
Screening Value,
SVderm
(mg/kg) =

[THQ x BW x AT<sub>NC</sub> x 365 d/yr]

[BSAE x FD x 10° kg/mg x AF x EF x ED x ABSd x (1/RfDd)]

### where:

THQ = Target Hazard Quotient (1), unitless

BW = Body Weight (70 kg, CTE and RME, both receptors)

AT<sub>NC</sub> = Averaging Time, noncancer [CTE = 5 years (both receptors); RME = 25

years (both receptors)]

BSAE = Body Surface Area Exposed (3,300 cm<sup>2</sup>, CTE and RME, both receptors)

FD = Fraction of dermal contact with affected soil [CTE = 10% (both receptors);

RME = 20% (both receptors)]

AF = Soil Adherence Factor  $[CTE = 0.02 \text{ mg/cm}^2 \text{ (both receptors)}; RME = 0.2 \text{ mg/cm}^2 \text{ (both receptors)}]$ 

mg/cm² (both receptors)]

EF = Exposure Frequency (CTE MW = 36 days/year; RME MW = 72 days/year):

CTE OW = 219 days/year; RME OW = 250 days/year)

ED = Exposure Duration [CTE = 5 years (both receptors); RME = 25 years (both

receptors)]

ABSd = Dermal Absorption Factor (chemical-specific), %/day

RfDd = Dermal Reference Dose (chemical-specific), mg/kg-day

[4]

The CTE and RME input parameters for the Tier 3 dermal contact screening value for the current maintenance worker are presented in Tables 1 and 2, respectively. The CTE and RME input parameters for the Tier 3 dermal contact screening value for the future outdoor worker are presented in Tables 3 and 4, respectively. Chemical-specific input parameters (e.g., dermal absorption factor, dermal reference dose) are presented in Table 5.

### 2.2.2 Tier 3 Dermal Contact Noncancer Risk Calculation

Noncancer Tier 1 and 2 screening equations related to dermal contact with soil are not presented in the (SSL) screening equations (IPCB, 2001). Therefore, the Tier 3 dermal risk calculation is presented below.

[5]

Tier 3 Dermal Contact Noncancer Risk (unitless) =

[Csoil x BSAE x FD x 10<sup>-6</sup> kg/mg x AF x EF x ED x ABSd x (1/RfDd)]

[BW x AT<sub>NC</sub> x 365 d/yr]

### where:

Csoil =	Concentration in soil (chemical-specific), mg/kg
BSAE =	Body Surface Area Exposed (3,300 cm², CTE and RME, both receptors)
FD =	Fraction of dermal contact with affected soil [CTE = 10% (both receptors); RME = 20% (both receptors)]
AF =	Soil Adherence Factor $[CTE = 0.02 \text{ mg/cm}^2 \text{ (both receptors)}; RME = 0.2 \text{ mg/cm}^2 \text{ (both receptors)}]$
EF =	Exposure Frequency (CTE MW = 36 days/year; RME MW = 72 days/year; CTE OW = 219 days/year; RME OW = 250 days/year)
ED =	Exposure Duration [CTE = 5 years (both receptors); RME = 25 years (both receptors)]
ABSd =	Dermal Absorption Factor (chemical-specific), %/day
RfDd =	Dermal Reference Dose (chemical-specific), mg/kg-day
BW =	Body Weight (70 kg, CTE and RME, both receptors)
$AT_{NC} =$	Averaging Time, noncancer [CTE = 5 years (both receptors); RME = 25

The CTE and RME input parameters for the Tier 3 dermal contact risk calculation for the current maintenance worker are presented in Tables 1 and 2, respectively. The CTE and RME input parameters for the Tier 3 dermal contact risk calculation for the future outdoor worker are presented in Tables 3 and 4, respectively. Chemical-specific input parameters (e.g., dermal absorption factor, dermal reference dose) are presented in Table 5.

### 2.3 Inhalation Calculations

Noncancer Tier 3 screening values and risk calculations related to inhalation are calculated using a modified version of the Tier 1 and 2 screening equation (equation [6]), which is presented below.

[6]

$$\frac{THQ \bullet AT \bullet 365 \frac{d}{yr}}{EF \bullet ED \bullet \left(\frac{1}{RfC} \bullet \frac{1}{PEF}\right)}$$

The Tier 3 screening values and risk calculations have been modified from the above Tier 1 and 2 calculation to account for the discontinuous inhalation experienced by typical receptors (e.g., industrial workers typically work 8 hours per day) while using toxicity values [inhalation Reference Concentrations (RfC) and inhalation Unit Risks (URF)], which are based upon continuous inhalation. The discontinuous inhalation calculation is derived using equations presented in a memorandum by U.S. EPA Toxicologist Robert Benson (Benson, 1998) and accounts for a specific receptor's inhalation rate, exposure frequency, and exposure duration. This equation is derived from "Adjustment for Occupational Scenarios" in the memo by Benson (Benson, 1998). Contrary to the different adjustments for residential and occupational scenarios in Benson's memo, Equations [7] and [8] are used to calculated an inhaled volume for the current maintenance worker and future outdoor worker, as opposed to the older U.S. EPA default inhalation rate of 20 m³/day, which is used in Benson's residential equation.

 $VEr(m^{3}/day) = \frac{IR \times ET}{24hours/day}$  [7]

where:

VE<sub>r</sub> = Receptor inhaled volume during exposure [CTE= 5.2 m³/day (both receptors); RME= 12 m³/day (both receptors)]

IR = Inhalation rate [CTE=31.2 m³/day or 1.3 m³/hr (both receptors); RME=36 m³/day or 1.5 m³/hr (both receptors)]

ET = Exposure time [CTE = 4 hours/day (both receptors); RME = 8 hours/day (both receptors)]

### Notes:

 $VE_r$  is changed from the original  $VE_{ob}$  (occupational default minute volume) because it will be used for all receptors. The equation to calculate  $VE_r$  is not specifically noted in Benson, 1998 but is a logical method to calculate daily inhalation.

### 2.3.1 Tier 3 Inhalation Noncancer Screening Value

The Tier 3 screening value calculation for a inhalation of particulates has been modified from the Tier 1 and 2 equation and is presented below (modifications are in bold):

Tier 3 Inhalation Noncancer Screening Value, SVinh

[THQ x  $AT_{NC}$  x 365 d/yr] [(VEr/VEh) x EF x ED x (1/RfC x 1/PEF)]

where:

THQ = Target Hazard Quotient (1), unitless

AT<sub>NC</sub> = Averaging Time, noncancer [CTE = 5 years (both receptors); RME = 25 years (both receptors)]

VE<sub>r</sub> = Receptor inhaled volume during exposure [CTE = 5.2 m³/day (both receptors); RME = 12 m³/day (both receptors)]

VE<sub>h</sub> = Human default inhaled volume (20m³/day, CTE and RME, both receptors)

EF = Exposure Frequency (CTE MW = 36 days/year; RME MW = 72 days/year; CTE OW = 219 days/year; RME OW = 250 days/year)

ED = Exposure Duration [CTE = 5 years (both receptors); RME = 25 years (both

receptors)]

RfC = Inhalation Reference Concentration (chemical-specific), mg/m<sup>3</sup>

PEF = Particulate Emission Factor (1.32E+09 m<sup>3</sup>/kg, CTE and RME)

The CTE and RME input parameters for the Tier 3 inhalation screening value for the current maintenance worker are presented in Tables 1 and 2, respectively. The CTE and RME input parameters for the Tier 3 inhalation screening value for the future outdoor worker are presented in Tables 3 and 4, respectively. Chemical-specific input parameters (e.g., inhalation reference concentration) are presented in Table 5. A detailed description of the PEF used in equation [8] is presented below.

Particulate Emission Factor (PEF) For this site, all constituents identified for Tier 3 screening calculations are non-volatile. Therefore, a default residential PEF for industrial scenarios is presented for these two constituents. The PEF relates the concentration of a constituent in soil to the concentration of dust particulates in the air (USEPA, 1996; USEPA, 2001). The PEF is based on the "unlimited reservoir" model from Cowherd et al. (1985) developed to estimate particulate emissions due to wind erosion (USEPA, 1996). The PEF input parameter is the same for the CTE and RME exposure scenario and both types of industrial workers. The PEF value is presented in Tables 1 through 4.

### 2.3.2 Tier 3 Inhalation Noncancer Risk Calculation

The Tier 3 risk calculation for inhalation of soil particulates has been modified from the Tier 1 and 2 equation and is presented below (modifications are in bold):

[9]

Tier 3 Inhalation Noncancer Risk (unitless) =

[Csoil x (VEr/VEh) x EF x ED x (1/RfC x 1/PEF)]

 $[AT_{NC} \times 365 d/yr]$ 

where:

Concentration in soil (chemical-specific), mg/kg Csoil = Receptor inhaled volume during exposure [CTE= 5.2 m3/day (both VE, receptors); RME= 12 m³/day (both receptors)] Human default inhaled volume (20m³/day, CTE and RME, both receptors) VE<sub>b</sub> Exposure Frequency (CTE MW = 36 days/year; RME MW = 72 days/year; EF CTE OW = 219 days/year; RME OW = 250 days/year)ED Exposure Duration [CTE = 5 years (both receptors); RME = 25 years (both receptors)] Inhalation Reference Concentration (chemical-specific), mg/m3 RfC Particulate Emission Factor (1.32E+09 m³/kg, CTE and RME, receptors) PEF Averaging Time, noncancer [CTE = 5 years (both receptors); RME = 25  $AT_{NC} =$ years (both receptors)]

The CTE and RME input parameters for the Tier 3 inhalation risk calculation for the current maintenance worker are presented in Tables 1 and 2, respectively. The CTE and RME input parameters for the Tier 3 inhalation risk calculation for the future outdoor worker are presented in Tables 3 and 4, respectively. Chemical-specific input parameters (e.g., inhalation reference concentration) are presented in Table 5.

### 2.4 Noncancer Toxicity Information

For the Tier 3 screening calculations, dermal toxicity values are assumed to be equal to oral toxicity values. The oral reference dose (RfDo) and inhalation reference concentration (RfC) for the 10 constituents are presented in Table 5. Noncancer toxicity values are not available for any of the six PAHs. Although oral reference doses and inhalation reference concentrations may be available for beryllium, cadmium, or nickel, they are not presented in Table 5 because the Tier 3 evaluation for these metals is based upon carcinogenic effects of inhalation only.

### 2.5 Noncancer Screening Values

The Tier 3 CTE and RME noncancer screening values for the current maintenance worker and future outdoor worker are presented in Tables 6 through 9.

The combined Tier 3 screening value (SVcomb) for all three soil pathways (ingestion, dermal contact, inhalation) is presented below in equation [10]:

[10]

1/SVcomb = 1/SVing + 1/SVderm + 1/SVinh

Noncancer toxicity values are only available for arsenic. Therefore, Tier 3 CTE and RME noncancer screening values for arsenic are presented below.

### Combined Noncancer Soil Screening Values for the Current Maintenance Worker

- CTE arsenic screening value = 118,418.6 mg/kg
- RME arsenic screening value = 8,901.2 mg/kg

### Combined Noncancer Soil Screening Values for the Future Outdoor Worker

- CTE arsenic screening value = 19,466.1 mg/kg
- RME arsenic screening value = 2,563.5 mg/kg

# 2.6 Comparison of Soil Concentrations to Tier 3 Noncancer Screening Values

Tier 3 CTE and RME noncancer screening values for arsenic were compared to surface and subsurface soil concentrations (C<sub>soil</sub>), which are identified as the upperbound estimate of average (UEA). C<sub>soil</sub> values are presented in Tables 6 through 9 and below:

- Arsenic, surface soil (Csoil = 8.81 mg/kg), and
- Arsenic, subsurface soil (C<sub>soil</sub> = 28.8 mg/kg)

Any C<sub>soil</sub> value for a constituent that exceeds its respective CTE or RME Tier 3 combined noncancer screening value may pose a potential human health risk. The surface and subsurface C<sub>soil</sub> values for arsenic do not exceed either the CTE or RME Tier 3 combined noncancer screening values for either receptor, indicating no potential for adverse risk for the current maintenance worker or for the future outdoor worker.

# 2.7 Calculation of Tier 3 Soil Noncancer Risks for a Current Maintenance Worker

Tier 3 CTE and RME noncancer risks for the current maintenance worker were calculated using both the surface and subsurface soil exposure point concentrations (C<sub>soil</sub>), and the results of these comparisons are provided in Tables 6 and 7. C<sub>soil</sub> values are presented below:

- Arsenic, surface soil (C<sub>soil</sub> = 8.81 mg/kg), and
- Arsenic, subsurface soil (Csoil = 28.8 mg/kg)

The resulting CTE and RME noncancer risks for arsenic in surface soil are 7.4E-05 and 9.9E-04, respectively. Both of these noncancer risks are below an acceptable chronic threshold level of 1, indicating no potential for adverse risk from surface soil for the current maintenance worker. The resulting CTE and RME noncancer risks for arsenic in subsurface soil are 2.4E-04 and 3.2E-03, respectively. Both of these noncancer risks are below an acceptable chronic threshold level of 1, indicating no potential for adverse risk from subsurface soil for the current maintenance worker.

### 2.8 Calculation of Tier 3 Soil Noncancer Risks for a Future Outdoor Worker

Tier 3 CTE and RME noncancer risks for the future outdoor worker were calculated using both the surface and subsurface soil exposure point concentrations (C<sub>soil</sub>), and the results of these comparisons are provided in Tables 8 and 9. C<sub>soil</sub> values are presented below:

- Arsenic, surface soil (C<sub>soil</sub> = 8.81 mg/kg), and
- Arsenic, subsurface soil (C<sub>soil</sub> = 28.8 mg/kg)

The resulting CTE and RME noncancer risks for arsenic in surface soil are 4.5E-04 and 3.4E-03, respectively. Both of these noncancer risks are below an acceptable chronic threshold level of 1, indicating no potential for adverse risk from surface soil for the future outdoor worker. The resulting CTE and RME noncancer risks for arsenic in subsurface soil are 1.5E-03 and 1.1E-02, respectively. Both of these noncancer risks are below an acceptable chronic threshold level of 1, indicating no potential for adverse risk from subsurface soil for the future outdoor worker.

### 3 Cancer Tier 3 Screening Values and Risk Calculations

The Tier 3 screening value and risk calculation equations for carcinogenic constituents are identical to those calculations for noncarcinogenic constituents, with the exception of toxicity values. For example, the Inhalation Unit Risk Factor (URF) is used instead of the Inhalation Reference Concentration (RfC). When using an inhalation unit risk factor, a conversion factor of 1,000 ug/mg must also be used. A conversion factor is not necessary when using the oral slope factor instead of the oral reference dose.

### 3.1 Ingestion Calculations

Cancer Tier 3 screening values and risk calculations related to incidental ingestion of soil are calculated using a modified version of the Tier 1 and 2 screening equation (equation [11]), which is presented below.

$$\frac{TR \bullet BW \bullet AT_c \bullet 365 \frac{d}{yr}}{SF_o \bullet 10^{-6} \frac{kg}{mg} \bullet EF \bullet ED \bullet IR_{soft}}$$

3.1.1 Tier 3 Ingestion Cancer Screening Value

The Tier 3 screening value calculation has been modified from the above Tier 1 and 2 calculation to account for the oral absorption and fraction of ingestion. The Tier 3 screening value calculation is presented below (modifications are in bold):

[12]

Tier 3 Ingestion Cancer Screening Value, SVing (mg/kg) =

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where:

TR	_	Target Risk Level (1E-06), unitless
BW	=	Body Weight (70 kg, CTE and RME, both receptors)
$AT_{C}$	=	Averaging Time, cancer (70 years, CTE and RME, both receptors)
IRsoil	=	Ingestion Rate [CTE = 20 mg/day (both receptors); RME = 50 mg/day (both receptors)]
FI	=	Fraction Ingested [CTE = 10% (both receptors); RME = 20% (both receptors)]
EF	-	Exposure Frequency (CTE MW = 36 days/year; RME MW = 72 days/year; CTE OW = 219 days/year; RME OW = 250 days/year)
ED	=	Exposure Duration [CTE = 5 years (both receptors); RME = 25 years (both receptors)]
ABS <sub>0</sub>	=	Oral Absorption Factor (chemical-specific or default of I), unitless
SFo	=	Oral Slope Factor (chemical-specific), mg/kg-day-1

The CTE and RME input parameters for the Tier 3 soil ingestion screening value for the current maintenance worker are presented in Tables 1 and 2, respectively. The CTE and RME input parameters for the Tier 3 soil ingestion screening value for the future outdoor worker are presented in Tables 3 and 4, respectively. Chemical-specific input parameters (e.g., oral absorption factor, oral slope factor) are presented in Table 5.

3.1.2 Tier 3 Ingestion Cancer Risk Calculation

The Tier 3 risk calculation has been modified from the above Tier 1 and 2 calculation to account for the oral absorption and fraction ingestion. The Tier 3 risk calculation is presented below (modifications are in bold):

Tier 3 Ingestion
Cancer Risk
(unitless) =

[Csoil x IRsoil x FI x 10<sup>-6</sup> kg/mg x EF x ED x ABSo x SFo]

 $[BW \times AT_C \times 365 \text{ d/yr}]$ 

where:

Csoil = Concentration in soil (chemical-specific), mg/kg
IRsoil = Ingestion Rate [CTE = 20 mg/day (both receptors); RME = 50 mg/day (both receptors)]

FI = Fraction Ingested [CTE = 10% (both receptors); RME = 20% (both receptors)]

EF = Exposure Frequency (CTE MW = 36 days/year; RME MW = 72 days/year; CTE OW = 219 days/year; RME OW = 250 days/year)

ED = Exposure Duration [CTE = 5 years (both receptors); RME = 25 years (both receptors)]

ABSo = Oral Absorption Factor (chemical-specific or default of 1), untiless

[13]

SFo = Oral Slope Factor (chemical-specific), mg/kg-day<sup>1</sup>
BW = Body Weight (70 kg, CTE and RME, both receptors)

AT<sub>C</sub> = Averaging Time, cancer (70 years, CTE and RME, both receptors)

The CTE and RME input parameters for the Tier 3 soil ingestion risk calculations for the current maintenance worker are presented in Tables 1 and 2, respectively. The CTE and RME input parameters for the Tier 3 soil ingestion risk calculations for the future outdoor worker are presented in Tables 3 and 4, respectively. Chemical-specific input parameters (e.g., oral absorption factor, oral slope factor) are presented in Table 5.

### 3.2 Dermal Contact Calculations

Cancer Tier 1 and 2 screening equations related to dermal contact with soil are not presented in the (SSL) screening equations (IPCB, 2001). Therefore, the Tier 3 dermal screening equation is presented below. Per request by Illinois EPA (personal conversation with Tom Hornshaw, April 25, 2002), quantitative dermal evaluation for PAHs should not be calculated. Instead, dermal contact with PAHs is accounted for by assuming the quantitative results from ingestion (e.g., dermal risk = ingestion risk; dermal screening value = ingestion screening value).

### 3.2.1 Tier 3 Dermal Contact Cancer Screening Value

Cancer Tier 1 and 2 screening equations related to dermal contact with soil are not presented in the (SSL) screening equations (IPCB, 2001). Therefore, the Tier 3 dermal screening equation is presented below.

Tier 3 Dermal Contact Cancer		G
Screening Value, SVderm	$[TR \times BW \times AT_C \times 365 d/yr]$	
(mg/kg) =	[BSAE x FD x 10 <sup>-6</sup> kg/mg x AF x EF x ED x ABSd x SFd]	

### where:

TR = Target Risk Level (1E-06), unitless

BW = Body Weight (70 kg, CTE and RME, both receptors)

AT<sub>C</sub> = Averaging Time, cancer (70 years, CTE and RME, both receptors)
BSAE = Body Surface Area Exposed (3,300 cm<sup>2</sup>, CTE and RME, both receptors)

FD = Fraction of dermal contact with affected soil [CTE = 10% (both receptors);

RME = 20% (both receptors)]

AF = Soil Adherence Factor [CTE = 0.02 mg/cm<sup>2</sup> (both receptors); RME = 0.2

mg/cm2 (both receptors)]

EF = Exposure Frequency (CTE MW = 36 days/year; RME MW = 72 days/year;

 $CTE \ OW = 219 \ days/year; \ RME \ OW = 250 \ days/year)$ 

[14]

ED = Exposure Duration [CTE = 5 years (both receptors); RME = 25 years (both receptors)]

ABSd = Dermal Absorption Factor (chemical-specific default of I), %/day

SFd = Dermal Slope Factor (chemical-specific), mg/kg-day<sup>1</sup>

The CTE and RME input parameters for the Tier 3 soil dermal contact screening value for the current maintenance worker are presented in Tables 1 and 2, respectively. The CTE and RME input parameters for the Tier 3 soil dermal contact screening value for the future outdoor worker are presented in Tables 3 and 4, respectively. Chemical-specific input parameters (e.g., oral absorption factor, oral slope factor) are presented in Table 5.

### 3.2.2 Tier 3 Dermal Contact Cancer Risk Calculation

Cancer Tier 1 and 2 screening equations related to dermal contact with soil are not presented in the (SSL) screening equations (IPCB, 2001). Therefore, the Tier 3 dermal risk calculation is presented below.

[15]

Tier 3 Dermal Contact Cancer Risk

(unitless) =

[Csoil x BSAE x FD x 10<sup>-6</sup> kg/mg x AF x EF x ED x ABSd x SFd]

[BW x ATc x 365 d/yr]

### where:

Csoil = Concentration in soil (chemical-specific), mg/kg

BSAE = Body Surface Area Exposed (3,300 cm<sup>2</sup>, CTE and RME, both receptors)

FD = Fraction of dermal contact with affected soil [CTE = 10% (both receptors);

RME = 20% (both receptors)]

AF = Soil Adherence Factor  $[CTE = 0.02 \text{ mg/cm}^2]$  (both receptors); RME = 0.2

mg/cm² (both receptors)]

EF = Exposure Frequency (CTE MW = 36 days/year; RME MW = 72 days/year;

 $CTE \ OW = 219 \ days/year; \ RME \ OW = 250 \ days/year)$ 

ED = Exposure Duration [CTE = 5 years (both receptors); RME = 25 years (both

receptors)]

ABSd = Dermal Absorption Factor (chemical-specific), %/day

SFd = Dermal Slope Factor (chemical-specific), mg/kg-day<sup>-1</sup>

BW = Body Weight (70 kg, CTE and RME)

 $AT_C$  = Averaging Time, cancer (70 years, CTE and RME)

The CTE and RME input parameters for the Tier 3 soil dermal contact risk calculations for the current maintenance worker are presented in Tables 1 and 2, respectively. The CTE and RME input parameters for the Tier 3 soil dermal contact risk calculations for the future outdoor worker are presented in Tables 3 and 4, respectively. Chemical-specific input parameters (e.g., oral absorption factor, oral slope factor) are presented in Table 5.

### 3.3 Inhalation Calculations

3.3.1 Tier 3 Inhalation Cancer Screening Value

The Tier 3 screening value equation for carcinogenic constituents is identical to the screening value equation for noncarcinogenic constituents, with the exception that the Inhalation Unit Risk Factor (URF) is used instead of the Inhalation Reference Concentration (RfC). When using an inhalation unit risk factor, a conversion factor of 1,000 ug/mg must also be used.

Tier 3 Inha Cancer Scre Value,		[16]
SVing (mg/kg)	= [(VEr/VEh) x URF x 1,000 ug/mg x EF x ED x (1/PEF)]	
where:		
TR :	Target Risk Level (1E-06), unitless	
AT <sub>C</sub>	Averaging Time, cancer (70 years, CTE and RME, both receptors)	
VEr	Receptor inhaled volume during exposure [CTE= 5.2 m <sup>2</sup> receptors); RME= 12 m <sup>2</sup> /day (both receptors)]	
VE <sub>h</sub> :	Human default inhaled volume (20m³/day, CTE and RME, both	receptors)
URF	Inhalation Unit Risk Factor (chemical-specific), (μg/m³)-1	. ,
EF =		days/year;
ED	Exposure Duration [CTE = 5 years (both receptors); RME = 25 receptors)]	years (both
PEF :	Particulate Emission Factor (1.32E+09 m³/kg, CTE and RME)	

The CTE and RME input parameters for the Tier 3 inhalation screening value for the current maintenance worker are presented in Tables 1 and 2, respectively. The CTE and RME input parameters for the Tier 3 inhalation screening value for the future outdoor worker are presented in Tables 3 and 4, respectively. Chemical-specific input parameters (e.g., inhalation unit risk factor) are presented in Table 5.

### 3.3.2 Tier 3 Inhalation Cancer Risk Calculation

The Tier 3 risk calculation has been modified from the Tier 1 and 2 equation and is presented below (modifications are in bold):

[17]

Tier 3 Inhalation Cancer Risk (unitless) =

[Csoil x (VEr/VEh) x EF x ED x URF x 1,000 ug/mg x (1/PEF)]

[ATc x 365 d/yr]

where:

Csoil = Concentration in soil (chemical-specific), mg/kg

VE<sub>r</sub> = Receptor inhaled volume during exposure [CTE= 5.2 m³/day (both

receptors); RME= 12 m3/day (both receptors)]

 $VE_b$  = Human default inhaled volume (20m³/day, CTE and RME, both receptors) EF = Exposure Frequency (CTE MW = 36 days/year; RME MW = 72 days/year;

CTE OW = 219 days/year; RME OW = 250 days/year)

ED = Exposure Duration [CTE = 5 years (both receptors); RME = 25 years (both receptors)]

URF = Inhalation Unit Risk Factor (chemical-specific),  $(\mu g/m^3)^{-1}$ PEF = Particulate Emission Factor (1.32E+09  $m^3/kg$ , CTE and RME)

 $AT_C$  = Averaging Time, cancer (70 years, CTE and RME)

The CTE and RME input parameters for the Tier 3 inhalation risk calculations for the current maintenance worker are presented in Tables 1 and 2, respectively. The CTE and RME input parameters for the Tier 3 inhalation risk calculations for the future outdoor worker are presented in Tables 3 and 4, respectively. Chemical-specific input parameters (e.g., inhalation unit risk factor) are presented in Table 5.

### 3.4 Cancer Toxicity Information

For the Tier 3 screening calculations, dermal toxicity values are assumed to be equal to oral toxicity values. The oral slope factor (SFo) and inhalation unit risk factor (URF) for the 10 constituents are presented in Table 5. Although oral slope factors may be available for beryllium, cadmium, or nickel, they are not presented in Table 5 because the Tier 3 evaluation for these metals is based upon carcinogenic effects of inhalation only.

### 3.5 Cancer Screening Values

The combined Tier 3 screening value (SVcomb) for all three soil pathways (ingestion, dermal contact, inhalation) is presented below in equation [18]:

1/SVcomb = 1/SVing +1/SVderm + 1/SVinh

The Tier 3 CTE and RME combined cancer screening values for the current maintenance worker and future outdoor worker are presented below and in Tables 6 through 9.

### Combined Cancer Soil Screening Values for the Current Maintenance Worker

- CTE arsenic screening value = 3,604.8 mg/kg
- RME arsenic screening value = 54.96 mg/kg
- CTE BaA screening value = 3,402.8 mg/kg
- RME BaA screening value = 68.05 mg/kg
- CTE BaP screening value = 340.1 mg/kg
- RME BaP screening value = 6.8 mg/kg

[18]

- CTE BbF screening value = 3,402.8 mg/kg
- RME BbF screening value = 68.05 mg/kg
- CTE beryllium screening value = 300,099.04 mg/kg
- RME beryllium screening value = 13,004.3 mg/kg
- CTE cadmium screening value = 400,132.05 mg/kg
- RME cadmium screening value = 17,339.05 mg/kg
- CTE chrysene screening value = 340,277.8 mg/kg
- RME chrysene screening value = 6,805.5 mg/kg
- CTE dibenz(a,h)anthracene screening value = 340.3 mg/kg
- RME dibenz(a,h)anthracene screening value = 6.8 mg/kg
- CTE indeno(1,2,3-cd)pyrene screening value = 3,402.8 mg/kg
- RME indeno(1,2,3-cd)pyrene screening value = 68.05 mg/kg
- CTE nickel screening value = 3,000,990.4 mg/kg
- RME nickel screening value = 130,042.9 mg/kg

### Combined Cancer Soil Screening Values for the Future Outdoor Worker

- CTE arsenic screening value = 592.6 mg/kg
- RME arsenic screening value = 15.8 mg/kg
- CTE BaA screening value = 559.4 mg/kg
- RME BaA screening value = 19.6mg/kg
- CTE BaP screening value = 55.9 mg/kg
- RME BaP screening value = 1.96 mg/kg
- CTE BbF screening value = 559.4 mg/kg
- RME BbF screening value = 19.6 mg/kg
- CTE beryllium screening value = 49,331.3 mg/kg
- RME beryllium screening value = 3,745.2 mg/kg
- CTE cadmium screening value = 65,775.1 mg/kg
- RME cadmium screening value = 4,993.6 mg/kg
- CTE chrysene screening value = 55,936.1 mg/kg
- RME chrysene screening value = 1,960 mg/kg
- CTE dibenz(a,h)anthracene screening value = 55.9 mg/kg
- RME dibenz(a,h)anthracene screening value = 1.96 mg/kg
- CTE indeno(1,2,3-cd)pyrene screening value = 11,187.2 mg/kg
- RME indeno(1,2,3-cd)pyrene screening value = 19.6 mg/kg
- CTE nickel screening value = 493,313.5 mg/kg
- RME nickel screening value = 37,452.4 mg/kg

### 3.6 Comparison of Soil Concentrations to Tier 3 Cancer Screening Values

Tier 3 CTE and RME cancer screening values for the 10 constituents were compared to surface and subsurface soil concentrations (C<sub>soil</sub>), which are identified as the upperbound estimate of average (UEA). C<sub>soil</sub> values are presented in Tables 6 through 9 and below:

- Arsenic, surface soil (C<sub>soil</sub> = 8.81 mg/kg), and
- Arsenic, subsurface soil (C<sub>soil</sub> = 28.8 mg/kg)

- BaA, surface soil (C<sub>soil</sub> = 5.84 mg/kg), and
- BaA, subsurface soil (C<sub>soil</sub> = 3.6 mg/kg)
- BaP, surface soil (C<sub>soil</sub> = 3.2 mg/kg), and
- BaP, subsurface soil (C<sub>soil</sub> = 9.9 mg/kg)
- BbF, surface soil (C<sub>soil</sub> = 5.35 mg/kg), and
- BbF, subsurface soil (C<sub>soil</sub> = 21.5 mg/kg)
- Beryllium, surface soil (Csoil = 1.2 mg/kg), and
- Beryllium, subsurface soil (C<sub>soil</sub> = 1.7 mg/kg)
- Cadmium, surface soil (Csoil = 4.7 mg/kg), and
- Cadmium, subsurface soil (C<sub>soil</sub> = 1.3 mg/kg)
- Chrysene, surface soil (Csoil = 5.6 mg/kg), and
- Chrysene, subsurface soil (C<sub>soil</sub> = 2.4 mg/kg)
- Dibenz(a,h)anthracene, surface soil (C<sub>soil</sub> = 1.3 mg/kg), and
- Dibenz(a,h)anthracene, subsurface soil (C<sub>soil</sub> = 0.6 mg/kg)
- Indeno(1,2,3-cd)pyrene, surface soil (C<sub>soil</sub> = 6.8 mg/kg), and
- Indeno(1,2,3-cd)pyrene, subsurface soil (C<sub>soil</sub> = 1.9 mg/kg)
- Nickel, surface soil (C<sub>soil</sub> = 16.7 mg/kg), and
- Nickel, subsurface soil (C<sub>soil</sub> = 14.3 mg/kg)

Any C<sub>soil</sub> value for a constituent that exceeds its respective CTE or RME Tier 3 combined cancer screening value may pose a potential human health risk. A summary of results is presented below.

- The surface and subsurface C<sub>soil</sub> values for all 10 constituents do not exceed the CTE Tier 3 combined cancer screening values for either receptor, indicating no potential for adverse risk for the current maintenance worker or for the future outdoor worker based upon a CTE scenario.
- The surface C<sub>soil</sub> values for all 10 constituents do not exceed the RME Tier 3 combined cancer screening values for the current maintenance worker, indicating no potential for adverse risk for the current maintenance worker based upon a RME scenario.
- The subsurface C<sub>soil</sub> values for all 10 constituents, except benzo(a)pyrene, do not exceed the RME Tier 3 combined cancer screening values for the current maintenance worker, indicating no potential for adverse risk for the current maintenance worker based upon a RME scenario. The subsurface C<sub>soil</sub> value for benzo(a)pyrene (9.9 mg/kg) is not significantly greater than the RME Tier 3 combined screening value (6.8 mg/kg) for the current maintenance worker.

- The surface C<sub>soil</sub> values for all 10 constituents, except benzo(a)pyrene, do not exceed the RME Tier 3 combined cancer screening values for the future outdoor worker, indicating no potential for adverse risk for the future outdoor worker based upon a RME scenario. The surface C<sub>soil</sub> value for benzo(a)pyrene (3.2 mg/kg) is not significantly greater than the RME Tier 3 combined screening value (1.96 mg/kg) for the future outdoor worker.
- The subsurface C<sub>soil</sub> values for all 10 constituents, except arsenic, benzo(a)pyrene, and benzo(b)fluoranthene do not exceed the RME Tier 3 combined cancer screening values for the future outdoor worker, indicating no potential for adverse risk for the future outdoor worker based upon a RME scenario. The subsurface C<sub>soil</sub> value for arsenic (28.8 mg/kg) is not significantly greater than the RME Tier 3 combined screening value (15.8 mg/kg) for the future outdoor worker. The subsurface C<sub>soil</sub> value for benzo(a)pyrene (9.9 mg/kg) is not significantly greater than the RME Tier 3 combined screening value (1.96 mg/kg) for the future outdoor worker. The subsurface C<sub>soil</sub> value for benzo(b)fluoranthene (21.5 mg/kg) is not significantly greater than the RME Tier 3 combined screening value (19.6 mg/kg) for the future outdoor worker.

## 3.7 Calculation of Tier 3 Soil Cancer Risks for a Current Maintenance Worker

Tier 3 CTE and RME cancer risks for the current maintenance worker were calculated using both the surface and subsurface soil exposure point concentrations (C<sub>soil</sub>), and the results of these comparisons are provided in Tables 6 and 7. When evaluating carcinogenic risks, an acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup> is consistent with the National Oil and Hazardous Substance Pollution Contingency Plan (1990) and with Illinois regulations (Section 742.900; Subpart I of TACO). According to the Illinois EPA, a site with carcinogenic risks less than 10<sup>-6</sup> generally should be considered a no-action site. For sites with carcinogenic risks greater than 10<sup>-6</sup>, further risk evaluation of the site is required. For sites with a carcinogenic risk greater than 10<sup>-4</sup>, corrective action is normally required (personal communication with Connie Sullinger of Illinois EPA, April 9, 2002).

The resulting RME cancer risks for all 10 constituents in surface soil are below an acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup>, indicating no potential for adverse risk from surface soil for the current maintenance worker based upon a RME scenario. In addition, the resulting cumulative RME surface soil cancer risk (1.1E-06) is within an acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup>. The resulting RME cancer risks for all 10 constituents in subsurface soil, except benzo(a)pyrene, are below an acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup>, indicating no potential for adverse risk from subsurface soil for the current maintenance worker based upon a RME scenario. The resulting benzo(a)pyrene RME subsurface soil cancer risk (1.4E-06) and cumulative RME subsurface soil cancer risk (2.5E-06) are both within an acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup>. Therefore, all surface and subsurface soil RME cancer risks are above Illinois EPA no-action level of 10<sup>-6</sup>, but fall within the carcinogenic risk range of 10<sup>-6</sup> to 10<sup>-4</sup>, where additional site evaluation is required. The CTE cancer risk calculations provide that additional evaluation.

The resulting CTE cancer risks for all 10 constituents in surface soil and subsurface soil are below an acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup>, indicating no potential for adverse risk from surface or subsurface soil for the current maintenance worker based upon a CTE scenario. In addition, the resulting CTE cumulative cancer risks were also below the Illinois EPA no-action level of 10<sup>-6</sup> (personal communication with Connie Sullinger of Illinois EPA, April 9, 2002) and below the acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup>.

In summary, all surface and subsurface soil cancer risks based upon RME scenarios are within an acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup>, while the CTE cancer risks are below 10<sup>-6</sup>. The RME and CTE assumptions were kept very conservative to allow for unrestricted industrial use. While it is possible that Area 1B will be used in the future, the majority of the site is expected to be covered with buildings or surface cover (pavement, gravel, etc.), which also limits direct contact. This, taken in consideration, along with the results of the Tier 3 risk evaluation indicate little or no potential for adverse risk from surface or subsurface soil for the current maintenance worker based upon both CTE and RME scenarios.

### 3.8 Calculation of Tier 3 Soil Cancer Risks for a Future Outdoor Worker

Tier 3 CTE and RME cancer risks for the future outdoor worker were calculated using both the surface and subsurface soil exposure point concentrations (C<sub>soil</sub>), and the results of these comparisons are provided in Tables 8 and 9. When evaluating carcinogenic risks, an acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup> is consistent with the National Oil and Hazardous Substance Pollution Contingency Plan (1990) and with Illinois regulations (Section 742.900; Subpart I of TACO). According to the Illinois EPA, a site with carcinogenic risks less than 10<sup>-6</sup> generally should be considered a no-action site. For sites with carcinogenic risks greater than 10<sup>-6</sup>, further risk evaluation of the site is required. For sites with a carcinogenic risk greater than 10<sup>-4</sup>, corrective action is normally required (personal communication with Connie Sullinger of Illinois EPA, April 9, 2002). The resulting RME cancer risks for all 10 constituents, except benzo(a)pyrene, in surface soil are below an acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup>, indicating no potential for adverse risk from surface soil for the future outdoor worker based upon a RME scenario. The resulting benzo(a)pyrene RME surface soil cancer risk (1.6E-06) and cumulative RME surface soil cancer risk (3.8E-06) are both within an acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup>.

The resulting RME cancer risks for all 10 constituents in subsurface soil, except arsenic, benzo(a)pyrene, and benzo(b)fluoranthene, are below an acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup>, indicating no potential for adverse risk from subsurface soil for the future outdoor worker based upon a RME scenario. The resulting arsenic RME subsurface soil cancer risk (1.8E-06), benzo(a)pyrene RME subsurface soil cancer risk (5.0E-06), benzo(b)fluoranthene RME subsurface soil cancer risk (1.1E-06), and cumulative RME subsurface soil cancer risk (8.6E-06) are all within an acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup>. All surface and subsurface soil RME cancer risks are above Illinois EPA no-action level of 10<sup>-6</sup>, but fall within the carcinogenic risk range of 10<sup>-6</sup> to 10<sup>-4</sup>, where additional site evaluation is required. The CTE cancer risk calculations provide that additional evaluation.

The resulting CTE cancer risks for all 10 constituents in surface soil and subsurface soil are below an acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup>, indicating no potential for adverse risk from surface or subsurface soil for the future outdoor worker based upon a CTE scenario. In addition, the resulting CTE cumulative cancer risks were also below the Illinois EPA noaction level of 10<sup>-6</sup> (personal communication with Connie Sullinger of Illinois EPA, April 9, 2002) and below the acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup>.

In summary, all surface and subsurface soil cancer risks based upon RME scenarios are within an acceptable cancer risk range of 10<sup>-6</sup> to 10<sup>-4</sup>, while the CTE cancer risks are below 10<sup>-5</sup>. The RME and CTE assumptions were kept very conservative to allow for unrestricted industrial use. While it is possible that Area 1B will be used in the future, the majority of the site is expected to be covered with buildings or surface cover (pavement, gravel, etc.), which also limits direct contact. This, taken in consideration, along with the results of the Tier 3 risk evaluation indicate little or no potential for adverse risk from surface or subsurface soil for the future outdoor worker based upon both CTE and RME scenarios.

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# No. 18 1 Summary of Central Tendency Exposure (CTE) Assumptions for the Current On-Site Maintenance Worker

A f (averaging times):  Carcinogenic effects Carcinogenic effects (noncarc.)  ED (exposure duration)  S yrs  S yrs  standard defa  Carcinogenic effects (noncarc.)  S yrs  standard CTE  ED (exposure duration)  EF (exposure frequency)  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S mg/dsy  assumes expo  T (fraction ingested)  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  To mg/dsy  assumes expo  F (fraction demail contact)  S yrs  standard CTE  A hours per d  A hours per d  A hours per d  A hours per d  I ludgementil  I ludgementil  RAF (relative absorption factor)  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  S yrs  standard CTE  To yrs  standard CTE  S yrs  standard CTE  To yrs  standard CTE  To yrs  A hours per d	W.
	standard default occupational assumption - eduit [EPA, 1993]  yrs standard CTE default occupational assumption - eduit [EPA, 1993]  yrs standard CTE default occupational assumption - eduit [EPA, 1993]  partition of the companio
	standard CTE default occupational assumption - adult [EPA, 1993]  yrs standard CTE default occupational assumption - adult [EPA, 1993]  particle standard CTE default occupational assumption - adult [EPA, 1993]  particle standard CTE default occupational assumption - adult [EPA, 1993]  particle standard CTE default occupational assumption - adult gardening [EPA, 1997; T4-15]  assumption assumption in site 3 times per month for a year [professional judgement]  or A hours per day outdoors [4 hird 4 8 hird = 0.5] x 20% of Area 18 shown to be Impacted [total Area B1=11.2 acres] [professional ludoement]
	standard CTE default occupational assumption - adult (EPA, 1993)  particle of the company of the
	ngday average daily soil ingestion among adults gardening [EPA, 1897; T4-16] 7/45/bar assumes exposure to site 3 times per month for a year professional judgement) 6% 4 hourst per day outdoors [4 hirld it 8 hirld = 0.5] x 20% of Area 18 shown to be Impacted [lotal Area B1=11.2 acres] [professional ludgement]
sclor) sa) sad) cabv)	rgiday average daily stoll ingestion among adults gardening [EPA, 1997; T4-15] y/s/year assumes exposure to site 3 times per month for a year [professional judgement] 0% 4 hours per day outdoors [4 hrld / 8 hrl
20 mg/day 30 days/yaar 10% 10% cdor) chemical-specific aa) 100.0% 0.02 mg/cm² 100.0% 1	
30 days/yaar 10% ccior) chemical-specific 693 1300 cm² 100.0% 604) 100.0% 605 100.0% 608 100.0% 610	
10%  clor)	
clor) chemical-specific  3300 cm² 100.0% 100.0% 100.0% 100.0% 100.0% 100.0% 100.0% 11.3 m³/hr 11.3 m³/hr 11.3 m²/hr 11.3 m²/hr	[hemeopn]
56d) 3300 cm <sup>8</sup> 100.0%	
50d) 3300 cm <sup>8</sup> 100.0% 100.0% 0.02 mg/cm <sup>2</sup> 30 dys/year 10 dys/year 10 dys/year 10 dys/year 10 dys/year 10 dys/year 10 dys/year 10 dys/year	
60d) 100.0% 100.0% mg/cm² 36 daya'yau 10% 10 taw 10% chamical-specific 13 m²/hr	n encommended industrial CTE surface area for soil contact EEPA. 2001. Exhibit 3-51
0.02 mg/cm³ 36 days/yau 10 % 10 % chanical-specific 1.3 m³/m	
38 days/year 10% 10% choriscal-specific 1.3 m <sup>3</sup> /m	
fly flyk chamical-specific 1.3 m <sup>2</sup> /m	
chamical-specific	
chamical-specific to the miles of the chamical specific to the chamical	
1.3 m <sup>2</sup> /hr	al-specific value varies according to chamical [Magos et al., 1996; EPA Region IV, 1996; EPA, 2001]
1.3 m <sup>2</sup> /m c.1	
Abeldan	m <sup>3</sup> /hr recommended mean hourty inhalation rate for outdoor workers IEPA, 1937; T5-231
April	50% time outdoors in an 8-hour worlday to account indoor ectivities during colder 8 menths fordesslonal judgement
EF (exposure frequency) 36 days/year assumes expo	

EPA, 2001. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E: Supplemental Guidance for Dermal Risk Assessment). Interim. Office of Emergency and Remedial Response, EPA, 1997. Exposure Factors Handbook. Vols I-III. Office of Research and Development, Washington, D.C. EPA/S002F-9-S003E-9-August. EPA, 1997. Soil Screening Guidance: Technical Background Document. Office of Emergency and Remedial Response. Washington, D.C. EPA/S407R-95/128. May. EPA Region IV Human Health Risk Assessment Builetth. - Supplemental Guidance: Papplemental Guidance: Supplemental Guidance in Pack. 1993. Superimental Guidance: Standard Default Exposure Fedors. Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.8-03. March. Magee, B., P. Anderson, D. Burmaster. 1998. Absorption Adjustment Fedors Distributions for Polycyclic Aromatic Human and Ecological Risk Assessment. April 1.

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Table 2 Summary of Reasonable Maximum Exposure (RME) Assumptions for the Current On-Site Maintenance Worker

BW (body weight)	70 kg standard default (or adult (EPA, 1991)	standard default (or adult (EPA, 1891)
AT (averaging times): Carcinogente effects Cinonic effects (noncarc.)	25 55 EY 75	standard defautt (EPA, 1981) standard RME defautt occupational assumption - adult (EPA, 1983)
EF (exposure frequency)	72 days/year	assumes exposure to site 6 times per month for a year (professional judgement)
ED (exposure duration)	25 yr	standard RME default occupational assumption - adult [EPA, 1993]
マーSurface Soil Exposure Assumption 医子子 東土学	STATE OF STA	THE STATE OF THE PROPERTY OF T
incidental ingestion IR (ingestion rate) FI (fraction ingested)	50 mg/day 20%	standard exposum assumption for occupational adults (IPCB, 2001, Appendix C, Table B; EPA, 1991; EPA, 1997, T1-2] 8 hours per day authoors [8 hrid / 8 hrid = 1.0] x 20% of Area 1B shown to be Impacted [total Area B1=11.2 acres] [professional
RAF (relative absorption factor)	chemical-specific	!udpement! value varies according to chemical [EPA Region IV, 1896; EPA, 1998; Magoe et al., 1996]
Dermal Contact TBS (total body surface area) FBE (fraction of body exposed) AF (stal adherence factor) FT) (reaction dermal confact)	3300 cm <sup>1</sup> 100.0% 0.2 mg/cm <sup>2</sup>	recommended Industrial RME surface area for soil contact [EPA, 2001, Exhibit 3-5] assumes complete exposive recommended Andustrial RME adherence factor for soil contact [EPA, 2001; Exhibit 3-5] 8 hours per day outdoors [8 hrid is 8 hrid a 4 .0] x 20% of Area 18 shown to be Impacted [tobal Area B1=11.2 acrea] [professional
RAF (retalive absorption factor)	chemical-specific	fudpament! value varies according to chemical (Magee at al., 1898; EPA Region IV, 1996; EPA, 2001)
Inhatation of Dust/Volatites:  (R (entaision rate)  ET (exposure time)  PEF foanizatia entission factor)	1.5 m³/hr 6 hr/day 1,32E+09 m²/kg	recommended mean inhalation rate for cutdoor workers engaged in moderate activities [EPA, 1997; TS-23] assumes 100% time outdoors in an 8-hour workday (professional judgement) recommended PEF (EPA, 1996)

EPA, 2001. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E: Supplemental Guidance for Dermat Risk Assessment Guidance. Office of Emergency and Remedial Response, EPA, 1998. Risk Assessment Guidance. Office of Emergency and Remedial Response, 1997. Exposure Factors Handbook. Vols I-III. Office of Research and Development, Washington, D.C. EPA/S002F-9-S002Fs. August. EpA, 1997. Exposure Factors Handbook. Vols I-III. Office of Emergency and Remedial Response, Washington, D.C. EPA/S40R-95/123. May. EPA, 1998. Serjenium Response, Manual Risk Assessment Bulletin - Supplemental Guidance in RAGS, October, 1998. EpA/S40R-95/123. May. EPA, 1998. Superium Exposure Factors for the Central Tendency and Response Pactors. Drill dated November 4, 1993. Exposure Factors for the Central Tendency and Response Pactors. Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9265.8-03. March. EPA, 1999. Human Health Evaluation Round Declarat Exposure Factors. Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9265.8-03. March. IPCB, 2001. Illinois Pollution Control Bead. Risk Based Cleanup Objectives, Part 742, Thered Approach to Corrective Action Objectives. Appendix C, Table B. Nanderson, D. Burmaster, 1998. Absorption Adjustment Factor Distributions for Polycycle Anomatic Hydrocarbona. Submitted to Human and Ecological Risk Assessment ... April 1.

# Tame 3 Summary of Central Tendency Exposure (CTE) Assumptions for the Future On-Site Outdoor Worker

			25.55	3	
Sity-po-alidid in the control (EPA, 1981)	standard default (EPA, 1991) standard CTE default occupational assumption - adult (EPA, 1993)	standard CTE default occupational assumption - adult [EPA, 1983]	Red   Bantaca' Soil Exposure Assumptions   State   S	recommended Industrial CTE surface area for soil contact [EPA, 2001, Exhibit 3-5] assumes complete exposure recommended industrial CTE adherence factor for soil contact [EPA, 2001; Exhibit 3-5] CTE default for occupational scenario [EPA, 1983]; recommended industrial CTE for soil contact [EPA, 2001, Exhibit 3-5] 4 hours per day outdoors (4 hirld /8 hirld = 0.5) x 20% of Area 18 shown to be impacted [total Area B1=11.2 scres] [professional indoment) uddenment)	recommended mean hourly inhalation rate for outdoor workers. [EPA, 1997; TS-23] 50% time outdoors in an 8-hour workday to ecount for indoor ectivities during colder 6 months [professional judgement] Fig. 64-but for ecoupational scenario [EPA, 1903]; recommended industrial CTE for soil contact [EPA, 2001, Ethibit 3-6] FROM FIRE INPA, 19081
70 kg	70 yrs 5 yrs	5 yrs	20 mg/day 219 dayakyaar 16% chemical-epecific	3300 cm² 100.0% 0.02 mptcm² 219 days/sar 10% chemical-epecific	1.3 m²/hr 4 hr/day 219 daya/year 1.32E-09 m³/mg
P. General Available on the Grand of the Control of	Carcingenic effects Chronic effects (noncarc.)	ED (exposure duration)	(A)Surface Soil Emporator Astrumptions) (A) in the line of the state o	Dermail Contact TBS (total body surface ares) FBE (traction of body exposed) AF (soil adherence factor) EF (exposure (requency) FD (fraction dermal contact) RAF (relative absorption factor)	Inhalation of DustVolatiles: R (inhalation rate) ET (arposure timp) EF (arposure firequency) EF (particulate emission factor)

EPA, 2001. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E: Supplemental Guidance for Dermal Risk Assessment). Interim. Office of Emergency and Remedial Response, EPA, 1997. Exposure Factors Handbook. Vols I-III. Office of Research and Development, Washington, D.C. EPASOOR-45002Fa. August. EPA 1998. Sal Screening Evidence: Technical Background Document, Office of Emergency and Remedial Response, Washington, D.C. EPAS-40R-65/12B. May. EPA Respon IV, 1986. Region IV, Numan Health Risk Assessment Budierie- Supplemental Guidance to RAGS, October, 1998. EPA 1993. Superfunds Standard Delaut Exposure Factors for the Central Tendency and Reasonable Mazerium Exposure, Drak, dated November 4, 1993. EPA 1991. Human Health Evaluation Manual, Supplemental Guidance: Standard Delaut Exposure Factors for the Central Tendency and Reasonable Mazerium Exposure, Submitted to Human and Ecological Risk Assessment . April 1.

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Table 4 Summary of Reasonable Maximum Exposure (RME) Assumptions for the Future On-Site Outdoor Worker

SO myday standard exposure assumption for occupational adults (IPCB, 2001, Appendix C., Table B; EPA, 1997; 71-2] 20% e hours per day outdoors (B hrid / 8 hrid = 1.0) x 20% of Area 1B shown to be impacted (total Area B1=11.2 acres) (professional indrement) chemical-specific value varies according to chemical (EPA Region IV, 1998; EPA, 1898; Magee et al., 1996) 3300 cm² recommended industrial RME surface area for soil contact (EPA, 2001; Exhibit 3-5) assumes complete exposure 0.2 mydra? necommended industrial RME adherence factor for soil contact (EPA, 2001; Exhibit 3-5) assumes complete exposure 0.2 mydra? ludgement) chemical-specific alto varies according to chemical (Mageo of al., 1998; EPA Region IV, 1998; EPA, 2001) 1.5 m²/m recommended mean inhabition rate for outdoor workers engaged in moderate activities (EPA, 1997; TB-23) a hours per day outdoors (B hrid / 8 hrid = 1.0) x 20% of Area 1B shown to be impacted (total Area B1=11.2 acres) (professional independent) a hours per day outdoors (B hrid / 8 hrid = 1.0) x 20% of Area 1B shown to be impacted (total Area B1=11.2 acres) (professional should man inhabition rate for outdoor workers engaged in moderate activities (EPA, 1997; TB-23)	70 yrs 25 yrs	BW (body weight) 70 kg standard detault for edult [EPA, 1991] AT (averaging times):	8 hours per day outdoors [8 hidd = 1.0] x 20% of Area 18 shown to be impacted (total Area B1=11.2 acres) (professional judgement)  Indigenent)  recommended industrial RME surface area for soll contact (EPA, 2001, Exhibit 3-5)  assumes complete exposure recommended industrial RME surface area for soll contact (EPA, 2001, Exhibit 3-5)  8 hours per day outdoors [8 hidd = 1.0] x 20% of Area 18 shown to be impacted (total Area B1=11.2 acres) (professional ludgement)  8 hours per day outdoors [8 hidd = 1.0] x 20% of Area 18 shown to be impacted (total Area B1=11.2 acres) (professional ludgement)  9 value varies according to chemical (Maggeo et al., 1998; EPA Region IV, 1996; EPA, 2001)  recommended mean inhalation rate for outdoor workers engaged in moderate activities (EPA, 1997; T5-23)		TBS (total body surface area) FBE (fredion of body exposed) AF (soil adherence factor) FD (fredion dermal contact) RAF (relative absorption factor) Inhalation of Dust/Volatiles:
chemical-specific	250 dayelyesir ston) 25 yrs 26 yrs ine Assumptione was stone to the st	70 yrs standard defautt (EPA, 1991) 25 yrs standard RME defautt occupational assumption - adutt (EPA, 1993) 250 days/year standard RME defautt occupational assumption - adutt (EPA, 1993) 255 yrs standard RME defautt occupational assumption - adutt (EPA, 1993) 255 yrs standard RME defautt occupational assumption - adutt (EPA, 1993) 256 yrs standard exposure assumption for occupational adutts (IPCB, 2001, Appendix C, Table B; EPA, 1997, 71-2) 20% ethours per day outdoors (8 hrifs / 8	judgement) value varies occording to chemical [EPA Region IV, 1996; EPA, 1898; Magee et al., 1996)		Dermal Contact
50 mg/day 20%	250 days/yesr standard RME default occupational assumption - Edot, 1991; EPA, 1993] 25 yrs standard RME default occupational assumption - Edot [EPA, 1993] 126 yrs standard RME default occupational assumption - Edot [EPA, 1993]	70 yrs standard default (EPA, 1891) 25 yrs standard RME default occupational assumption - adult (EPA, 1993) 250 days/year standard RME default occupational assumption (EPA, 1993) 25 yrs standard RME default occupational assumption - adult (EPA, 1993) 25 yrs standard RME default occupational assumption - adult (EPA, 1993)	8 hours per day outdoors [8 hrid # 1.0] x 20% of Area 18 shown to be impacted (total Area B1+11.2 acras) [professional		RAF (relative absorption factor) Dermal Contact
WORKERS OF THE INVESTIGATION WITH A PRINCE OF THE WASTERN TO STATE OF THE WAST	250 days/rear	70 yrs 25 yrs 250 days/yesr	standard exposure assumption for occupational adults (IPCB, 2001, Appendix C, Table B; EPA, 1991; EPA, 1997, 71-2]	50 mg/day 20% chemical-specific	Incidental Ingestion IR (ingestion rale) IR (fraction Ingestiod) RAF (relative absorption factor) Dermal Contact
25 yrs standard RME default occupational assumption - adult [EPA, 1993]		ects 70 yrs noncarc.) 25 yrs		25 yrs 1969 (CARPS) 2545 1961 19 20% chemical-specific	ED (exposure duration) SturtacetSoff Expositive Assumptions Pages: a Incidental Ingravion rale) R (fraction rale) R (fraction ingested) RAF (relative absorption factor) Dermal Contact

EPA, 2001. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E: Supplemental Guidance for Dermal Risk Assessment). Interim. Office of Emergency and Remedial Response.
EPA, 1996. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual. Supplemental Guidance. Dermal Risk Assessment. Interim Guidance. Office of Emergency and Remedial EspA 1997. But Supplemental Guidance in Enable Manual. Supplemental Guidance, Washington, D.C. EPASIONZE, August.
EPA, 1996. Soil Screening Guidance: Technical Background Documental Countering. Washington, D.C. EPASIONZE, 1993. Superfund's Standard Delant Exposure Ecotes of Emergency and Remedial Response, Washington, D.C. EPASIONZE, 1993. Superfund's Standard Delant Exposure Ecotes for Emergency and Reseconshe Maximum Exposure. Draft death November 4, 1993. Exposure Fockers, Standard Delant Exposure Fockers. Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 8225.6-03. March. IPCR. 2001. Introd Polluton Control Board. Risk Based Cleanty Operator Standard Delant Exposure Fockers, Office of Solid Waste and Ecological Risk Assessment . April 1.
Magee, B., P. Anderson, D. Burmaster. 1998. Absorption Adjustment Fector Distributions for Polycyclic Aromatic Office of Submitted to Human and Ecological Risk Assessment . April 1.

Table 5 Summary of Toxicity Information

				Tier	Tier 3 Input Parameters				
	Oral	Dermal Absorptio		II)	Inhalation				
	Absorpti on Factor	n Factor	1/PEF [2]	Oral Reference	Reference	Oral Slope Factor	ctor	Inhalation Unit Risk	it Risk
Compound	(unitless)	_	(kg/m³)	(mg/kg-d)	(mg/m³)	(mg/kg-d) <sup>-1</sup>		(ug/m³) <sup>-1</sup>	_
Arsenic	9.0	0.03	7.58E-10	3.00E-04 [3]	NA	1.50E+00	3	4.30E-03	3
Benzo(a)anthracene	1	A A	7.58E-10	NA	- AN	7.30E-01 [4	4	ĄN	1
Benzo(a)pyrene	-	ΑN	7.58E-10	- AN	NA	7.30E+00 [3	3	9.00E-04	[4]
Benzo(b)fluoranthene	1	Ϋ́	7.58E-10	NA	- NA	7.30E-01	4	AZ AZ	1
Beryllium [c]	NA	AN A	7.58E-10	NA .	- NA	ΑN	ļ	2.40E-03	3
Cadmium [c]	NA	AN	7.58E-10	NA -	NA	NA	,	1.80E-03	ල
Chrysene [d]	1	NA	7.58E-10	NA -	NA	7.30E-03 [4	[4]	NA	,
Dibenz(a,h)anthracene	1	NA	7.58E-10	NA I	NA	7.30E+00 [4	4	AN	1
Indeno(1,2,3-cd)pyrene [d]	1	NA	7.58E-10	NA -	- NA	7.30E-01 [4	4	AN	1
Nickel [c]	NA	AN	7.58E-10	NA	NA AN	NA	,	2.40E-04	[3]

NA = Not available or not applicable

(a) Quantitative dermal evaluation not included for PAHs. Dermal contact with PAHs accounted for assuming quantitative results from ingestion (e.g., dermal risk = ingestion risk; dermal screening value = ingestion screening value ).

[b] Dermal toxicity values are assumed to be equal to oral toxicity values.

ic) Although constituent does not exceed Tier 1 screening levels, it is a similar acting carcinogenic constituent as arsenic (target organ = lungs), which is a COC. Therefore, only carcinogenic inhalation evaluation for this constituent is presented per TACO Section 742. Appendix A, Table F.

(d) Although constituent does not exceed Tier 1 screening levels, it is a similar acting carcinogenic constituent as BaA, BaP & Biff (target organ = G) system), which are COC. Therefore, only carcinogenic evaluation for this constituent is presented per TACO Section 742. Appendix A, Table F.

# References:

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     As cited in USEPA's Region III September 2001 Risk Based Concentration (RBC) table as EPA-NCEA provisional v

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**Statistical Calculations** 

### 1.0 Introduction

This appendix presents a variety of statistical calculations for soil data at the tannery site. These general statistics are discussed in Section 2.0 of this appendix.

### 2.0 General Statistics

Tables 1 and 2 present statistical summaries of soil data for Area 1B (surface and subsurface soil). Each statistical summary table is composed of several categories of statistical information, as discussed below.

- A. Sample Counts. In this category, the following statistical information is provided:
  - number of samples
  - number of rejected samples
  - number of valid samples
  - number of detects
  - · number of nondetects
  - · percent nondetects

The percent nondetects is calculated as follows (assuming the number of valid samples is greater than zero):

where:

PercNonDet = percent of nondetects
NonDet = number of nondetects
NumValSamp = number of valid samples

- B. Basic Statistics. In this category, the following statistical information is provided:
  - minimum detection limit
  - maximum detection limit
  - minimum detected concentration
  - maximum detected concentration
  - sample with the maximum detected concentration
- C. General Summary Statistics. This category provides a variety of summary statistics, including:
  - median
  - · mean or average
  - standard deviation
  - · coefficient of variation

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geometric mean

• geometric standard deviation

In calculating all these summary statistics, nondetects are replaced with half the detection limit.

The median is the concentration at the middle of a sorted list of samples. If the number of samples is odd, the median is the concentration of the middle sample. If the number of samples is even, the median is the average of the concentrations of the two samples in the middle of the list.

The average, xavg, is given by:

$$x_{\text{avg}} = \frac{\sum x_i}{n}$$

where

 $x_i$  = the value of sample number i

n = number of samples

The standard deviation is the sample standard deviation, s, given by:

$$s = \sqrt{\sum \frac{(x_{avg} - x_i)^2}{(n-1)}}$$

The coefficient of variation, CoefVar, is given by:

$$CoefVar = \frac{s}{x_{avz}}$$

The geometric mean and geometric standard deviation are calculated as follows:

- The data is logarithmically transformed using the natural logarithm (ln).
- The average and standard deviation are calculated for the transformed data,  $x_{t-avg}$  and  $s_t$ , respectively, using the equations above.
- The geometric mean,  $x_{gmean}$ , and geometric standard deviation,  $s_g$ , are calculated by transforming back  $x_{1-avg}$  and  $s_i$ , as follows:

$$x_{gmean} = e^{x_{t-evg}}$$

D. Testing of Normality of Data. In this category, the data is tested to determine if it is represented by a normal distribution. One of two tests is employed. If there are 50 samples or less, the Shapiro-Wilk test of normality is utilized (Shapiro and Wilk, 1965). Using the procedures outlined in Gilbert (1987), the data is sorted and manipulated to calculate a W test statistic. This W-statistic was compared to a W value at a 0.05 quantile. The W value at the 0.05 quantile is found by referring to a lookup table (see Table A7 in Appendix A of Gilbert (1987)). If the W-statistic is greater than or equal to the W value, the data is considered to be normally distributed.

If there are more than 50 samples, the D'Agostino test of normality is utilized (D'Agostino, 1971), which is a two tailed statistical test. Using the procedures outlined in Gilbert (1987), the data is sorted and manipulated to calculate the Y test statistic. For a test of normality at the 0.05 level of significance, the Y values at the 0.025 quantile, Y0.025, and 0.975 quantile, Y0.975, are determined by interpolating from a lookup table (e.g., Table A8 in Appendix A of Gilbert (1987)). The data is considered to be normally distributed if the Y statistic satisfies the following condition:

$$Y_{0.25} \leq Y - statistic \leq Y_{0.975}$$

- E. Testing of Log-Normality of Data. In this category, the data is tested to determine if it is represented by a log-normal distribution. The data is transformed by taking the natural logarithm of each sample value. The procedures described previously are then applied to the transformed data. If there are 50 samples or less, the Shapiro-Wilk test of normality is used. If there are more than 50 samples, the D'Agostino test of normality is utilized.
- F. 95% Upper Confidence Limits on the Mean. In this category, 95% upper confidence limits on the mean (95% UCLs) are calculated using procedures for different distributions of data. If there were greater than or equal to 50% non-detect values in the data set, or the data was neither normally nor log-normally distributed, then the data was assumed to be nonparametric.

For normally distributed data, the 95% UCL, UCL<sub>norm</sub>, is calculated with the following equation (USEPA, 1992):

$$UCL_{narm} = x_{avg} + \frac{t \cdot s}{\sqrt{n}}$$

The one tail t-statistic at a 95% level, t, depends on the number of samples, n, and the standard deviation of the data, s, and comes from Table A2 in Appendix A of Gilbert (1987).

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For log-normally distributed data, the 95% UCL, UCL<sub>ln</sub>, is calculated using three different procedures. USEPA (1992) originally proposed calculating the 95% UCL for lognormally distributed data using the H-statistic, H, in the following equation:

$$UCL_{in} = e^{(x_{i-avg} + 0.5 \cdot s_i^2 + s_i \cdot H / \sqrt{n-1})}$$

The one tail H-statistic at a 95% level, H, depends on the number of samples, n, and the standard deviation of the log-transformed data, s<sub>t</sub>, and comes from Table A12 in Appendix A of Gilbert (1987).

In a more recent paper, USEPA (1997) identifies significant problems with using this equation to calculate the 95% UCL. In this paper, USEPA (1997) suggests calculating the minimum variance unbiased estimate (MVUE) of the mean using the equation in Gilbert (1987) and using the Jackknife and Bootstrap procedures adapted to lognormal distributions to calculate the 95% UCL. In this analysis, the 95% UCL is calculated three ways, using the H-statistic, using the modified Jackknife method and using the modified Bootstrap method. Although the H-statistic based 95% UCL is not recommended by USEPA (1997), this value was used as the 95% UCL for lognormally distributed data, as requested by Illinois EPA.

For data that is neither normally distributed nor lognormally distributed (i.e., nonparametric), USEPA (1997) recommends using the Jackknife, Bootstrap or Bootstrap t method. The 95% UCL was calculated using all three methods and the highest value was used as the 95% UCL for data sets classified as nonparametric.

- G. Source Concentration. This category includes the following information:
  - number of valid samples
  - number of detects
  - mean
  - distribution type
  - 95% UCL based on the distribution type
  - maximum detected concentration
  - source concentration

If the test of normality indicates the data is normally distributed, it is assumed to be normally distributed even if the test of lognormally indicates it may also be considered lognormally distributed. The source concentration is the 95% UCL or the maximum detected concentration, whichever is lower, which is consistent with USEPA guidance (USEPA, 1989).

H. Distribution of Data. This category provides information on the distribution of the data. The type of distribution is specified (i.e., normal, lognormal or nonparametric), then various percentiles of the data are provided depending on the distribution type. The minimum value, which is approximately the 0<sup>th</sup> percentile, is given along with the maximum value, which is approximately the 100<sup>th</sup> percentile. Value for percentiles

between the 0<sup>th</sup> and 100<sup>th</sup> percentile are also provided using the methods outlined in Gilbert (1987) for normal and nonparametric data sets. For lognormally distributed data, the data is logarithmically transformed and the methods for normally distributed data are used to determine the values at different percentiles.

I. Distribution of Data for Nonparametric Data. This category provides information on the distribution of the data using the methods outlined in Gilbert (1987) for nonparametric data sets. The information provided in this category is similar to the information provided in category H except that an underlying distribution type (e.g., normal or lognormal) is not assumed for any data set.

### 3.0 References

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- Shapiro, S.S., and M.B. Wilk, 1965. An Analysis of Variance Test for Normality (Complete Samples), Biometrika, 52: 591-611.

Table 1

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chemical	CAS No.	Minimum Detection Limit	Maximum Detection	Minimum Detected Concentration	Maximum Detected Concentration	Sample with Maximum Defect
, July 10, 10, 10, 10, 10, 10, 10, 10, 10, 10,					-4-	
L'AAIS (mg/Kg)			-			
scrio(a)anthracene	20333	0.87	78.0			
Chrysene	218019	0.82	0.82		S.	
Benzo(b) fluoranthene	205992	0.82				
Benzo(k) fluoranthene	207089	0.82		0.76	33	
Benzo(a)pyrene	50328	0.82		1.2		SB-61A
Indeno(1.2.3-cd)pyrepe	193395	0.82		0.11	6.8	i
Dibenzo(a.hlanthracene	53703	0.82			I	
Pesticide Compounds (mg/Kg)						
Aldrin	309002	0.0017	0.0029	NA	×	AN
Heptachlor Epoxide	1024573	0.0017		0.0	0	SB
Diefdrin	12509	0.0017	0.0055	0.016		SB-33A
1,4-DDT	50293	0.0045	0.0055	ŀ		
CBs (mg/Kg)						
Arocior - 1248	1336363	0.033	0.055			ì
Aroctor - 1254	1336363	0.033	0.055			
Aroclor - 1260	1336363	0.033	Ö			ž
Fotal PCBs		Ϋ́N	NA	ĺ	NA	ŀ
nergable Compounds (mg/Kg)		1				
Antimony	7440360	2.8			Y.	
Arsenic	7440382	YZ	Ī			
Barium	7440393	YZ				
Beryllium	7440417	0.21	0.34	Ĭ		
Cadmium	7440439	19.0	0.97	1.2	4.7	S
Chromium	16065831	NA	NA		2600	SS-12
Hexavalent Chromium	18540299					
Cead	7439921	NA NA			22	L/S
Метешу	7439976	0.07			3	
Nickel	7440020	NA			16.7	SB-33A
Sclenium	7782492	0.29			7	SB-30A
	400000	0.44			***	

	Ī		J	3. General Sun	C. General Summary Statistics		
			:	Standard	Coefficient of	Geometric	Geometric
Chemical	CAS NO.	Median	Mean	Deviation	Variation	Mean	Deviation
CPAHs (mg/Kg)							
Benzo(a)anthracene	56553	2.75	3.29	3.11		122	2.86
Chrysene	218019	2.65	3.24	2.93	0.906	777	2.71
Benzo(b)fluoranthene	205992	2.55	3.25	2.55		2.38	2.65
Benzo(k) Augmentene	207089	1.11	80°	1.03		1.12	2.03
Benzo(a)pyrene	50328	1.6	1.95	1.52	7TT.0	1.52	2.25
Indeno(1,2,3-cd)pyrene	193395	69:0	1.68	2.56	136	0.85	422
Dibenzo(a,h)anthracene	53703	0.53	0.715	0.662		0.486	27.2
Pesticide Compounds (mg/Kg)							
Akhin	300002	0.000925	0.00103	0.000236	0.23	0.003	1,24
Heptachlor Epoxide	1024573	0.00468	0.00318	0.00915		0.00377	4.43
Dieldrin	12509	0.002	0.00408	0.00589		0.00224	2.95
4,4'-DDT	\$0293	0.0265	0.0557	0.0791	1.42	0.0197	5.93
PCBs (mg/Kg)							
Aroclor - 1248	1336363	0.018	0.0198	0.00437	0.22	0.0195	
Aroclor - 1254	1336363	810.0	0.0198	0.00437	0.22	0.0195	1.23
Aroclor - 1260	1336363	0.018	0.0198	0.00437	022	0.0195	12
Total PCBs		0	0	0	1E+99	NA	YN N
Inorganic Compounds (mg/Kg)							
Antimony	7440360	1.63	1.71	0.371		1.68	1
Arsenic	7440382	5.5	5.78	3,69	ø	4.46	2.53
Bantum	7440393	58.9	141	196		60.2	
Beryllium	7440417	0.22	0.436	0.514		0.276	
Cadmium	7440439	0.843	1.41	1.67		0.877	2.79
Chromium	16065831	142	629	1030	151	961	
Hexavalent Chromium	18540299						
Lead	7439921	727	96.4	83.1	0.862	64.9	2.83
Mercury	7439976	0.116	0.501	0.684		0.197	4.6
Nickel	7440020	5.95	8.03	6.15	-	6.51	2.08
Selenium	7782492	0.685	0.753	0.68		0.511	
Silver	7440224	0.318	0.349	0.131	0.374	0.33	1.44

FXConEdit5159 Tenner/Datather 1 Evel/Area 18 Surface Solluis

				<ol> <li>Testing of N</li> </ol>	<ul> <li>D. Testing of Normality of Data</li> </ul>	q	
		Shapiro-Wilk Test of	llk Test of	D'Agostin	D'Agostino Test of Normality (N>50)	ality (N>50)	
Chemical	CAS No.	W-Statistic	W Value at	Y-Stattetic	Y Value at 0.025 Level	Y Value at	Is Data Normally Distributed at
CPAJIs (mg/Kg)							CO.O
Benzo(a)anthracene	56553	0.822	0.788				× ×
Chrysene	218019	0.79	0.788				1 2
Benzo(b)fluoranthene	205992	0.846	0.788				3 5
Benzo(k) fluorauthene	207089	0.858	0.788				3 %
Benzo(a)pyrene	50328	0.851	0.788				, ×
indeno(1,2,3-cd)pyrene	193395	0.738	0.758				Ž
Dibenzo(a,h)anthracene	53703	0.874	0.788				Ves
Pesticide Compounds (mg/Kg)							
Aldrin	309002	0.807	0.788				No
Heptachfor Epoxide	1024573	0.842	0.788				× ×
Dieldrin	17209	0.614	0.788				2
4,4:DDT	50293	0.738	0.788				Ž
PCBs (mg/Kg)	ļ						
Aroclor - 1248	1336363	0.821	0.788				S.
Aroclor - 1254	1336363	0.821	0.788				S.
Aroclor - 1260	1336363	0.821	0.788				S.
Fotal PCBs		0	0.788				Ŋ
inorganic Compounds (mg/Kg)							
Antimony	7440360	0.899	0.748				ž
Arsenic	7440382	0.926	0.788				Yes
Barium	7440393	0.743	0.788				Ž
Beryllium	7440417	0.748	0.748				2
Cadmium	7440439	0.72	0.788				N.
Chromium	16065831	0.729	0.788				Z
Hexavalent Chromium	18540299						2
Lead	7439921	0.896	0.788				Yes
Mercury	7439976	0.747	0.788				No
Nickel	7440020	0.844	0.748				Yes
Selenium	7782492	0.848	0.788				2
Silver	7440224	9160	0.788				2

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			Ш	esting of Log-	E. Testing of Log-Normality of Data	ata		
	Ī	Shapiro-Wilk	Shapiro-Wilk Test of Log-	D'Agostino T	D'Agostino Test of Log-Normality (N>50)	mallby (N>50)		
							Is Data Log- Normally	
Chemical	CAS No.	W-Statistic	W Value at 0.05 Level	Y-Statistic	Y Value at 0.025 Level	Y Value at 0.975 Level	Distributed at 0.05 Level?	
CPAHs (mg/Kg)								_
Benzo(a)anthracene	56553	0.958	0.788				Yes	
Chrysene	218019	0.913	. 0.788				Yes	
Benzo(b) Iluoranthene	205992	0.872	0.788				Yes	
Benzo(k) fluoranthene	207089	0.993	0.788			8	Yes	
Benzo(a)pyrene	50328	0.96	0.788				Yes	
Indeno(1,2,3-ed)pyrme	262661	0.974	0.788				Yes	
Dibenzo(a,h)anthracene	53703	0.979	0.788				Yes	
Pesticide Compounds (mg/Kg)								
Aldrin	309002	0.837	0.788				옷	
Heptachlor Epoxide	1024573	0.854					Yes	
Dieldrin	60571	0.857					No	
4.4'-DDT	50293	0.927	0.788				Yes	
PCBs (mg/Kg)		Ī						
Aroclor - 1248	1336363	0.846					Š	
Aroclor - 1254	1336363	0.846					% %	
Aroclor - 1260	1336363	0.846					% -	
Total PCBs		0.846	0.788				Š	
Inorganic Compounds (mg/Kg)								
Antimony	7440360	0.909					2	
Arsenic	7440382	0.83					Ya	
Banum	7440393	0.965					Ya.	
Beryllium	7440417	0.922					Yes	
Cadmium	7440439	0.918	0.788				Yes	
Chromium	16065831	0.964	ī				Yes	
Hexavalent Chromium	18540299							
Lead	7439921	0.944	0.788				Yes	
Mercury	7439976	0.896	0.788				Yes	
Nickel	7440020	0.895					Yes	
Selenium	7782492	0.896	0.788				Ν	
Silver	7440224	0.939		ſ			S.	

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Statistics for Surface Soil in Area 1B (Continued)

		Mormal D	Normal Dietribudion		•	andred Clembar	the first of the same	
						CONTRACTOR STATE	IIOGRAII	
					95% UCL for Lognormal	Minimum Variance	95% UCL Using	95% UCL Using
			95% UCL for		Distribution	Unblased	Jacklonife	Bookstrap
Chemical	CAS No.	t-Statistic	Distribution	H-Statistic	Statistic	Mean	Normal Theory	Normal Theory
CPAHs (mg/Kg)								
Benzo(a)anthracene	56553	2.015	5.84	4.4902	31.7	3.41		5.57
Chrysene	218019	2.015	5.65	4.2946	25.4	3,37	5.76	5.33
Benzo(b) Buoranthene	205992	2.015	5.35	•	24			5.07
Benzo(k) Iluoranthene	207089	2.015	223	m	4.12			
Benzo(a)pyrene	50328	2.015	3.2	1.0	7.86			
Indeno(1,2,3-ed)pyrene	193395	2.015	3.99		110	1.85	4.07	3.85
Dibenzo(a,h)anthracene	53703	2.015	1.26	4.3089	5.54	0.722		
Pesticide Compounds (mg/Kg)								
Aldrin	309002	2.015	0.00122	2.1146	0.00126	0.00102	0.00122	0.00117
Heptachlor Epoxide	1024573	2015	0.0157	6.1082	0.665	0.00861		0.0163
Dieldrin	1209	2.015	0.00892	4.5982	0.0371	0.00353	0.00715	0.00768
1,4'-DDT	50293	2.015	0.121	7.2216	30.2	0.0616		0.133
PCBs (mg/Kg)								
Aroclor - 1248	1336363	2.015	0.0234	2.1025	0.0241	0.0198		0.0225
Aroclor - 1254	1336363	2.015	0.0234	2,1025	0.0241	0.0198		0.0226
Aroclor - 1260	1336363	2.015	0.0234	2.1025	0.0241	0.0198	0.0234	0.0226
Fotal PCBs		2.015	0	NA	YN.	YX.	NA	NA
norganic Compounds (mg/Kg)								
Antimony	7440360	2,3534	2.15		2,42	17.1		1.99
Arsenic	7440382	2.015	187.50		36.9	6.28		8.37
Barium	7440393	2,015	302	_	9950	136	306	297
Beryllium	7440417	2.3534	3.		150	0.406	0	_
Cadmium	7440439	2.015	2.79		111	133		
Chromium	16065831	2.015	1520		754000	\$69		1780
fexavalent Chromium	18540299				=			
ead	7439921	2.015	165			666	181	351
Mercury	7439976	2.015	1.06	6.252		0.468	1.1	1.07
Nickel	7440020	2,3534	15.3					12.
Selenium	7782492	2.015	131	•		_		7
Cilitar	PARKET	2016	0.457				_	-

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			Nonpar	Nonparametric	
Chemical	CAS No.	95% UCL Using Jackknife Method	95% UCL Using Standard Bootstrap Method	t-stallstic for Bootstrap-t	95% UCL Using Bootstrap-t Method
CPAHs (mg/Kg)					
Benzo(a)anthracene	56553	5.84	523	-1.38	
Chrysene	218019		5.04	1.77	
Benzo(b) fluoranthene	205992			-1.37	
Benzo(k) fluoranthene	207089	2.23		-1.38	
Benzo(a)pyrene	50328	3.2	2.86	-1,45	
Indeno(1,2,3-cd)pyrene	193395				
Dibenzo(a,h)anthracene	53703	1.26	1.14	-1.55	1.74
Pesticide Compounds (mg/Kg)					1
Aldrin	309002	0.00122	0.00116	-2.8	0.00168
Heptachlor Epoxide	1024573	7510.0	0.0139	-2.13	7,200
Dieldrin	60571	0.00892	•		0.0306
4,4-DDT	50293	0.121	0.106		0.31
PCBs (mg/Kg)					
Aroclor - 1248	1336363	0.0234	0.0224		
Aroclor - 1254	1336363	0.0234		-3.27	
Aroclor - 1260	1336363	0.0234	0.0225		0.0324
Total PCBs		0	0	•	
Inorganic Compounds (mg/Kg)					
Antimony	7440360				
Arsenic	7440382			7	
Barium	7440393		259		
Beryllium	7440417	1.04	7		
Cadmium	7440439				
Chromium	16065831	1520	1280	-10.8	11800
Hexavalent Chromium	18540299				
Lead	7439921	165			
Mercury	7439976	1.06	0		_
Nickel	7440020				1
Selenium	7782492			1	
Silver	7440224	0.457	0.428	AL.1-	0.503

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•		Number of Valid	Number		<b>-</b>	95% Upper Confidence	Maximum	e de la companya de l
Chemical	CAS No.	Samples	Detects	Distribution	Mean	Mean	Concentration	Concentration Concentration
CPAHs (mg/Kg)								
Benzo(a)anthracene	56553	ø	S	Norma	3.29	5.84	9.2	
Chrysene	218019	9	S.	Normal	3.24	5.65	8.9	
Benzo(b)fluoranthere	205992	9	٧٦	Normal	3.25		00	5.35
Benzo(k) Iluoranthene	207089	9	٧,	Normal	1.38	223		
Велго(а)рутеле	50328	9	'n	Normal	1.95		4.0	3.2
indeno(1,2,3-cd)pyrene	193395	9	4	Lognormal	1.88			
Dibenzo(a,h)anthracene	53703	9	4	Normal	0.715		6.1	1.26
Pesticide Compounds (mg/Kg)			1					
Aldrin	309002	9	0	Nonparametric	QX	2	2	g
Heptachlor Epoxide	1024573	9	_	Normal	0.00818	0.0157		0.0157
Dieldrin	17509	9	_	Nonparametric	0.00408	0.0306	_	•
4,4'-DDT	50293	9	4	Lognormal	0.0557	30.2	0.21	0.21
PCBs (mg/Kg)							ľ,	
Aroclor - 1248	1336363	9	0	Nonparametric	2			Q
Aroclor - 1254	1336363	9	0	Nonparametric	2			
Aroclor - 1260	1336363	9	0	Nonparametric	2	QX	DN	QX
Total PCBs		9	0	Nonparametric	Q			10
norganic Compounds (mg/Kg)								
Anticuony	7440360	4	0	Nonparametric	2		2	
Arsenic	7440382	9	9	Normal	5.78			
Barium	7440393	9	9	Lognormal	141	9950		
Beryllium	7440417	4	7	Lognormal	0.436	150		
Cadmium	7440439	9	E)	Lognormal	1.41	11.1	4.7	
Chromium	16065831	9	9	Ī	629	754000	2600	2600
Hexavalent Chromium	18540299							
pa,	7439921	9	9	Normal	96.4			165
Mercury	7439976	9	S	Lognorms	0.501		1.7	į
Nickel	7440020	4	4	Normal	8.03	15.3		
Selenium	7782492	9	2	Nonparametric	0.753			
Silver	7440224	9	0	Nonparametric	2	2	2	

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					H. DIS	H. Distribution of Data	ata			
	-		Mimimem					55		Maximum Vatue
			Value	-	4	75.0	480	450	400	(Approx.
Chemical	CAS No.	Distribution	Percentile)	Percentile	Percentile	Percentile	Percentile	Percentile	Percentile	Percentile)
CPAHs (mg/Kg)										
Benzo(a)anthracene	56553	Normal	0.4	61.1	329	5.38	7.27		10.5	9.2
Chrysene	218019	Normal	0.41	1.26	3.24	5.21	66.9		10.1	2
Benza(b) fluorauthene	205992	Normal	0.41	1.53	325	4.97	6.52	7.45	9.18	600
Benzo(k)fluoranthene	207089	Normal	0.41	0.689	1.38	2.07	2.7		3.77	3.3
Benzo(a)pyrene	50328	Normal	0.41	0.929	1.95	2.97	3.9		5.48	4,
Indeno(1,2,3-cd)pyrene	193395	Lognorma	0.11	0.322	0.85	2.25	\$39	1.6	24.3	6.8
Dibenzo(a,h)anthracene	53703	Normal	0.13	0.269	0.715	1.16	1.56		225	1.9
Pesticide Compounds (mg/Kg)										
Aldrin	309002	Nonparametric	0.00085	0.00085	0.000925	0.00123	0.00145	0.00145	0.00145	0.00145
Heptachtor Epoxide	1024573		0.00085	0.002	0.00818	0.0143	0.0199	0.0232	0.0295	0.023
Dieldrin	60571	Nonparametric	0.00085	0.00085	0.002	0.00606	0.016		910.0	0.016
4,4'-DDT	50293		0.00225	0.00594	0.0197	0.0656	0.193		1.24	0.21
PCBs (mg/Kg)							e e			
Aroclor - 1248	1336363	Nonparametric	0.0165		0.018	0.0238				
Aroclor - 1254	1336363	Nonparametric	0.0165		0.018	0.0238	_	0.0275	0.0275	0.0275
Aroclor - 1260	1336363	Nonparametric	0.0165		0.018	0.0238				
Total PCBs		Nonparametric	0	0	0	0	0	0	0	•
Inorganic Compounds (mg/Kg)					R					
Antimony	7440360	Nonparametric	1.4		1.63	2.1	22		2.2	7
Arsenic	7440382	Normal	0.77	3.29	5.78	8.27				17.1
Barium	7440393	Lognormal	10.4		60.2	163			1880	220
Beryllium	7440417	Ī	0.105		0.276	0.561				7
Cadmium	7440439		0.305	•	0.877		3.26	4.74	١	4.7
Chromium	16065831		14.2	54.8	196			•	16000	
Hexavalent Chromium	18540299									
Lead	7439921	Normal	16.2	40.4	96.4			233	290	220
Mercury	7439976	٤	0.035	ő	0.197	0.552			T	
Nickel	7440020	Normal	3.5		8.03	12.2	15.9			
Sclenium	7782492		0.145	0.153	0.685	1.14		2	2	
Silver	7440224	Nonparametric	0.22		0.318	0.479	0.55			0.55

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Statistics for Surface Soil in Area 1B (Continued)

				. Distributio	of Data for A	onparametric	<ol> <li>Distribution of Data for Nonparametric Distribution</li> </ol>		
	M								Mavimise
		Mimimum Value							Value (Approx.
Chemical	CAS No.	(Approx, 0th Percentile)	25th Percentile	Soth Percentile	75th Percentife	Percentile	95th Percentile	99th Percentile	100th Percentile)
CPAHs (mg/Kg) Benzolalanthmoses	15595	180		27.6	4 85	9.3	60	6.0	
Chrysene	218019	0.41	1.45	2.65	4.48	0	0 %	0 8	5
Benzo(b)fluoranthene	205992	0.41	6.1	2.55	4.7	60	00	**	
Benzo(k) fluoranthene	207089	0.41	0.673	11.1	2.03	3.3	33		33
Велго(а)рутеле	50328	0.41	-	9.1	2.78	4,	4,	4,00	4.8
Indeno(1,2,3-ed)pyrene	193395	0.11	0.335	69'0	3.65	8.9	6.8	9.9	6.8
Dibenzo(a,h)anthracene	53703	0.13	0.163	0.53	123	1.9	1.9	1.9	1.9
Pesticide Compounds (mg/Kg)				ï					
Aldrin	309002	0.00085	0.00085	0.000925	0.00123	0.00145	0.00145	0.00145	0.00145
Heptachior Epoxide	1024573	0.00085	0.00085	0.00468	0.017	0.023	0.023	0.023	0.023
Dieldrin	17209	0.00085	0.00085	0.002	0.00606	910'0	910.0	910.0	0.016
4,4"-DDT	50293	0.00225	0.00263	0.0265	0.102	0.21	0.21	0.21	0.21
PCBs (mg/kg)	711-111			Ī			-		
Aroclor - 1248	1336363	0.0165	0.0165	0.018	0.0238	0.0275	0.0275	0.0275	0.0275
Aroclor - 1254	1336363	0.0165	0.0165	0.018	0.0238	0.0275	0.0275	0.0275	0.0275
Aroclor - 1260	1336363	0.0165	0.0165	0.018	0.0238	0.0275	0.0275	0.0275	0.0275
Total PCBs	I	0	0	Ф	0	•	0	0	•
Inorganic Compounds (mg/Kg)									
Antimony	7440360	1.4	1.41	1.63	17	2.2	22	22	7
Arsenic	7440382	0.77	3.49	5.5	7.83	12.1	17.1	12.1	121
Bariom	7440393	10.4	16.3	58.9	265	220	220	520	220
Beryllium	7440417	0.105	0.121	0.22	0.968	12	1.2	1.2	7
Cadmium	7440439	0.305	0.369	0.843	2.23	4.7	4.7	4.7	4.7
Chromium	16065831	14.2	59.9	142	1480	2600	2600	2600	2600
Hexavalent Chromium	18540299								
Lead	7439921	16.2	24.3	727	183	220	22	220	
Mercury	7439976	0	0.0688	0.116	1.15	1.7	1.7	1.7	1.7
Nickel	7440020	3.5	3.58	5.95	14.6	16.7	16.7	16.7	
Seknium	7782492	0.145	0.153	0.685	1.14	7	2	7	
Silver	7440224	0.22	0.231	9120	0.470	250	250	224	220

				A. Sampl	A. Sample Counts		
i.i.		Number of	Number of Rejected	Number of Valid	Number of	Number of	Percent
Chemical	CAS No.	Samples	Samples	Samples	Detacts	Nondetects	Nondetects
CPAHs (mg/Kg)							
Benzo(a)anthracene	56553	11	0	=	m	90	
Chrysene	218019	11	0	=	L.3	<b>\$10</b>	
Benzo(b)fluoranthene	208992	11	0	11	4	_	63.6
Benzo(k) fluoranthene	207089	=	•	Ξ	m	ĊΟ	
Benzo(a)pyrene	50328	=	0	=	n	60	7.27
Indeno(1,2,3-cd)pyrene	193395	=	0	=	e	80	
Dibenzo(a,h)anthracene	53703	==	0	=	m	90	
Pesticide Compounds (mg/Kg)							
Aldrin	309002	=	0	Ξ	0	11	2
Heptachlor Epoxide	1024573	11	0	Ξ	63	80	72.7
Dieldrin	17209	=	0	=======================================	2	6	
4,4-DDT	\$0293	17	0	=	4	7	
PCBs (mg/Kg)							
Aroclor - 1248	1336363	=	0	=	_	10	90.9
Aroclor - 1254	1336363	=======================================	0	=		01	
Aroclor - 1260	1336363	Ξ	0	=	•	=	200
Total PCBs		=	0	=	_	9	
Inorganic Compounds (mg/Kg)							
Antimony	7440360	9	0	9	0	01	100
Arsenic	7440382	=	0	=	=	•	
Barium	7440393	Ξ	0	=	_		o.
Beryllium	7440417	9	0	10			
Cadmium	7440439	=	0	11	E	•	72.7
Chromium	16065831	11	0	=	-	•	
Hexavalent Chromium	18540299						
Lead	7439921	Ξ	0	=	11		
Mercury	7439976	=	0	11	9	•	4
Nickel	7440020	10	0	2	*	2	
Selenium	7782492	11	0		4		63.6
Silver	7440224	11	0	=	0	=	100

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Statistics for Subsurface Soil in Area 1B (Continued)

		-		B. Basic Statistics	23	
Chemical	CAS No.	Minimum Detection Limit	Maximum Detection Limit	Minimum Delected Concentration	Maximum Detected	Sample with Maximum Defect
CPAHs (me/Ke)					-1-	
Berzofalanthracene	13595	11.0	280	0 04	31	97.93
Chrosene	010010	100	20.0	250		
Demonth Management	20000		0.00	7.0		
Design United States	766607	0.33	0.79	0.74		SB-338
Denzo(k) moranmene	60707	0.33	0.90			
period of the second	2000	670	0.93	770		
Indeno(1,2,3-cd)pyrene	193395	0.50	0.93	0.64	5.5	SB-33B
Dibenzo(a,h)anthracene	53703	0.33	0.93	0.12		SB-33B
Pesticide Compounds (mg/Kg)						
Aldrin	309002	0.0017	0.0024	NA NA	××	YZ
Heptachlor Epoxide	1024573	0.0017	0.0024	0.009		SB-33B
Dieldrin	11209	0.0017	0.0047	0.019		SB-33B
4,4"-DDT	50293	0.0033	0.0047	0.033		SB-37B
PCBs (mg/Kg)						
Aroclar - 1248	1336363	0.033	0.047	3.2	3.2	SB-33B
Arocler - 1254	1336363	0.033	0.047	1.9	1.9	SB-33B
Aroelar - 1260	1336363	0.033	0.047	NA NA	R	X
Total PCBs		¥	VN.	5.1	5.1	SB-33B
Inorganic Compounds (mg/Kg)						
Antimony	7440360	2.9	3.8	YZ	NA NA	YZ.
Arsenic	7440382	YZ	NA	0.4	40.6	SB-35B
Barium	7440393	4	4	1.8	ľ	SB-33B
Beryllium	7440417	0.22	0.25	0.36		SB-35B
Cadmium	7440439	4.0	0.82	1.4		SB-37B
Chromium	16065831	Y.	YY.	3.2	704	SB-33B
Hexavalent Chromium	18540299					
Lead	7439921	ž	NA	1.7	133	SB-33B
Mercury	7439976	0.06	0.094	0.07	_	SB-33B
Nickel	7440020	1.5	1.6	4.6		MW-4A
Selenium	7782492	0.3	0.83	0.54	I	SB-62B
Silver	7440224	0.08	0.0	YN.		AM

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	ì		٥	. General Sum	C. General Summary Statistics		
				-			4
Chemical	CAS No.	Median	Mes and a second	Standard Devlation	Coefficient of Variation	Geometric	Geometric Standard Deviation
Canada Santa							
Creats (mg/kg) Berzo(alanthrzene	56553	71.0	0.879	1.22	1.19	0.448	3.05
Chrosene	218019	100	C 843	111	14	0.416	2.97
Benzo(b)Ountanthene	205992	0.37	3.57	7.99	2.24	0.687	5.71
Benzofk) Buoranthene	207089	700	2	2.72	2.1	0.474	3.48
Benzo(a)ovrene	50328	023	1.27	2.9	2.27	0.414	3.49
Indeno(1,2,3-ed)pyrene	193395	0.37	0.846	1.56	1.85	0.41	2.84
Dibenzo(a.h)znthrocene	53703	. 0.2	0.311	0.256	0.823	1570	1.9
Pesticide Compounds (mg/Kg)							
Aldrin	309002	0.00105	0.00103	0.00011	0.107	0.00102	1.11
Heptachlor Epoxide	1024573	0.00105	0.0148	0.0333	224	0.00263	5.58
Dieldrin	17209	0.00205	0.0197	0.0534	2.72	0.00346	4.53
4,4-DDT	\$0293	0.0022	0.061	0.122	2.01	0.00855	8.14
PCBs (mg/Kg)				1			
Aroclor - 1248	1336363	0.02	0.309	0.959	1.6	0.0313	4.65
Aroclor - 1254	1336363	0.02	0.191	0.567	2.97	0.0299	3.98
Aroclor - 1260	1336363	0.02	0.02	0.00207	0.103	0.0199	=
Total PCBs		0	0.464	1.54	332	AN	Y.
Inorganic Compounds (mg/Kg)							
Antimony	7440360	1.58	1.59	0.147	0.0923		1.09
Arsenic	7440382	<u>6.</u>	6.38	11.7	1.83		3.77
Barium	7440393	21.9	42.9	66.2	1.54	14.2	5.46
Bezyllium .	7440417	0.123	0.506	0.649	1.28		3.13
Cadmium	7440439	0.355	0.688	0.626	16:0	0.506	2.16
Chomium	16065831	7.2.7	134	220	19.		9.9
Hexavalent Chromium	18540299						
Lead	7439921	15.5	23.4				3.98
Mercury	7439976	0.07	0.132	0.131	0.985	0.0835	2.7
Nickel	7440020	9.5	10.2				3.37
Sefenium	7782492	0.38	0.426	0.326	0.766		2.0
Cilves	7440224	0.245	0.235	0.0679	0.289	0.214	1.7.

EXComEditS159 Terner/Delatifier 1 EvanArea 19 Subsurface Solluts

				<ul> <li>D. Testing of Normality of Data</li> </ul>	ormality of Dat	6	
	I	Shapiro-Wilk Test of		D'Agostin	D'Agostino Test of Normality (N>50)	Ilty (N>50)	
Ghemical	CAS No.	W.Statistic	W Value at	Y-Statistic	Y Value at	Y Vatue at	Is Data Normally Distributed at
CDAILS							0.03 Laver
Crais (mg/kg)							3
Benzo(a)anthracene	26333	0.63	0.65				ž
Chrysene	218019	19'0	0.85				Š
Benzo(b) fluoranthene	205992	0,496	0.85				ž
Benzo(k) fluoranthene	207089	0.466	0.85				2
Вепго(а)рутеле	50328	0.438	0.85				2
Indeno(1,2,3-ed)pyrene	193395	0.476	0.85	-			Š
Dibenzo(a.h)anthracene	53703	0.716	0.85				No
Pesticide Compounds (mg/Kg)							
Aldrin	309002	0.959	0.85				ž
Heptachlor Epoxide	1024573	0.503	0.85				Z
Dieldrin	12509	0.395	0.85				Ž
4,4'-DDT	50293	0.577	0.85		14		ŝ
PCBs (mg/Kg)							
Aroclor - 1248	1336363	0.347	0.85				N <sub>o</sub>
Aroclor - 1254	1336363	0.348	0.85				No
Aroclor - 1260	1336363	0.985	0.85				200
Total PCBs		0.345	0.85				2
Inorganic Compounds (mg/Kg)							
Antimony	7440360	0.884	0.842				No
Arscnic	7440382	0.536	0.85				ž
Barium	7440393	0.647	0.85				No
Beryllium	7440417	59'0	0.842				Ň
Cadmium	7440439	0.697	0.85				No
Chromium	16065831	0.664	0.85				S.
Hexavalent Chromium	18540299						
Lead	7439921	0.578	0.85				No
Mercury	7439976	0.801	0.65				%
Nickel	7440020	0.957	0.842				Yes
Selenium .	7782492	0.832	0.85				S.
Silver	7440224	0.646	0.85				No

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			ızi	Testing of Log-	E. Testing of Log-Normality of Data	ata	
		Shapiro-Wilk	Shapiro-Wilk Test of Log-	D'Agostino 1	D'Agostino Test of Log-Normality (N>50)	mality (N>50)	
							Is Data Log- Normally
Chemical	CAS No.	W-Statistic	W Value at 0.05 Level	Y-Statistic	Y Value at 0.025 Level	Y Value at 0.975 Lavel	Distributed at 0.05 Level?
CPAHs (mg/Kg)							
Benzo(a)anthracene	56553	0.815	0.85				%
Chrysene	218019	0.806	0.85				å
Benzo(b)fluoranthene	205992	0.8	0.85				ž
Benzo(k)fluoranthene	207089	0.81	0.85				ž
Benzo(a)pyrene	5032B	0.732	0.85				Š
Indeno(1,2,3-cd)pyrene	193395	0.816	0.85				No
Dibenzo(a,h)anthracene	53703	0.901	0.85				S.
Pesticide Compounds (mg/Kg)							
Aldrin	309002	0.96	0.85				ž
Heptachlor Epoxide	1024573	0.675	0.85				ž
Dieldrin	60571	0.649	0.85				ž
4,4*DDT	50293	0.749	0.85				ž
PCBs (mg/Kg)							
Aroclor - 1248	1336363	0.404	0.85				2
Aroctor - 1254	1336363	0.411	0.85				cZ.
Aroclor - 1260	1336363	0.985	0.85				°Z
Total PCBs		0.985	0.85				S.
Inorganic Compounds (mg/Kg)							
Antimony	7440360	0.898	0.842				Š
Arsenic	7440382	0.962	0.85				Ya
Barium	7440393	0.893					Ya
Beryllium	7440417	0.748	_				ž
Cadmium	7440439	0.786					ŝ
Chromium	16065831	0.917	0.85				Yes
Hexavalent Chromium	18540299						h
Lead	7439921	0.924					Ye
Mercury	7439976	0.864					Ye
Nickel	7440020	0.83	_				2
Selenium	7782492	0.894					ž
Silver	7440224	0.483	0.85				2

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Statistics for Subsurface Soil in Area 1B (Continued)

				F. 95% Upp	F. 95% Upper Confidence Limits on the Mean	Jimits on the M		
		Normal D	Normal Distribution		7	Lognormal Distribution	ribution	
			95% UCL for		95% UCL for Lognormal Distribution	Minimum Variance Unbiased	95% UCL Using Jackinife	95% UCL Using Bootstrap
Chemical	CAS No.	t-Statistic	Normal Distribution	H-Statistic	Using H- Statistic	Estimate of Mean	Method with Log Normal Theory	물물
CPAHs (mg/Kg)		2010						
Charter	SCCOOL C	2017	25.	1.083	2.0	0.768	35.	
Benzofhilluoranibene	20500	1.8125	1.47	3.1887	75.7	0.731	121	1.42
Benzo(k) (horanthene	207089	1.8125	2.79	3.5082	4.11	0.925	17.	
Benzo(a) pyrene	50328	1.8125	2.85	3.514	3.62	0.811	1.57	
Indeno(1,2,3-cd)pyrene	193395	1.8125	1.7	3.0945	1.96	99.0	1.17	
Dibenzo(a,h)anthracene	53703	1.8125	0.451	2.3799	0.497	0.301	0.429	•
Festiciae Componens (mg/Kg)							;	
Aldna	309002	1.8125	0.00109	1.7945	0.00109	0.00103	0.00109	_
Heptachlor Epoxide	1024573	1.8125	0.033	4.5407	0.136	0.00893	0.0199	
Dieldrin	60571	1.8125	0.0488	4.0741	0.0757	0.00904	0.0188	0.0362
4,4-DDT	50293	1.8125	0.128	5.4058	2.78	0.0494	0.12	0.183
Ample: 1248	1343641	24101				7,000	1	
A-1-1-48	330303	C719.1	0.833	4.1353	0.763	0.0846	0.17	
Auctor - 1234	1336363	1.8125	0.501	3.7952	0.406	0.0673	0.134	
Aroclor - 1260	1336363	1.8125	0.0212	1.7912	0.0213	0.02	0.0212	o
Feetwards Commenced (margins)	ĺ	1.8125	7	Z Z	YY.	ž	YZ.	¥N
Charles Components (inches)	011000							
Anumony	7440360	1.8331	1.68	1.802	1.68	1.59	1.67	_
Arsenic	7440382	1.8125	12.7	3.6804	28.8	5.42	10.2	
Barrum	7440393	1.8125	79	4.4933	672	47	94.4	
Beryllium	7440417	1.8331	0.882	3.407	1.84	0.459	0.842	
Cadmium	7440439	1.8125	1.03	2.5915	1.28	0.659		
Chomium	16065831	1.8125	žž	4.9445	3750	138	306	_
Hexavalent Chromium	18540299							
Lead	7439921	1.8125	4	3.796	137	22.6	41.4	44.1
Mercury	7439976	1.8125	0704	3.0421	2720	0.131	0.214	0.203
Nickel	7440020	1.8331	14.4	3.5631	57.9	12.3	18.3	16.2
Selenium	7782492	1.8125	0.605	2.5258	0.781	0.423	0.608	0.586
Silver	7440224	1.8125	0.272	2.2668	0.375	0.247	0.27	0.267

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Table 2

		F. 95%	Upper Confidence I	F. 95% Upper Confidence Limits on the Mean (Confd)	Courd
			Nonpar	Nonparametric	:
	_				
			95% UCL Using	;	95% UCL Using
Chemical	CAS No.	Jackknife Method	Standard Bootstrap Method	Ecotstrap-t	Bootstrap-t Method
CPAHs (mg/Kg)					
Benzo(s)anthracene	56553	1.55	1.47	-2.47	
Chrysene	218019	1.49	1.42	-3.1	4.5
Benzo(b)fluoranthene	205992	7.93	•	-2.24	
Benzo(k)fluoranthene	207089	2.79		•	
Benzo(a)pyrene	50328	2.85			
Indeno(1,2,3-ed)pyrene	193395	1.7	1.59	-3.47	6.27
Dibenzo(a,h)anthracene	53703	0.451	0.431		9.0
Pesticide Compounds (mg/Kg)					
Aldrin	309002	0.00109	0.00108	-0.553	0.00109
Heptachlor Epoxide	1024573	0.033	0.0301	-5.44	961'0
Dieldrin	60571	0.0488	0.0447		2.47
4,4°-DDT	50293	0.128	0.118		
PCBs (mg/Kg)					
Aroclor - 1248	1336363	0.833			1
Aroclor - 1254	1336363	0.50	0.461		
Arocker - 1260	1336363	0.0212	0.021	-0.588	
Total PCBs			12	0	0.464
Inerganic Compounds (mg/Kg)					
Antimony	7440360	1.68			
Arsenic -	7440382	12.7		1	
Barium	7440393	79		-1.26	126
Beryllium	7440417	0.862			
Cadmium	7440439	1.03	0	_	
Chromium	16065831	254	237	-1.06	366
Hexavalent Chromium	18540299				
Lead	7439921	44	40.7		
Мегешу	7439976	0.204	_	ď	
Nickel	7440020	14.4			
Selenium	7782492	0.605			
Silver	7440224	0.272	0.267	1600	0.261

				כ	c. cource concentrations	entranous			
		Number	Number			95% Upper Confidence	Maximum		
Chemical	CAS No.	Samples	Detects	Distribution	Mean	Mean	Concentration	Concentration Concentration	
CPAHI (mg/Kg)				9					
Benzo(a)anthracene	56553	=	m	Nonparametric	0.879	3.91	3.6		
Chrysene	218019	11	m	Nonparametric	0.843	4.5			
Benzo(b) fluoranthene	205992	11	4	Nonparametric	3.57	21.5	27	7	
Benzo(k)fluoranthene	207089	Ξ	m	Nonparametric	13	9.05			
Benzo(a)pyrene	50328	Ξ	m	Nonparametric	1.27	28	6.6		
Indeno(1,2,3-cd)pyrene	193395	=	I.J.	Nonparametric	0.846	627	5.5	Ì	
Dibenzo(a,h)anthracene	53703	Ξ	E.	Nonparametric	0.311	0.0	1	0.6	
Pesticide Compounds (mg/Kg)									
Aldrin	309002	=	0	Nonparametric	QX	QX	QX.	QX	
Heptachlor Epoxide	1024573	11	n	Nonparametric	0.0148	0.196			
Dieldrin	11209	Ξ	2	Nonparametric	0.0197	2.47			
4,4*.DDT	50293	=	4	Nonparametric	0.061	0.341		0	
PCBs (mg/Kg)					1				
Aroclor - 1248	1336363	Ξ	-	Nonparametric	0.309	196			
Aroclor - 1254	1336363	Ξ	-	Nonparametric	0.191	9.89			
Aroclor - 1260	1336363	=======================================	0	Nonparametric	2	Ş	34		
Total PCBs	1	11	_	Nonparametric	0.464	1	5.1		
Inorganic Compounds (mg/Kg)									
Antimony	7440360	9	0	Nonparametric	Ş	2			
Arsenic	7440382	Ξ	=	Lognomal	6.38	28.8	40.6	28.8	
Barium	7440393	=	2	Lognormal	42.9	672			
Berylliun	7440417	9	4	Nonparametric	0.506	1.63	1.7		
Cadmium	7440439	=	m	Nonparametric	0.688	1.19	2	1.19	
Chromium	16065831	=	=	Lognoma	134	3750	704		
Hexavalent Chromium	18540299				4				
Lead	7439921	=======================================	=	Lognomal	23.4	137		133	
Mercury	7439976	=======================================	9	Lognomat	0.132	0.372	0.39	0	
Nickel	7440020	10	60	Normal	10.2	14.4			
Selenium	7782492	=======================================	4	Nonparametric	0.426	0.7			
Silver	7440224	=	0	Nonparametric	S	2	_	2	

										Maximum
		-	Mimimum							Vatue (Approx.
Chemical	CAS No.	Distribution	(Approx. 0th	25th Percentile	Soth	75th Percentile	90th Percentile	95th Percentile	99th Percentile	100th Percentile)
CPAHs (mp/Kg)										
Benzo(a)anthracene	56553	Nonparametric	0.165	0.185	0.37	0.94	3.48	3.6	3.6	3.6
Chrysene	218019	Nonparametric	0.165	0.185	0.37	0.74	3,32			
Benzo(b)fluoranthene	205992	Nonparametric	0.165	0.185	0.37	4.5	22.7			
Benzo(k) fluoranthene	207089	Nonparametric	0.165	0.185	0.37	<u></u>	7.8			
Benzo(a)pyrene	50328	Nonparametric	0.165	0.185	0.23	0.465		9.9		
Indeno(1,2,3-cd)pyrene	193395	Nonparametric	0.165	0.185	0.37	0.64				
Dibenzo(a,h)anthracene	53703	Nonparametric	0.12	0.165	07	0,395	0.893		_	_
Pesticide Compounds (me/Kg)						1				
Aldrin	309002	Nonparametric	0.00085	0.00095	0.00105	0.00115	0.00119	<u></u>	e,	ē
Heptachlor Epoxide	1024573	Nonparametric	0.00085	0.00095	0.00105	0.009	0.0952			
Dieldrin	17509	Nonparametric	0.00085	0.0019	0.00205	0.00235	0.148	_	_	_
4,4-DDT	\$0293	Nonparametric	0.00165	0.00195	0.0022	0.064	0.352	0.4	0.4	4.0
PCBs (mg/Kg)										
Aroclor - 1248	1336363	Nonparametric	0.0165	0.0185	0.02	0.022	2.56			
Aroclor - 1254	1336363	Nonparametric	0.0165	0.0185	0.02	0.022				
Aroclor - 1260	1336363	Nonparametric	0.0165	0.0185	0.02	0.022		0.0	0.0	0.0
Total PCBs		Nonparametric	0	0	0	•	4.08	5.1	2.	- 2.
toorganic Compounds (mg/Kg)										
Antimony	7440360	Nonparametric	1.45	1.45	1.58				1.9	
Arsenic	7440382	Lognormal	0.4	1.04	2.55		7	22.6		40.6
Barium	7440393	Lognormal	1.8	4.53	14.2	44.7				
Beryllium	7440417	Nonparametric	0.11	0.114	0.123	0.875			1.7	
Cadmium	7440439	Nonparametric	0.2	0.33	0355	1.4				
Опотит	16065831	Legnormal	3.2	8.87	31.9		363	723	2630	704
Hexavalent Chromium	18540299	)								
Lead	7439921	Lognormal	1.7	3.95	01	25.4	58.9	97.2	249	133
Mercury	7419976	Lognormal	0.03	0.0421	0	_				
Nickel	7440020	Normal	0.75	5.16	10.2	15.1		7		
Sclenium	7782492	Nonparametric	0.15	0.16			=	12		12
Silver	7440224	Nonparametric	0.0	0.235			_	1	Ì	<u>~</u>

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Statistics for Subsurface Soil in Area 1B (Continued)

				Conningio	I OI DAM IUF	6. Distribution of Data for Nonparametric Distribution	DISTIDUTION		
		-							
		Mimimum				S.			Value
Chemical	CAS No.	(Approx. 0th	25th	Soth	75th	90th	95th	99th	100th
CPAHs (me/Ke)		all retining		resections	TEI CERIMO	rercenue	المادوالااام	Percentile	Percentile)
Benzo(a)anthracene	56553	0.165	0.185	0.37	0.94	3.48	3.6	3.6	91
Chrysene	218019	0.165	0.185	0.37	0.74	3.32	3.4	3.4	1
Benzo(b) fluoranthene	205992	0.165	0.185	0.37	4.5	22.7	27	27	27
Benzo(k) fluoranthene	207089	0.165	0.185	0.37	1.3	7.8	9.6	9.6	9.6
Вепго(а)ругане	50328	0.165	0.185	0.23	0.465	8.26	9.6	9.9	9.9
Indeno(1,2,3-ed)pyrene	193395	0.165	0.185	037	0.64	4,6	5.5	SS	5.5
Dibenzo(a,h)anthracene	53703	0.12	0,165	0.7	0.395	0.893	_	_	
Pesticide Compounds (mg/Kg)		•					•		•
Aldrin	309002	0.00085	0.00095	0.00105	0.00115	0.00119	0.0012	0.0012	0.0012
Heptachlor Epoxide	1024573	0.00085	0.00095	0.00105	0.009	0.0952	0.11	0.11	0.11
Dieldrin	17509	0.00085	0.0019	0.00205	0.00235	0.148	0.18	0.18	0.18
4,4-DDT	50293	0.00165	0.00195	0.0022	0.064	0.352	0.4	0.4	0.4
PCBs (mg/Kg)									i
Aroclor - 1248	1336363	0.0165	0.0185	0.02	0.022	2.56	3.2	3.2	32
Aroclor - 1254	1336363	0.0165	0.0185	0.02	0.022	1.52	6.1	1.9	1.9
Aroclor - 1260	1336363	0.0165	0.0185	0.02	0.022	0.0233	0.0235	0.0235	0.0235
Total PCBs		9	0	0	0	4.08	5.1	5.1	5.1
[Inorganic Compounds (arg/Kg)		_				11			
Antimony	7440360	1.45	1.45	1.58	1.68	1.89	1.9	1.9	1.9
Arsenic	7440382	4.0	0.64	6:1	5.9		40.6	40.6	40.6
Banium	7440393	1.8	7.6	21.9	61.1	961	229	229	229
Beryllium	7440417	0.11	0.114	0.123	0.875	1.7	1.7	1.7	1.7
Cadmium	7440439	0.2	0.33	0.355	1.4	1.9	2	7	2
Chromium	16065831	3.2	5.3	727	291	624	704	704	707
Hexavelent Chromium	18540299								
Lesd	7439921	1.7	2.5	15.5	24.2	112	133	133	133
Mercury	7439976	0.03	0.03	0.07	0.24	0.378	0.39	0.39	0.39
Nickel	7440020	0.75	3.65	9.5	16,1	23.4	24	24	24
Sclenium	7782492	0.15	0.16	0.38	0.61	1.1	1.2	1.2	12
Silver	7440224	0.04	0.235	0.245	0.26	0.296	0.3	0.3	

## Appendix I

**Proposed Engineered Barrier Design for Tannery Site** 

## Proposed Engineered Barrier Design for Tannery Site, Waukegan, Illinois

An engineered barrier is proposed at the Tannery site in Waukegan, Illinois to be placed over site soil impacted by tannery operations. The purpose of the engineered barrier is to prevent direct exposure to impacted soil and provide the structural support for equipment need to construct the cover. The components of the engineered barrier are (from the bottom): in-place soil, woven geotextile, gravel, topsoil, and seed. Figure 1 shows the proposed engineered barrier layout.

The engineered barrier will be placed directly on the existing, in-place soil. The soil has undrained shear strength of approximately 200 pounds per square foot. This is based on field torvane testing conducted at the site on March 12, 2002. This soil has insufficient strength to directly support tire mounted or track mounted construction equipment.

Woven geotextile (Geotex 4x4 or equivalent) will be placed directly above the in-place soil. A specification sheet for the Geotex 4x4 is attached. The wide width tensile strength (ASTM 4595) is 4,800 pounds per foot of width. Tensile strength of geotextile is presented as a force per unit width. To obtain stress units, this value would be divided by the material thickness (55 mils or 0.055 inches). The stress units are not typically presented because the material thickness will vary greatly when stretched to failure. Geotex 4x4 is only manufactured in black. We are contacting other vendors to determine if a colored material with equivalent strength properties can be obtained.

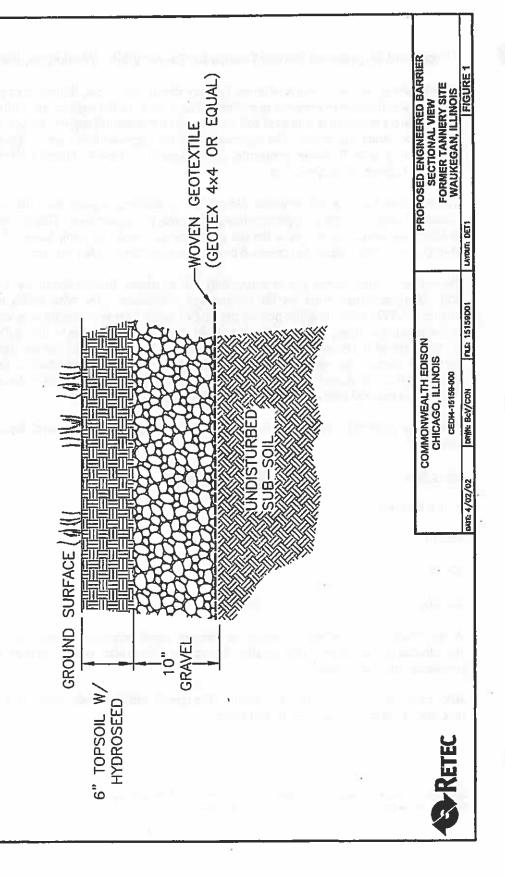
Above the geotextile will be a 10-inch thick layer of gravel. This gravel layer will consist of:

Sieve Size	Percent Finer by Weight
3-inch diameter	100
No. 10	30-95
No. 40	10 – 70
No. 200	0 - 15

A minimum of 10-inches is needed to prevent direct exposure according to the remediation objectives report for the site. The gravel layer is also required to provide the necessary structural support.

Above the gravel will be 6 inches of topsoil. The topsoil will be hyrodseeded. This layer is in place to prevent erosion of the soil cover.

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## **Product Data Sheet**

GEOTEX® 4 x 4

GEOTEX 4x4 is a woven polypropylene geotextile containing heavy monofilament (warp) and fibrillated (fill) yarns. The individual yarns are woven in a unique twill pattern to form a strong geotextile. These characteristics make the GEOTEX 4x4 ideal for the construction of embankments over soft soils, steepened slopes, and modular block and/or wrapped-face retaining walls The geotextile is resistant to ultraviolet degradation and to biological and chemical environments for normally found in soils. GEOTEX 4x4 conforms to the property values listed below which have been derived from quality control testing performed by one of SI Geosolutions' GAI-LAP accredited laboratories:

MARV<sup>2</sup>

		MA	KY
PROPERTY	TEST METHOD	ENGLISH	METRIC
Physical			
Mass/Unit Area	ASTM D5261	13.0 oz/y²	440g/m
Thickness	ASTM D5199	55 mils	1.3 mm
Mechanical			
Wide Width Tensile Strength	ASTM D4595	4,800 x 4,800 lb/ft	70 x 70 kN/m
Wide Width Elongation	ASTM D4595	9 x 9%	9 x 9%
Wide Width Tensile @ 2% Strain	ASTM D4595	460 x 840 lb/ft	7.0 x 12.2 kN/m
Wire Width Tensile @ 5% Strain	ASTM D4595	2,400 x 2,400 lb/ft	35.0 x 35.0 kN/m
Wide Width Tensile @ 10% Strain	ASTM D4595	3,900 x 3,900 lb/ft	57.0 x 57.0 kN/m
Tensile Strength ( Grab )	ASTM D4632	450 x 410 lbs	2000 x 1820 N
Puncture Strength	ASTM D4833	160 lb	712 N
Mullen Burst	ASTM D3786	1,200 psl	8,270 kPa
Trapezoidal Tear	ASTM D4533	225 x 225 lbs	1,000 x 1,000 N
Endurance		19	1.41
UV Resistance	ASTM D4355	90%	90%
Hydraulic			
Apparent Opening Size (AOS)	ASTM D4751	30 US Std. Sleve	0.600 mm
Permittivity	ASTM D4491	0,60 sec <sup>-1</sup>	0.60 sec <sup>-1</sup>
Water Flow Rate	ASTM D4491	45 gpm/ft <sup>2</sup>	1,830 Vmin/m²
Roll Sizes		15.0 ft x 300 ft	4.57 m x 91.46 m

## NOTES:

The property values listed above are effective 9/6/2000 and are subject to change without notice.

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Values for machine (warp) and cross-machine (fill), respectively, under dry or saturated conditions. Minimum average roll values (MARV) are calculated as the typical minus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any samples taken from quality assurance testing will exceed the value reported.

