U.S. Army Corps of Engineers

New England District
Concord, Massachusetts

Remedial Investigation/Feasibility Study (RI/FS) Work for Six Operable Units (OUs) General Electric (GE)/Housatonic River Project Pittsfield, Massachusetts

Contract No. DACW33-94-D-0009

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HUMAN HEALTH RISK ASSESSMENT–ALLENDALE SCHOOL

Task Order No. 0032

DCN: GEP2-121198-AAEM

11 December 1998

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WESTON
MANAGERS DESIGNERS/CONSULTANTS

REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) WORK FOR SIX OPERABLE UNITS (OUs) GENERAL ELECTRIC (GE)/HOUSATONIC RIVER PROJECT PITTSFIELD, MASSACHUSETTS

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Prepared for:

U.S. ARMY CORPS OF ENGINEERS
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TABLE OF CONTENTS

Section Page

TABLE OF CONTENTS
(Continued)

Section **Page**

TABLE OF CONTENTS
(Continued)

Section **Page**

LIST OF FIGURES

LIST OF TABLES

Title **Page**

LIST OF TABLES
(Continued)

LIST OF TABLES
(Continued)

Title **Page**

LIST OF TABLES
(Continued)

Title **Page**

LIST OF TABLES
(Continued)

Title **Page**

1. INTRODUCTION

1.1 BACKGROUND AND OBJECTIVES

This report is the baseline human health risk assessment for the Allendale School property located on Connecticut Avenue in Pittsfield, MA. Roy F. Weston, Inc. (WESTON®) has prepared this risk assessment for the U.S. Environmental Protection Agency, Region I (EPA). The methodologies used in this risk assessment are in accordance with EPA risk assessment guidance documents for Superfund sites (99-0002, 99-0089, 99-0007, 99-0008, 99-0009, 99-0010) and with EPA Region I guidance (99-0005).

The objective of the baseline human health risk assessment is to evaluate potential human health risks resulting from exposure to hazardous substances at the Allendale School in the absence of any remedial action (i.e., the no-action alternative). The baseline risk assessment is designed to estimate the potential carcinogenic risks and noncancer health effects, and to identify their causes, as well as to support the evaluation of the need for cleanup of the site. Figure 1-1 provides an overview of the risk assessment process. Each of the key components of this process are described below, along with the section of the report in which they are discussed:

- **Hazard Identification (Section 2)**—Presents an evaluation and summary of the sampling data that were used in the risk assessment. This section is comprised of the following:
  - Summary of available historical data reports.
  - Selection of data subsets for use in the risk assessment.
  - Data reduction and evaluation, and selection of chemicals of potential concern (COPCs).

- **Exposure Assessment (Section 3)**—Identifies and describes the rationale for exposure scenarios and pathways that were evaluated in the risk assessment. This section discusses the exposure pathways by which current and future residents and workers could potentially come in contact with the COPCs, the calculated exposure point concentrations (EPCs), and the exposure algorithms and input assumptions used to calculate the estimated daily intakes (doses).

- **Toxicity Assessment (Section 4)—**Presents a discussion of the selection and use of carcinogenic and noncancer toxicity values that define dose-response relationships for the COPCs.
- **Risk-Based Concentrations (Section 5)—**Presents the derivation of the risk-based concentrations (RBCs) used in the future use evaluation.
- **Risk Characterization (Section 6)—**Presents the methodology for calculating carcinogenic risk and noncancer health effects and the results and conclusions of the risk assessment.
- **Uncertainty Analysis (Section 7)—**Discusses those assumptions and methodologies used in the risk assessment that resulted in over- or under-estimation of risks and focuses on those that drive the risk results.
- **References (Section 8)**.

It should be noted that the baseline human health risk assessment is not a study of the health of the current population or a prediction of actual health effects resulting from past site exposures.

The Allendale School property is currently used as a primary school, but is zoned residential. Therefore, two exposure scenarios have been evaluated for the Allendale School. The first is a current use scenario that assumes the property will continue to be used as a primary school in the near future. It evaluates exposure of school children, young children accessing the site from local residences, and a groundskeeper to surface soil contamination. The exposure pathways evaluated quantitatively in the current scenario are soil ingestion and dermal contact with soils. The second scenario assumes that the site may become a residential development in the future. It evaluates exposure of a future resident child and adult to surface and subsurface soils. The exposure pathways evaluated quantitatively are soil ingestion, dermal contact with soil, and home garden produce consumption.

In the current scenario, human health risks are evaluated using algorithms and exposure parameters consistent with national and regional EPA guidance, as noted previously. For the future use scenario, RBCs have been developed and compared with combined surface and subsurface concentrations. This was done because of the heterogeneous distribution of subsurface soil contamination and the potential for hot spots, and the uncertainty of knowing exactly where residential properties would be located and where exposure could occur.

1.2 SITE DESCRIPTION

1.2.1 Location and Physical Setting

Allendale School is a 12-acre site located in Pittsfield, MA (Figure 1-2). The property is located approximately 1,500 feet north of the Housatonic River. The Allendale School property has been designated as Operable Unit (OU) 3. Figure 1-3 shows the location of Allendale School in relation to the other OUs associated with the GE site. The property is located immediately to the north of the Hill 78 Area of the GE facility (OU 1), across the Tyler Street Extension. Figure 1-4 is a site plan of the Allendale School. The school building is situated on the northwest side of the property. The remainder of the 12-acre property generally consists of paved and grass-covered areas. An area that historically has experienced poor drainage is located on the southern portion of the property.

Based on historical investigations, overburden geologic units at the Allendale School property generally include (from the ground surface downward): cap materials, fill, glaciofluvial sands, black organic peat and silt, gray silt, gray to black sand and silt, and clayey silt. Additional information regarding the soil types and locations of these units is contained in the *MCP Supplemental Phase II Report for the Allendale School Property* (03-0023). Depth to groundwater ranges from approximately 5 feet below ground surface (bgs) in the vicinity of monitoring wells SCH-2 and SCH-3, to approximately 10 feet bgs in the vicinity of monitoring wells SCH-1, SCH-4, NY-4, and 78-6 (see Figure 1-8 of the feasibility study [FS]). A geologic site model and a description of the geology and hydrogeology at the Allendale School property is further described in the FS.

1.2.2 Site History

The property originally was part of the 1,250 acre Allen Farm that was used to breed horses. In 1920, the Pittsfield Industrial Development Company (PIDC) purchased several hundred acres of the Allen Farm. GE purchased some of this land from PIDC for facility expansion. The Allendale School was built between 1950 and 1951. The 12-acre parcel on which the Allendale School sits was purchased from the PIDC in 1950 by local philanthropists and donated to the City of Pittsfield for use as a school. The school building occupies approximately 30,000 square feet (ft^2) on the northern section of the property. An additional wing is being added to the eastern portion of the school and is planned for completion in the fall of 1998. The property is surrounded on the northern, eastern, and western boundaries by residential areas. The property lies in an area of Pittsfield currently zoned “residential” (R-12) where a single-family dwelling could be built occupying a minimum lot size of 12,000 ft^2.

At the time of the school’s construction in 1950, GE entered into an agreement under which GE allowed the City to remove soil from GE property for use as fill material at the school property. A copy of this agreement is contained in Appendix E of the *MCP Interim Phase II Report for the Allendale School Property* (03-0007). The agreement indicates that fill material placed on the Allendale School property originated from the Hill 78 Area located south of the school property (03-0007). Concerns regarding the potential presence of polychlorinated biphenyls (PCBs) at the Allendale School property were initially raised during the construction of the Pittsfield Generating Company facility (formerly known as the Altresco Corporation Cogeneration Facility), located at the Hill 78 Area. Due to the presence of PCBs in soil at this area, the potential existed for PCBs to be present in the fill at the Allendale School property.

The Massachusetts Department of Environmental Protection (MADEP) conducted soil and surface-water sampling in January 1990 to investigate the potential for PCBs at the Allendale School property. The results from this sampling event and subsequent soil sampling conducted by GE in 1990 indicated PCB concentrations greater than the “level of concern” of 2 milligrams per kilogram (mg/kg) in soil established by MADEP. A Short-Term Measure (STM), as defined by the Massachusetts Contingency Plan (MCP), was conducted in 1991 to reduce the potential for human contact with soils containing levels of PCBs greater than 2 mg/kg. The STM consisted of the placement of a permeable geotextile layer overlain with a minimum of 2 feet of “clean” soil over areas where PCB soil concentrations exceeded 2 mg/kg within the top 3 feet of existing soil. These contaminated soils were not removed prior to cap placement. The STM cap is constructed of permeable materials that allow for infiltration of rainwater and snowmelt. The area covered by the STM permeable cap is approximately 5 acres.

In March 1992, MADEP classified the Allendale School property as a priority site and required a Phase II Comprehensive Site Assessment in accordance with 310 CMR 40.545 of the MCP. Prior to 1992, the Allendale School property was considered to be part of the GE Hill 78 Landfill Area site.

In January 1993, GE submitted the interim Phase II report to MADEP. On 13 September 1996, after review of that document, MADEP directed GE to: (1) submit an Imminent Hazard Evaluation Proposal for surface and near-surface soil sampling and analysis at the Allendale School property to evaluate whether a potential "imminent hazard" existed; (2) submit thereafter a supplemental Phase II statement of work (SOW) proposing additional investigations; and (3) upon completion of the additional investigations, submit a supplemental Phase II report for the property. On 27 September 1996, GE submitted an Imminent Hazard Evaluation Proposal, which was conditionally approved by MADEP in a letter dated 10 October 1996. In support of the imminent hazard evaluation, GE collected soil samples from the surface (0 to 6 inches) and near-surface (6 to 12 inches) from 114 grid node locations based on a 50-foot grid. Concentrations of PCBs were greater than 2 mg/kg in 2 out of 114 locations, at both the surface and near-surface intervals (sampling locations AS-96-76 and AS-96-80). None of the 114 surface samples had PCB concentrations greater than the MCP potential imminent hazard threshold of 10 mg/kg, and only 1 out of 114 of the near-surface samples had a PCB concentration greater than 10 mg/kg (16 mg/kg, sampling location AS-96-80, 6 to 12-inch interval). On 6 December 1996, GE submitted an Imminent Hazard Evaluation Report. Based on the available information, GE concluded that a potential imminent hazard as defined in the MCP (310 CMR 40.0321(2)(b)) did not exist at the schoolyard.

Additional soil sampling activities were conducted in 1996 and 1997 in support of supplemental Phase II activities. As described in the *MCP Supplemental Phase II Report for the Allendale School Property* (03-0023), based on these soil sampling activities, the horizontal extent of surficial (0 to 3 feet bgs) soil with PCB concentrations greater than 2 mg/kg appeared to be limited to soil beneath the permeable cap, with the exception of several areas along the eastern and northwestern sides of the cap.

The most recent soil sampling activities were conducted by GE in February and March 1998 in order to delineate areas with soil concentrations greater than 2 mg/kg in surficial soil outside the cap, to further define the vertical extent of contamination, and to collect and analyze additional soil samples for Appendix IX of 40 Code of Federal Regulations (CFR) 264 constituents. Based on the additional soil sampling activities, three areas were identified for soil removal because of PCB concentrations greater than 2 mg/kg in surficial soil outside the cap. The excavated areas are shown in Section 2, Figure 2-2. These areas included a wetlands area on the southeastern side of the cap and areas on the northeastern and northwestern sides of the cap. Approximately 1,600 cubic yards (yd^3) of soil were excavated from these areas and disposed of off-site in April 1998. Excavation depths ranged from 6 inches to 3 feet. A geotextile material was placed in the excavations prior to backfilling. Backfill and topsoil materials were then placed in the excavations to restore the areas to the original grades.

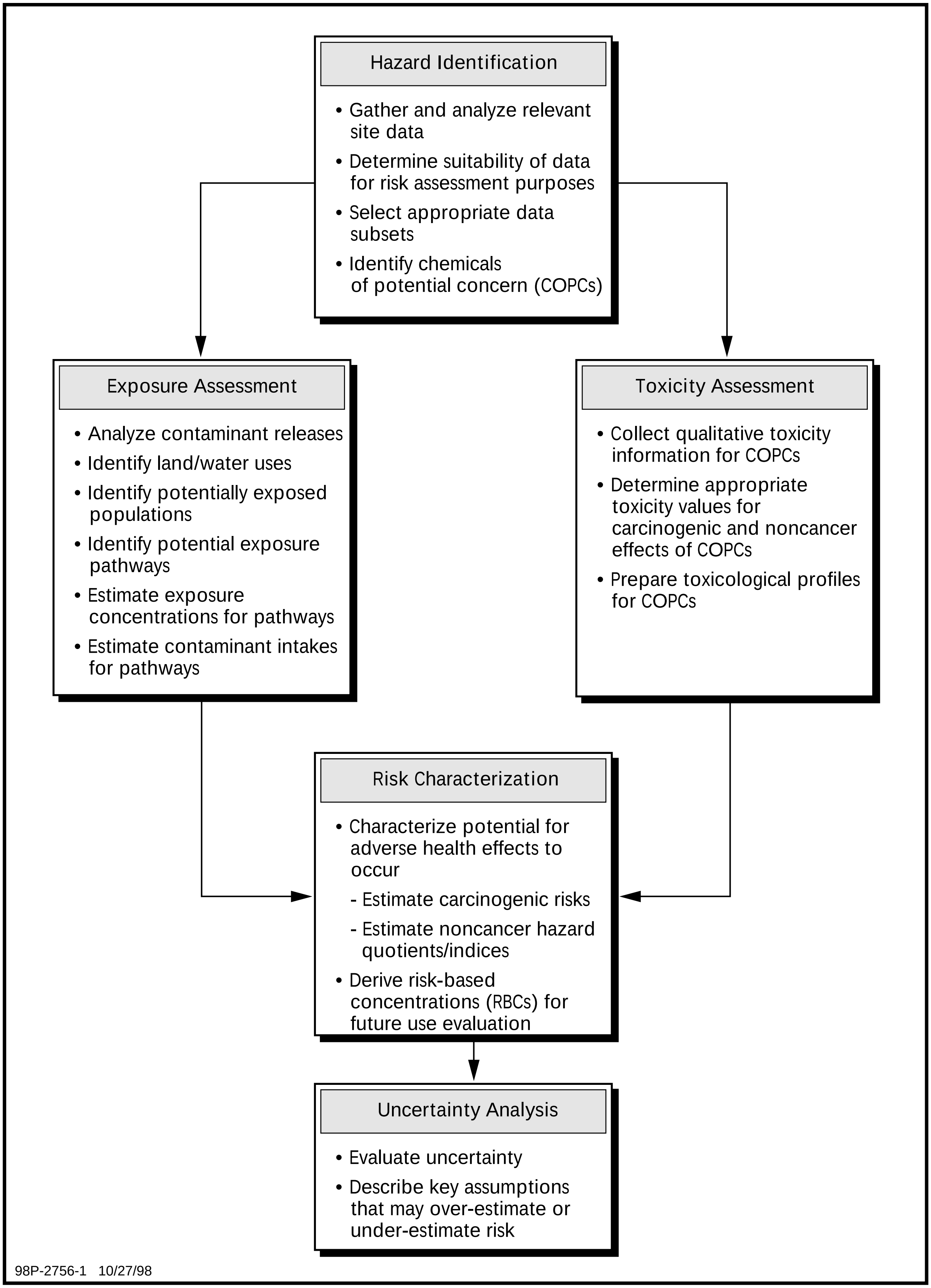
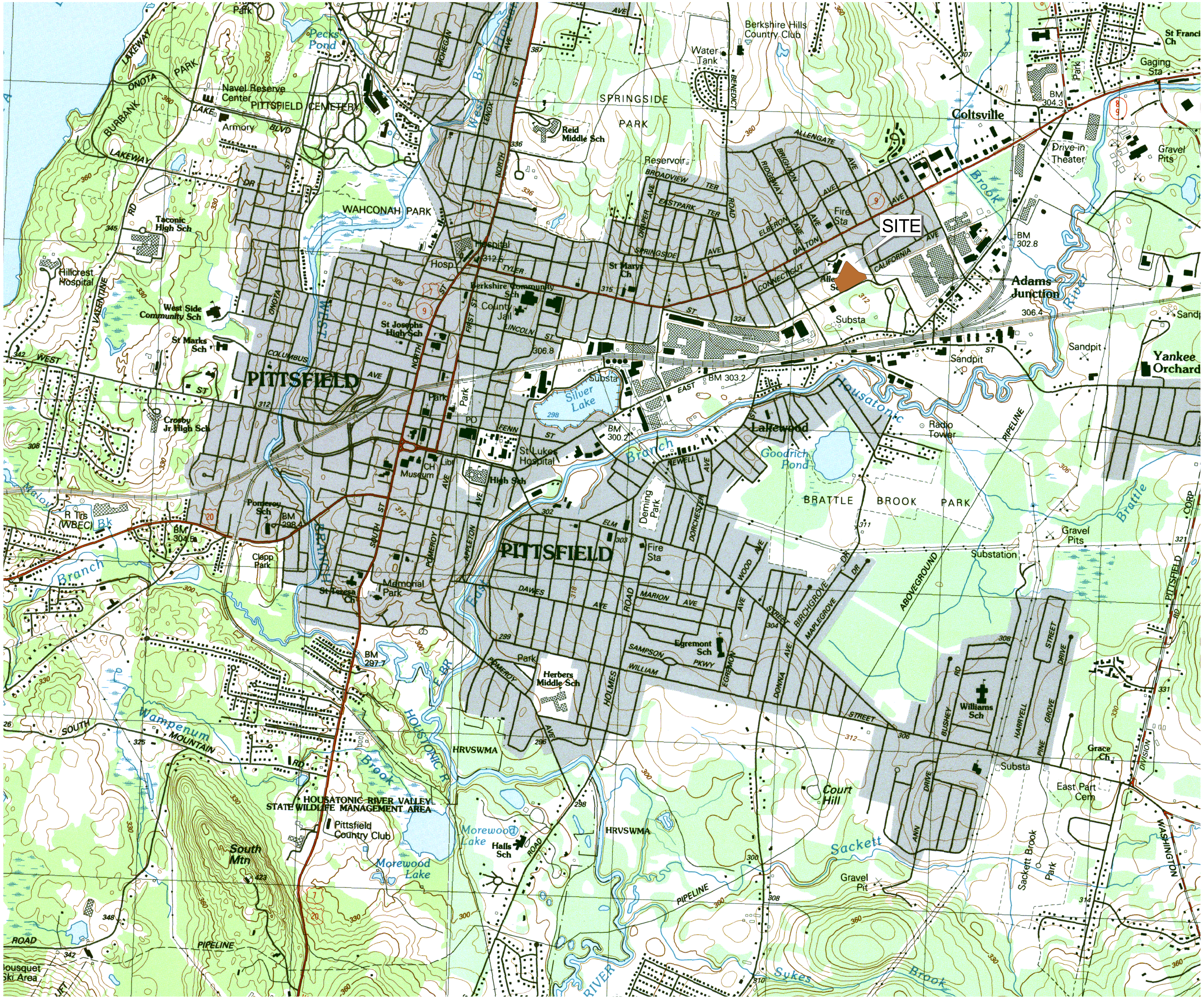


FIGURE 1-1 OVERVIEW OF BASELINE HUMAN HEALTH RISK ASSESSMENT PROCESS



Map produced by WESTON, adapted from MassGIS Scanned USGS Quads

N
W E
S

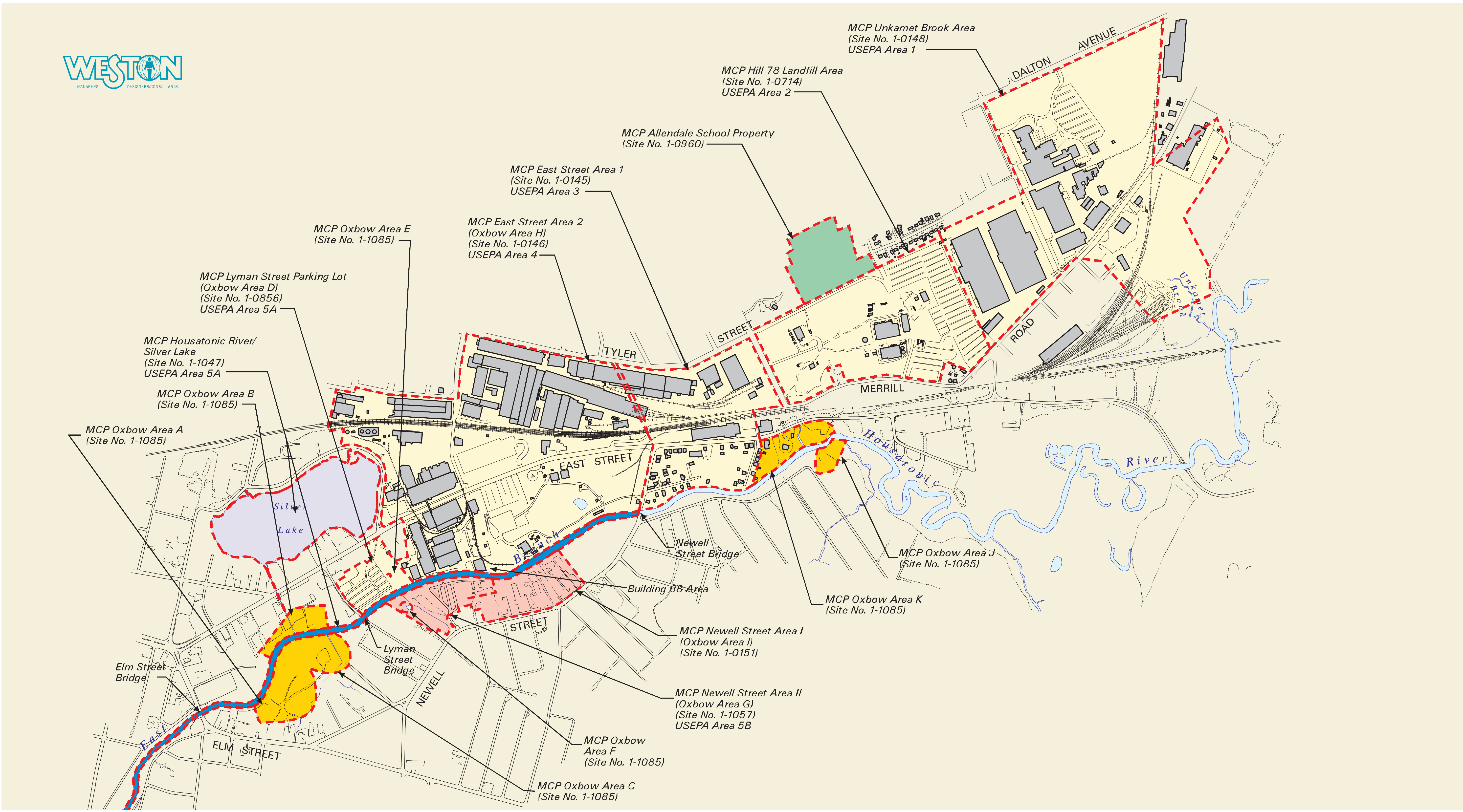
Scale in Feet

1000 0 1000 2000 3000 4000 5000

Revised Draft Feasibility Study, Allendale School
Pittsfield/Housatonic River Site
Pittsfield, Massachusetts

FIGURE 1- 2
LOCATION MAP

| I:/gepitt/aprs/risk102.apr | Location Map | I:/gepitt/plots/risk102.eps | 12/9/1998 |



LEGEND

- O.U. #1 - GE Facility
- O.U. #2 - Housatonic River
- O.U. #3 - Allendale School
- O.U. #4 - Silver Lake
- O.U. #5 - Newell Street
- O.U. #6 - Oxbows A, B, C, J, and K

N

Scale in Feet

500 0 500 1000 1500 2000

Map produced by WESTON, adapted from Geographic Information System (GIS) database provided by TechLaw Inc.

Revised Draft Feasibility Study, Allendale School
General Electric (GE)/Housatonic River Project
Pittsfield, MA

FIGURE 1-3
AREA MAP

/proj2/gepitt/amls/riskasarea.aml ..09 Dec 98 15:24:53 Wednesday

Revised Draft Feasibility Study, Allendale School
Pittsfield/Housatonic River Site
Pittsfield, Massachusetts

FIGURE 1 - 4
SITE PLAN

| I:/gepitt/aprs/risk104.apr | Fig 1- 4 | I:/gepitt/plots/risk104.eps | 12/9/1998 |

2. HAZARD IDENTIFICATION

2.1 INTRODUCTION

The objective of this section is to review and summarize the historical analytical soils data at the Allendale School property for use in the human health risk assessment. These data were pooled from historical sample data collected during a number of site investigations by GE from 1990 to 1998. The following reports were reviewed:

- 03-0007—BBL (Blasland, Bouck & Lee, Inc.). 1993. *MCP Interim Phase II Report for the Allendale School Property*. General Electric Company, Pittsfield, MA. January 1993.

- 03-0023—BBL (Blasland, Bouck & Lee, Inc.). 1997. *MCP Supplemental Phase II Report for the Allendale School Property*. General Electric Company, Pittsfield, MA. August 1997.

- 03-0040—BBL (Blasland, Bouck & Lee, Inc.). 1998. *Addendum to the MCP Supplemental Phase II Report for the Allendale School Property*. Volume I of III. General Electric Company, Pittsfield, MA. June 1998.

- 03-0040—BBL (Blasland, Bouck & Lee, Inc.). 1998. *Addendum to the MCP Supplemental Phase II Report for the Allendale School Property*. Volume II of III. General Electric Company, Pittsfield, MA. August 1997.

- 03-0040—BBL (Blasland, Bouck & Lee, Inc.). 1998. *MCP Supplemental Phase II Report for the Allendale School Property*. Volume III of III. General Electric Company, Pittsfield, MA. August 1997.

- 03-0011—GE (General Electric Company). 1996. *Pittsfield 1-0960 GE/Allendale Schoolyard, Laboratory Results for Playset Location-Quanterra Laboratory*. Letter to Lyn Cutler, MADEP, from R.W. Gates, GE. 7 November 1996.

- 03-0052—Geraghty & Miller (Geraghty & Miller, Inc.). 1990. *Results of the February 1990 Soil Sampling Program—Allendale School Yard and Vicinity, Pittsfield, Massachusetts*. March 1990.

- 03-0045—Geraghty & Miller (Geraghty & Miller, Inc.). 1990. *Results of the April 1990 Soil Sampling Program – Allendale School Yard and Vicinity, Pittsfield, Massachusetts*. July 1990.

- 03-0046—Geraghty & Miller (Geraghty & Miller, Inc.). 1990. *Results of the July 1990 Soil Sampling Program – Allendale School Yard, Pittsfield, Massachusetts*. September 1990.

- 03-0053—Geraghty & Miller (Geraghty & Miller, Inc.). 1990. *Results of the August 1990 Soil Sampling Program – Allendale School Yard, Pittsfield, Massachusetts*. September 1990.
- 03-0051—Geraghty and Miller (Geraghty & Miller, Inc.). 1991. *Allendale School Altresco Tree Planting Sampling Results. QA/QC Report.* Project: Pittsfield, MA. Bill Gray. Task No. 910222P. 7 March 1991.

Electronic data spreadsheets for the historical data were not provided to EPA for this risk assessment. Therefore, the hard-copy data from each of the data sample reports first had to be entered manually into spreadsheets prior to any data reduction and evaluation procedures. Moreover, no validation packages initially were available when the risk assessment data evaluation started.

On the basis of various discussions with EPA Region I, it was decided to evaluate current use and future use scenarios. The depth of soil exposure in the current scenario was selected as 0 to 1 foot bgs, and for the future use evaluation, the soil depth was selected as 0 to 10 feet bgs (99-0125).

2.2 DATA REDUCTION

All of the historical data sets were reviewed for chemicals detected, their locations (horizontal extent), and the depth at which the samples were taken (vertical extent). The PCB data were initially evaluated to select the appropriate sample locations and depths for all chemicals for use in the risk assessment. The evaluation involved reviewing the sample location/data summary maps accompanying each report, and noting the horizontal and vertical extent of contamination. These data were then reviewed by depth and location to select those samples that should be evaluated. Figure 2-1 is a copy of a map from BBL (03-0040) showing the horizontal extent of PCB contamination based on sampling activities conducted from 1990 to 1998. Sediment and soils data from the wetlands area in the southeastern portion of the property were included in the data reduction/evaluation process. Although historical groundwater data are available, groundwater in the area does not appear to be classified as a potable water source, is not currently used as a water supply, and is not likely to be used in the future given the availability of other sources of potable water (03-0041). Therefore, groundwater exposure was not evaluated in this risk assessment. Sediments data from the small wetlands were additionally evaluated in the screening ecological risk assessment.

A number of soil sample locations at certain depths were not evaluated in the risk assessment. Several factors were considered in eliminating certain data from consideration in both the current use and future use scenarios. These factors were the following:

- Availability of both pre-cap and post-cap historical data.
- Recent soil remediation activities on the school property.
- Ongoing construction of the new wing of the Allendale School, scheduled for completion in the fall of 1998.

A discussion of these issues follows.

2.2.1 Pre- and Post-Capping Soils Data

The historical data reports, ranging from 1990 to the present, represent samples both predating the construction of the cap (summer 1991), as well as samples from post-cap sampling activities. A factor that required careful consideration was the grading of the capped area relative to the noncapped surfaces. The soil depth designations in each report have different connotations relative to exposure potential, depending on whether the data were collected prior to or after construction of the cap. The cap was constructed in the summer of 1991 and consists of a geotextile liner topped with approximately 2 feet of clean soil. The “depth” of a sample relates to the depth from the surface at the date of sampling. “Surface” soil sample data (0 to 1-foot bgs) located within the perimeter of the current cap area but that predated cap construction (i.e., those data collected prior to the summer of 1991) were not used in the current exposure scenario because they are “subsurface” in the context of present exposure conditions (i.e., below 2 feet).

Surface soil samples in the capped area reported after the summer of 1991 are identified as depth below the capped surface. In this case, a 0 to 1-foot sample would be included in the current exposure scenario.

For future use, soil samples taken in the capped area prior to the capping in summer 1991 from 0 to 8 feet bgs would be used to represent a total excavation depth of 10 feet (i.e., there was 2 feet of clean soil added to the top of the uncapped surface). Subsurface soil samples of up to 10 feet bgs outside the perimeter of the capped area (i.e., post-1991 data) were included in the future use scenario.

Table A-1 (Appendix A) lists the sample locations and depths (by collection date) within the capped area. An “X” in the columns on the right side of Table A-1 indicates that this sample location/depth was used either in the current use or future use evaluation. Absence of an “X” designation in either or both columns indicates the sample was not used in the respective scenario.

2.2.2 Interim Soil Removal Activities

Recent soil removal activities at the northwestern, northeastern, and southeastern areas of the original cap also had to be considered in the sample selection process. Prior to placement of the original cap in 1991, no soils were removed (i.e., a geotextile liner was placed directly on top of contaminated areas, and then 2 feet of clean soil was added to the top). However, several interim removal actions occurred in 1998 (03-0039, 03-0040). These removal actions involved the excavation of PCB-contaminated soils at various depths from several areas adjacent to the original cap. Figure 2-2 shows these areas. The map is edited from a recent report (Table 2; 03-0040). It is color-coded to show site sample locations where samples of various depths were removed.

The soil removal depths varied from 0.5 foot to 3 feet. Because this removed soil had contamination reported in previous investigations, the associated historical data points were eliminated from evaluation for the risk assessment. It should be noted that a geotextile liner was added directly to the exposed soil sample location following soil removal, and then the vacated area was brought up to grade with clean fill. It was assumed that samples taken down to 0.5 foot near a former underground storage tank (UST) in the northwestern area of the Allendale School property (samples AS-UST-1 and AS-UST-2) were removed. Refer to Figure 2-3 for their locations.

Table A-2 (Appendix A) lists the sample locations/depths that were removed. None of these samples were evaluated in the current or future use scenarios.

2.2.3 Sampling Related to Recent Construction Activities

"Pre-excavation" (PRE-) samples were taken at locations near the existing east wing of the Allendale School. Figure 2-3 is a map edited from a historical report showing these locations. It is assumed that these sample locations will be covered by the new wing (under construction) and, therefore, will not pose an exposure potential under the current use scenario. It was further determined that samples "PRE-21 through PRE-25" (highlighted) had been removed down to 6 feet and replaced with clean fill. Therefore, from a future residential exposure view, these sample values were eliminated from consideration. The remaining "PRE" samples were included in the future use evaluation. Table A-3 (Appendix A) lists these samples.

2.2.4 Results of Initial Data Reduction

In summary, sample locations and depths were eliminated from consideration using the following criteria:

- For both current use and future use scenarios, a sample from historical reports taken at a specific depth and later removed was eliminated from consideration in the risk assessment. Although the eliminated (removed) contaminated soil samples were replaced by clean fill, no confirmatory sample results could be located.
- For current use scenarios, sample values were eliminated from consideration if they were under currently existing asphalt, under the original geotextile liner (placed in 1991), or at any location where it was not considered realistic for surface soil exposure to occur.
- For the future use scenario, any sample below 10 feet of the surface (from the current grade) was eliminated from consideration.

Table A-4 (Appendix A) presents the specific sample locations and depths below grade that were evaluated in this risk assessment. The format of Table A-4 is as follows:

- Sample location identification (ID) number.
- Designation relative to the time of placement of the cap.
- Sample location relative to the horizontal extent of the cap.
- Depth of soil sample (inches).

- Level (parts per million [ppm] of total PCBs – obtained from the maps supplied in the respective reports).
- Current or future use designation with rationale for selection or elimination.

An "X" in the column marked "current" or "future" indicates that these sample points were used in the respective scenarios. All samples used in the current scenario were evaluated in the future scenario.

2.3 DATA USABILITY

EPA Region I discusses data usability issues that should be considered in the risk assessment process in Risk Update 3 (99-0125). Data usability is defined as the process of ensuring that the quality of the data meets the intended uses and satisfies the data quality objectives (DQOs) established for sampling and analysis as presented in the remedial investigation (RI) report. Data usability involves assessing the analytical quality, sampling methodology, and field errors that may be inherent in the data. EPA Region I requires that all data used in the human health risk assessment process be validated to Tier II. For a Tier II validation, quality control (QC) checks and analytical procedures are assessed and the data are qualified accordingly. A Tier II validation should result in a data validation report.

Several factors collectively have resulted in limitations to the extent to which these issues can be addressed in this risk assessment. The major factors related to delays in receiving data validation packages, and the difficulty in obtaining DQOs, sampling and analysis plans, and field sampling data associated with the numerous reports available. Subsequently, there is a concern that the data reports do not meet all of these data usability criteria. GE has communicated to EPA Region I that the data collected from 1996 through 1998 have been validated equivalent to EPA Region I's Tier II evaluation (99-0125).

EPA is currently reviewing the historical data packages to confirm Tier II validation was conducted. Until this is confirmed, the risk assessment that follows must be considered a preliminary risk screen. If it is found that a Tier II validation was conducted, a further data usability discussion will be added as an addendum to this report. If EPA cannot confirm that a

Tier II validation has been conducted, split samples will be collected during remedial activities to support this risk evaluation.

2.4 SCREENING FOR CHEMICALS OF POTENTIAL CONCERN

Prior to the statistical evaluation of the selected data points for risk evaluation, the reduced data set was screened for COPCs. The COPC screening guidance followed was that outlined by EPA Region I in Risk Update 3 (99-0125). EPA Region I recommends that the maximum medium concentration of any detected chemical be compared with EPA Region III risk-based concentrations (RBCs) at a target cancer risk of 1E-06 and a target hazard quotient (HQ) of 0.1. Because EPA Region III's RBCs do not take into account dermal exposure from soil contact, EPA Region I recommends that a discussion of the rationale for retaining a chemical as a COPC based on dermal exposure potential should be presented. In addition, a chemical should be retained as a COPC if it exceeds any applicable or relevant and appropriate requirements (ARARs). If the maximum concentration exceeds an RBC value or an ARAR, the chemical is to be retained as a COPC. EPA Region I does not recommend using background levels of any potential contaminant for screening purposes.

For the Allendale School risk assessment, EPA Region I recommended the following modifications to their COPC screening guidelines:

- EPA Region IX Preliminary Remediation Goals (PRGs) (99-0057) for residential soil should be used instead of EPA Region III RBCs because they take into account dermal exposure, a pathway not accounted for in the EPA Region III RBCs. Therefore, a discussion of dermal exposure potential was not necessary.

- The maximum sitewide chemical concentration in soil should be the highest sample value based on an examination of both the vertical and horizontal extent of contamination from 0 to 10 feet bgs.

- EPA Region I does not recognize any soil ARARs, and therefore, no ARAR comparisons could be performed.

- The PRG for naphthalene should be used to screen acenaphthylene, benzo(g,h,i)perylene, and phenanthrene.

- A PRG for lead of 400 mg/kg in residential soil should be used in the screening analysis.

- Any detected chemical for which there is no PRG assigned to it by EPA Region I should be eliminated as a COPC unless there is evidence that the chemical potentially poses a significant health hazard.

Dioxins/furans were screened using the toxicity equivalents (TEQs) of 2,3,7,8-tetrachloro-dibenzo-p-dioxin (2,3,7,8-TCDD) for each sample location and depth. Two approaches were used. If either of the approaches indicated 2,3,7,8-TCDD should be retained, it was considered a COPC. In the first approach, only the detections of 2,3,7,8-TCDD congeners were converted to TEQs and the nondetects were ignored. In the second approach, if a congener was listed as a nondetect, it was assigned a sample value of one-half the sample detection limit (as a TEQ). In both approaches, the maximum calculated 2,3,7,8-TCDD TEQ value was noted and compared with the PRG for 2,3,7,8-TCDD (based on a target cancer risk of 1E-06). The toxicity equivalence factors (TEFs) (99-0092) used for these approaches are discussed in Section 4 (Toxicity Assessment).

Table 2-1 summarizes the COPCs determined from the screening procedure of all samples from 0 to 10 feet bgs. Table A-5 (Appendix A) presents a more detailed evaluation of the COPC selection process with regard to all detected chemicals, showing whether they were excluded or included for subsequent evaluation in the risk assessment (nondetected chemicals are not included in this table). It is possible that some of these COPCs would drop from consideration in the surface soil (current use) evaluation because maximum values in surface soils (0 to 1 foot bgs) may not exceed EPA Region IX PRGs. However, it was conservatively assumed that the selected chemicals would be included as COPCs both in the current (0 to 1-foot soils) and future (0 to 10-foot soils) scenarios.

As can be observed from Table A-5, 2,3,7,8-TCDD was selected as a COPC regardless of which screening method was used. The only PCB mixtures that were detected were Aroclors-1254 and -1260. These values were expressed as “total” PCBs. The EPA Region IX PRG tables do not list a PRG for n-nitrosopiperidine. Moreover, the *Integrated Risk Information System* (IRIS) (99-0011) or the *Health Effects Assessment Summary Tables* (HEAST) (99-0006) do not list any toxicity criteria for this chemical. The chemical has been discussed in more detail in the toxicology profiles (Subsection 4.4). 2-Methylnaphthalene was excluded as a COPC based on its low potential for toxicity (99-0011).

Table 2-2 is a summary of the selection of COPCs according to the format required in RAGS Part D, Table 2.1. Tables A-6 and A-7 (Appendix A) present the data summaries of all detected chemicals based on 0 to 1 foot bgs and 0 to 10 feet bgs, respectively.

2.5 DATA EVALUATION

2.5.1 Assumptions and Guidelines

The data evaluation process used in this risk assessment is consistent with *Risk Assessment Guidance for Superfund (RAGS),* Volume 1, *Human Health Evaluation Manual (Part A)* (99-0002) as modified by discussions with EPA Region I. As discussed previously, a forward risk assessment approach was used for the current use scenario evaluation. For the future use scenario, a reverse risk assessment process was used. In the cases of both surface soils and subsurface soils, soil borings were arithmetically averaged at each sample location in terms of the vertical extent before any further calculations or comparisons were performed. A sitewide exposure concentration was calculated for each COPC for 0 to 1-foot soils. For the future use scenario, an exposure point concentration was not calculated. Instead, chemical-specific RBCs were developed for each COPC and subsequently compared to the vertically averaged concentrations of each chemical at each soil sampling location selected for use in the risk assessment.

The following general guidelines for data evaluation were used for both surface soils (0 to 1 foot) and subsurface soils (0 to 10 feet):

- All data with “J” qualifiers were assumed to be positive identifications. J values are estimated chemical concentrations reported below the minimum confident quantitation limit or the sample quantitation limit (SQL).

- Duplicate samples from the same sampling location were considered as one data point. For duplicates where both sample values were detected concentrations, the values were averaged unless the relative difference between the two samples was equal to or greater than 50%. If the latter criterion was met, the maximum value of the duplicate set was used as the sample concentration. If a duplicate consisted of nondetected and detected values, the detected value was used as the sample concentration in subsequent calculations. However, in the data summary table, the analytical results of all duplicate samples were used in presenting the range of detected concentrations (i.e., the minimum and the maximum detected concentrations).

- If a chemical sample value was reported as a “U” (i.e., nondetect), and if other sample locations for that chemical had reported detections, the “U”-flagged value was assumed to be present at one-half the sample quantitation limit or detection limit for subsequent statistical evaluation.

- Only detections, “J” values, and “U” values were evaluated in this risk assessment. Blank (“B”) values were excluded from consideration in any calculation.

- The arithmetic mean and 95% upper confidence limit (UCL) of the mean concentrations in the current use scenario were based on log-transformed data. The methodology for estimating exposure point concentrations and the results are discussed in Subsection 3.4.

2.5.2 Results of Vertical Averaging

2.5.2.1 Surface Soils (0 to 1 Foot)

Prior to calculating a sitewide exposure point concentration (see Section 3), the surface soil samples (0 to 1 foot bgs) were first vertically averaged. Historical soil boring data ranged from 0 to 6 inches, 0 to 12 inches, or 6 inches to 18 inches. Any sample value where the depth of 1 foot was included in its depth range was averaged as a “surface” sample. It was conservatively assumed that any sample that had been removed and then replaced with clean soil would be eliminated from the averaging calculations (see Subsection 2.2.4); i.e., the replaced sample of clean soil was not vertically averaged with the detections at one-half the sample detection limit.

2.5.2.2 Subsurface Soils (0 to 10 feet)

For conducting the future scenario risk evaluation, soils from 0 to 10 feet in depth were evaluated individually by sample location. The arithmetic average of the vertical soil boring samples at each sample location selected as a COPC was calculated. As with surface soil samples, it was conservatively assumed that any sample that had been removed and then replaced with clean soil would be eliminated from the averaging calculations (see Subsection 2.2.4). In other words, the replaced sample of clean soil was not averaged with the hits at one-half the sample detection limit. The vertically averaged soil boring concentrations can be found in Section 6 (comparison with RBCs).

Table 2-1

Chemicals of Potential Concern,[a] Allendale School, Pittsfield, MA

Chemicals of Concern
2,3,7,8-TCDD
Benzo(a)anthracene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(a)pyrene
Dibenz(a,h)anthracene
Indeno(1,2,3-cd)pyrene
Phenanthrene
Dieldrin
Polychlorinated biphenyls (PCBs)[b]
Arsenic
Thallium

[a] Chemicals of potential concern were determined as discussed in Subsection 2.2.6. Refer to RAGS Part D, Table 2.1 (Section 2, Table 2-2) for detailed summary.

[b] Aroclors-1254 and –1260 were the only detected mixtures.

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Table 2-2

RAGS PART D TABLE 2.1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soils 0 to 10 feet bgs
Exposure Point:	Dermal Contact with Soil/Soil Ingestion

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)(3)	Background Value	Screening Toxicity Value (4)		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (5)
1746-01-6	2,3,7,8-TCDD Equivalent	0.0003		0.4607		µg/kg	ASB-31	19/28	0.000092-0.61 (6)	0.4607		0.0038	C	N/A	N/A		ASL
1336-36-3	Total PCBs	10		1,100,000		µg/kg	B18	519/895	8.4-1000	1,100,000		200	C	N/A	N/A		ASL
56-55-3	Benz(a)anthracene	38		15,000		µg/kg	ASB-3	11/28	360-560	15,000		560	C	N/A	N/A		ASL
50-32-8	Benzo(a)pyrene	46		16,000		µg/kg	ASB-3	13/28	360-560	16,000		56	C	N/A	N/A		ASL
205-99-2	Benzo(b)fluoranthene	46		14,000		µg/kg	ASB-3	14/28	360-560	14,000		560	C	N/A	N/A		ASL
207-08-9	Benzo(k)fluoranthene	44		12,000		µg/kg	ASB-3	14/28	360-560	12,000		5600	C	N/A	N/A		ASL
53-70-3	Dibenz(a,h)anthracene	78		2,500		µg/kg	ASB-3	4/28	360-560	2,500		56	C	N/A	N/A		ASL
193-39-5	Indeno(1,2,3-cd)pyrene	44		3,800		µg/kg	ASB-3	8/28	360-560	3,800		560	C	N/A	N/A		ASL
85-01-8	Phenanthrene	47		12,000		µg/kg	ASB-3	15/28	360-560	12,000		5.5	N	N/A	N/A		ASL
60-57-1	Dieldrin	9.3		6,400		µg/kg	ASB-19	3/29	1.8-400	6,400		28	C	N/A	N/A		ASL
7440-38-2	Arsenic	2.7		17		mg/kg	K18	29/29	-	17		0.38	C	N/A	N/A		ASL
7440-28-0	Thallium	1		17		mg/kg	K18	3/29	0.4-3	17		0.52	N	N/A	N/A		ASL

(1) Minimum/maximum detected concentration.

(2) Maximum concentration used as screening value.

(3) Congener-specific TEQs, at each sample location were summed to yield a 2,3,7,8-TCDD TEQ.
The maximum total TEQ value was used to screen against the 2,3,7,8-TCDD PRG.

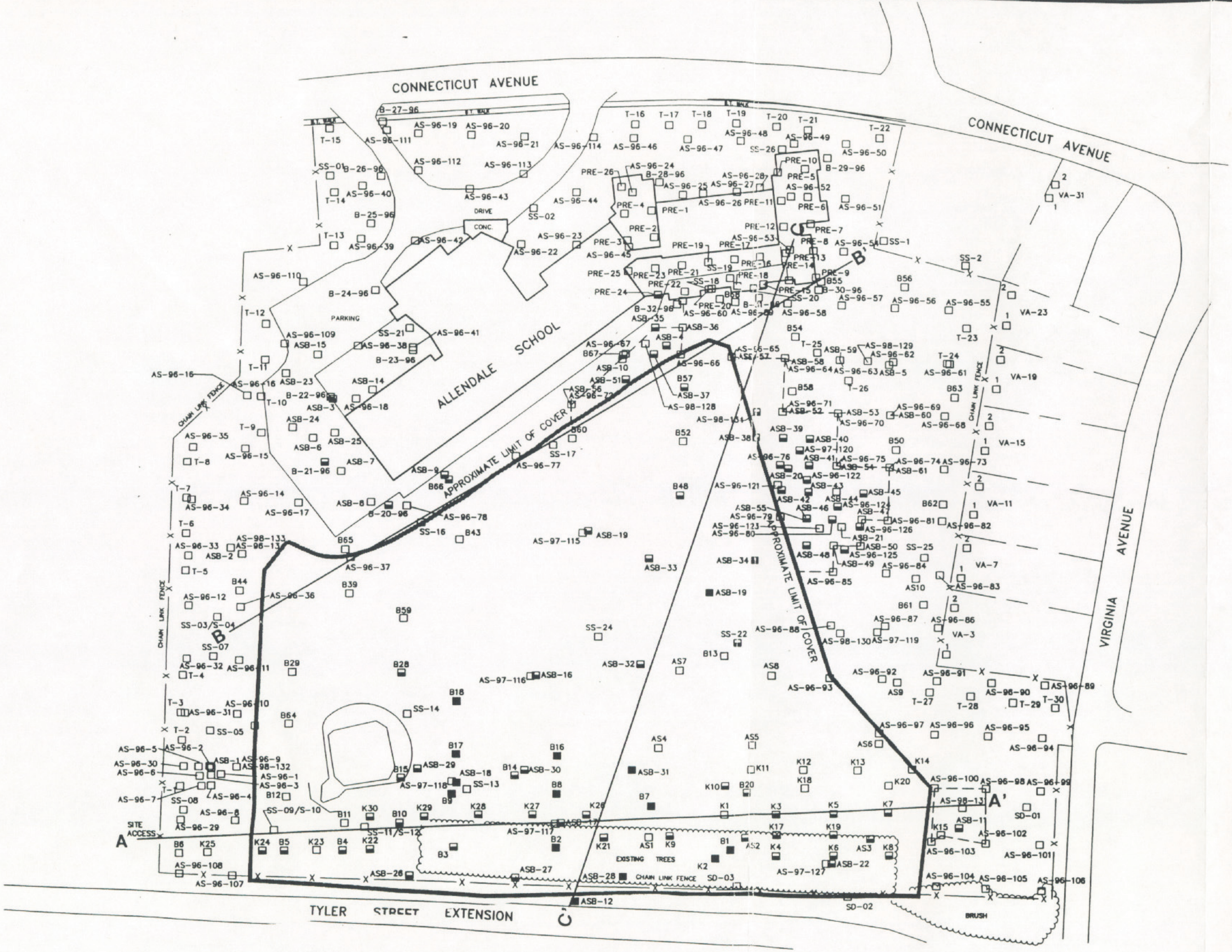
(4) EPA Region IX Residential Soil Preliminary Remediation Goals
(Cancer risk target level = 1E-06, Target HQ = 0.1)

(5) Rationale Codes Selection Reason: Above Screening Levels (ASL)

(6) Represents the range of detection limits for all congeners (TEQs are not presented).

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
C = Carcinogenic
N = Non-Carcinogenic
BGS = Below ground surface

Figure 2-1
Summary of Horizontal Extent of PCBs in Soil Based on 1990-1998 Historical Data (originally presented as Figure 12, BBL, 1998f)



LEGEND:

- EXISTING CHAIN LINK FENCE
- EXISTING TREES AND BRUSH
- HIGHEST PCB CONCENTRATION OF ALL SAMPLES COLLECTED AT BORING LOCATION:
  - LESS THAN 2.0 ppm
  - 2.0 ppm TO LESS THAN 50.0 ppm
  - GREATER THAN OR EQUAL TO 50 ppm
- APPROXIMATE LIMITS OF SOIL REMOVAL
- A——A' TRANSECT

100' 0 100'

GRAPHIC SCALE

GENERAL ELECTRIC COMPANY, PITTSFIELD MASSACHUSSETTS

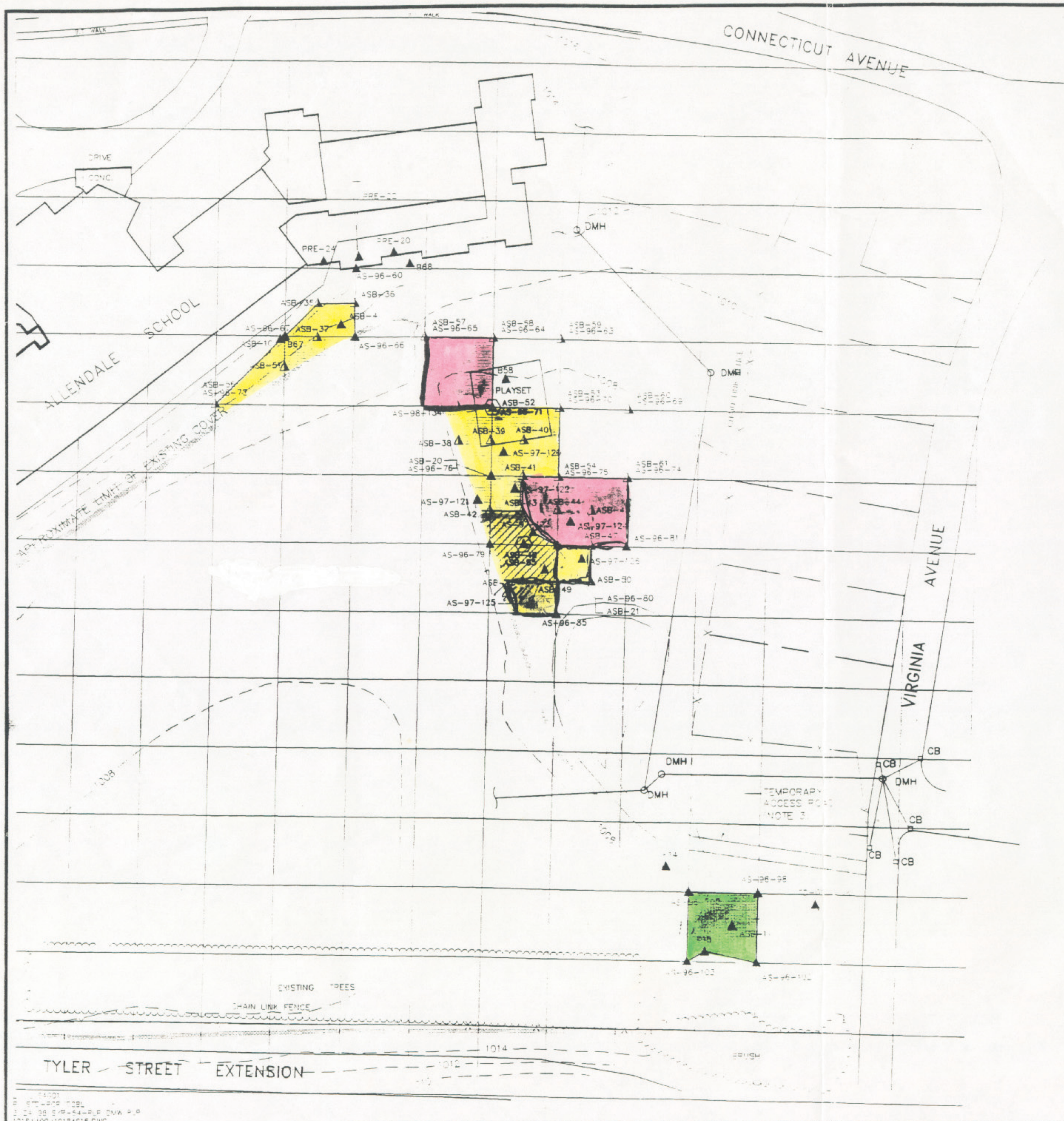
ADDENDUM TO THE SUPPLEMENTAL PHASE II REPORT FOR THE ALLENDALE SCHOOL PROPERTY

SUMMARY OF HORIZONTAL EXTENT OF PCBs IN SOIL

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 12

P: STD-DZBL.PCP
6/11/98 SYR-54-RLP YCC GMS LBR
10184400/10184S17.DWG



SAMPLE ID	SAMPLE DEPTH (ft)	PCBs (ppm)
AS-96-60	0-0.5	[illegible]
	0.5-1	[illegible]
AS-96-63	0-0.5	41
	0.5-1	62
AS-96-64	0-0.5	[illegible]
	0.5-1	39
AS-96-65	0-0.5	ND(0.039)
	0.5-1	[illegible]
AS-96-66	0-0.5	ND(0.039)
	0.5-1	ND(0.039)
AS-96-67	0-0.5	[illegible]
	0.5-1	0.059
AS-96-69	0-0.5	4
	0.5-1	0.052
AS-96-70	0-0.5	46
	0.5-1	62
AS-96-71	0-0.5	ND(0.034)
	0.5-1	ND(0.035)
AS-96-72	0-0.5	0.18
	0.5-1	0.14
AS-96-74	0-0.5	0.51
	0.5-1	0.41
AS-96-75	0-0.5	[illegible]
	0.5-1	1.5
AS-96-76	0-0.5	2.8
	0.5-1	2.7
AS-96-79	0-0.5	ND(0.038)
	0.5-1	ND(0.038)
AS-96-80	0-0.5	3.6
	0.5-1	16
AS-96-81	0-0.5	1.7
	0.5-1	0.88
AS-96-85	0-0.5	0.13
	0.5-1	0.64
AS-96-98	0-0.5	0.72
	0.5-1	0.22
AS-96-100	0-0.5	0.22
	0.5-1	0.61
AS-96-102	0-0.5	0.48
	0.5-1	0.54
AS-96-103	0-0.5	ND(0.042)
	0.5-1	0.13
AS-97-120	0-0.5	1.9
	0.5-1	12
AS-97-121	0-0.5	ND(0.043)
	0.5-1	ND(0.040)
AS-97-122	0-0.5	1.4
	0.5-1	4.2
AS-97-123	0-0.5	0.084
	0.5-1	0.053
AS-97-124	0-0.5	1.2
	0.5-1	11
AS-97-125	0-0.5	0.65
	0.5-1	8
AS-97-126	0-0.5	1.1
	0.5-1	5.6
ASB-4	0-0.5	0.95
	0.5-1	0.84
	1-3	5.3
ASB-10	0-0.5	0.087
	0.5-1	0.05
	1-3	0.064
ASB-11	0-0.5	4.2
	0.5-1	0.65
	1-3	1.81
ASB-20	0-0.5	0.064
	0.5-1	4.2
	1-3	42
ASB-21	0-0.5	5.3
	0.5-1	7.6
	1-3	2.2
B58	0-0.5	ND(0.7)
	0.5-1	ND(0.6)
B67	0-0.5	ND(0.6)
	0.5-1	ND(0.6)
	1-1.5	ND(0.6)
	1.5-2	ND(0.6)
	2-2.5	ND(0.6)
	2.5-3	ND(0.6)
B68	0-0.5	ND(0.6)
	0.5-1	ND(0.6)
	1-1.5	ND(0.6)
	1.5-2	ND(0.6)
	2-2.5	ND(0.6)
	2.5-3	ND(0.6)
[illegible]14	0-0.25	[illegible]
	0.25-0.5	[illegible]
	0.5-1	[illegible]
	1-1.5	[illegible]
[illegible]15	0-0.25	[illegible]
	0.25-0.5	[illegible]
	0.5-1	[illegible]

SAMPLE ID	SAMPLE DEPTH (ft)	PCBs (ppm)
	[illegible]-1.5	[illegible]
PRE-20	1-2	ND(0.079)
	2-4	ND(0.037)
PRE-22	1-2	[illegible]
	2-4	ND(0.037)
PRE-24	1-2	[illegible]
	2-4	[illegible]
SD-01	0-0.5	[illegible]
ASB-35	0 - 0.5	0.068
	0.5 - 1	0.048
	1 - 3	ND(0.036)
ASB-36	0 - 0.5	[illegible]
	0.5 - 1	[illegible]
	1 - 3	0.068
ASB-37	0 - 0.5	[illegible]
	0.5 - 1	[illegible]
	1 - 3	[illegible]
ASB-38	0 - 0.5	ND(0.056)
	0.5 - 1	[illegible]
	1 - 3	[illegible]
ASB-39	0 - 0.5	[illegible]
	0.5 - 1	[illegible]
	1 - 3	[illegible]
ASB-40	0 - 0.5	[illegible]
	0.5 - 1	[illegible]
	1 - 3	[illegible]
ASB-41	0 - 0.5	[illegible]
	0.5 - 1	[illegible]
	1 - 3	[illegible]
ASB-42	0 - 0.5	ND(0.050)
	0.5 - 1	[illegible]
	1 - 3	[illegible]
ASB-43	0 - 0.5	[illegible]
	0.5 - 1	[illegible]
	1 - 3	ND(0.041)
ASB-44	0 - 0.5	[illegible]
	0.5 - 1	[illegible]
	1 - 3	[illegible]
ASB-45	0 - 0.5	[illegible]
	0.5 - 1	49
	1 - 3	[illegible]
ASB-46	0 - 0.5	[illegible]
	0.5 - 1	19
	1 - 3	[illegible]
ASB-47	0 - 0.5	0.59
	0.5 - 1	0.55
	1 - 3	[illegible]
ASB-48	0 - 0.5	[illegible]
	0.5 - 1	[illegible]
	1 - 3	[illegible]
ASB-49	0 - 0.5	0.061
	0.5 - 1	0.45
	1 - 3	1.4
ASB-50	0 - 0.5	0.49
	0.5 - 1	0.21
	1 - 3	ND(0.051)
ASB-51	0 - 0.5	[illegible]
	0.5 - 1	[illegible]
	1 - 3	13.7
ASB-52	1-3	1.8
	3-5	0.044
	5-7	ND(0.041)
	7-9	ND(0.039)
	9-11	ND(0.037)
ASB-53	1-3	0.27
ASB-54	1-3	0.92
ASB-55	3-5	5.4
	5-7	ND(0.037)
	7-9	0.93
ASB-56	1-3	0.12
ASB-57	1-3	0.32
ASB-58	1-3	ND(0.041)
ASB-59	1-3	[illegible]
ASB-60	1-3	ND(0.040)
ASB-61	1-3	0.43
AS-98-134	0 - 0.5	ND(0.046)
	0.5 - 1	[illegible]
	1 - 3	[illegible]

APPROXIMATE SCALE

Figure 2-2
Soil Removal Areas Based on the 1998 Sampling Activities (modified by WESTON)

LEGEND:

- EXISTING CHAIN LINK FENCE
- EXISTING TREES AND BRUSH
- SAMPLING LOCATION
- PHASE II SOIL BORING LOCATION (1998)
- FEBRUARY/MARCH 1998 SAMPLING LOCATION
- CB CATCH BASIN
- DMH DRAINAGE MANHOLE
- 0.5 FOOT REMOVAL
- 1 FOOT REMOVAL
- 3 FOOT REMOVAL
- TSCA SOIL REMOVAL

NOTES: 1. DATA FOR UPPER 3 FEET ONLY.
2. [ ] = SAMPLE DUPLICATE.
3. ( ) = SAMPLE DETECTION LIMIT.

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.
2. ALL ALLENDALE SITE SAMPLE LOCATIONS ARE NOT SHOWN; THIS FIGURE IDENTIFIES ONLY THOSE LOCATIONS RELEVANT TO THE DELINEATION OF SOIL REMOVAL LIMITS OUTSIDE THE EXISTING SOIL COVER.
3. THE LOCATION OF THE TEMPORARY ACCESS ROAD IS PRELIMINARY AND SUBJECT TO CHANGE BASED ON FIELD CONDITIONS AND LOCATIONS OF UTILITIES.
4. SURFACE TOPOGRAPHIC CONTOURS PROVIDED FROM GE DRAWING NO. 3927-D-374 ENTITLED "ALLENDALE SCHOOL YARD DRAINAGE, LANDSCAPE, COVER MATERIAL AS BUILT/G.E. CO." DATED 10/25/91.

GENERAL ELECTRIC COMPANY – PITTSFIELD, MASSACHUSETTS

ALLENDALE SCHOOL PROPERTY

PRELIMINARY SOIL REMOVAL LIMITS

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 2

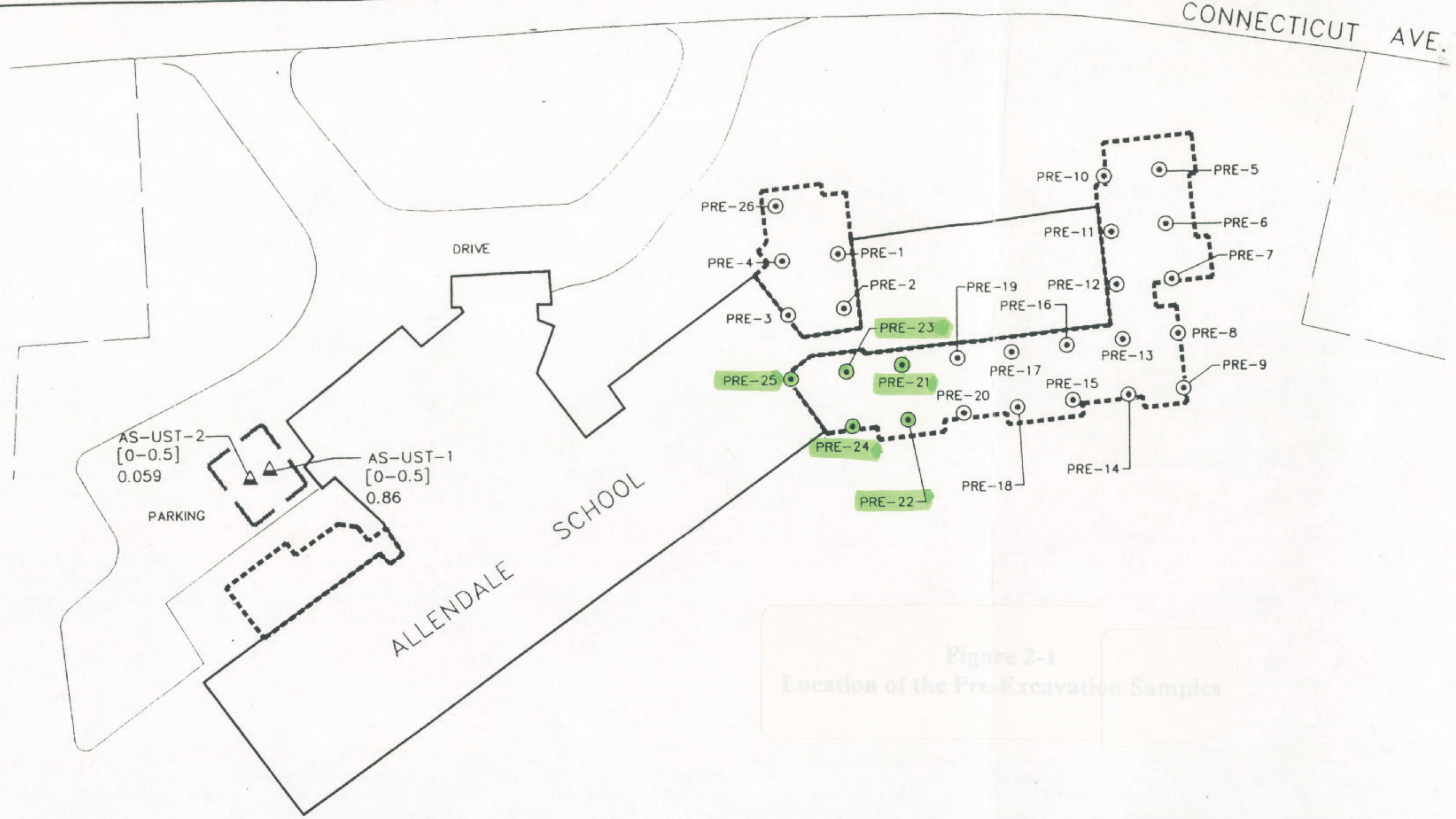


Figure 2-3
Soil Removal Areas Based on the 1998 Sampling Activities (modified by WESTON)

These samples were removed down to six feet below ground surface (bgs)

LEGEND:

- APPROXIMATE LIMITS OF PROPOSED BUILDING EXPANSION (GIFFORD ENGINEERING, 8/28/96)
- PRE-EXCAVATION – SAMPLING LOCATIONS (APRIL 21-22, 1997)
- SAMPLE CONCENTRATION GREATER THAN 2 ppm PCB
- APPROXIMATE TANK REMOVAL AREA
- SOIL SAMPLE FROM UNDERNEATH REMOVED TANKS
- [0-0.5] SOIL SAMPLE DEPTH IN FEET
- 0.86 PCB CONCENTRATION IN ppm

NOTES:

1. PRE-EXCAVATION SAMPLING LOCATIONS ADVANCED BASED ON A 25-FOOT BY 25-FOOT GRID, WHICH IS GENERALLY CONSISTENT WITH GE's PROTOCOLS FOR THE MANAGEMENT OF EXCAVATION ACTIVITIES (UPDATED NOV. 1996). THE SAMPLING AT THESE LOCATIONS INCLUDED 2-FOOT INTERVAL SAMPLING FOR PCBs TO DEPTHS AT LEAST 2-FEET BEYOND THE EXTENT OF FILL AS DETERMINED BASED ON HISTORICAL TOPOGRAPHIC MAPPING PREDATING THE CONSTRUCTION OF THE SCHOOL. THESE LOCATIONS WERE SURVEYED BY BLASLAND, BOUCK & LEE, INC., AT THE TIME OF SAMPLING.
2. 1990 AND 1996 SAMPLING LOCATIONS ARE APPROXIMATE.

0 30' 60' 120'
GRAPHIC SCALE

SUMMARY OF SOIL BORING PCB SAMPLE RESULTS
(PPM, DRY WT.)(SAMPLE INCREMENTS IN FEET)

Sample ID	0 - 0.5	0.5 - 1	1 - 1.5	1.5 - 2	2 - 2.5	2.5 - 3	3 - 3.5	3.5 - 4	4 - 4.5	4.5 - 5	5 - 5.5	5.5 - 6	6 - 6.5	6.5 - 7	7 - 7.5	7.5 - 8	8 - 8.5	8.5 - 9	9 - 9.5	9.5 - 10
PRE-1	0-2ft: ND (0.037)[0.075]				2-4ft: 0.072				--	--	--	--	--	--	--	--	--	--	--	--
PRE-2	0-2ft: 0.093				2-4ft: 0.11				--	--	--	--	--	--	--	--	--	--	--	--
PRE-3	0-2ft: 0.049				2-4ft: 0.041				--	--	--	--	--	--	--	--	--	--	--	--
PRE-4	0-2ft: ND(0.037)				2-4ft: ND (0.038)				--	--	--	--	--	--	--	--	--	--	--	--
PRE-5	0-2ft: ND(0.038)				2-4ft: ND (0.038)				4-6ft: ND (0.038)				--	--	--	--	--	--	--	--
PRE-6	0-2ft: ND(0.039)				2-4ft: ND (0.038)				--	--	--	--	--	--	--	--	--	--	--	--
PRE-7	0-2ft: ND(0.039)				2-4ft: ND (0.038)				--	--	--	--	--	--	--	--	--	--	--	--
PRE-8	0-2ft: ND(0.037)				2-4ft: ND (0.04)				4-6ft: ND (0.039)[ND (0.039)]				6-8ft: ND (0.038)				--	--	--	--
PRE-9	0-2ft: ND(0.044)				2-4ft: ND (0.04)				4-6ft: ND (0.04)				--	--	--	--	--	--	--	--
PRE-10	0-2ft: 0.047				2-4ft: ND (0.037)				4-6ft: ND (0.038)				--	--	--	--	--	--	--	--
PRE-11	0-2ft: ND(0.037)				2-4ft: ND (0.036)				4-6ft: ND (0.038)				--	--	--	--	--	--	--	--
PRE-12	0-2ft: 0.047				2-4ft: ND (0.036)				4-6ft: ND (0.039)				6-8ft: ND (0.038)				--	--	--	--
PRE-13	0-2ft: ND(0.036)				2-4ft: ND (0.036)				4-6ft: ND (0.038)				6-8ft: ND (0.038)[ND (0.038)]				8-10ft: ND (0.039)			
PRE-14	0-2ft: 0.042				2-4ft: ND (0.038)				4-6ft: ND (0.039)				--	--	--	--	--	--	--	--
PRE-15	0-2ft: 0.038				2-4ft: ND (0.037)				4-6ft: ND (0.039)				--	--	--	--	--	--	--	--
PRE-16	0-2ft: ND(0.035)				2-4ft: ND (0.038)				4-6ft: ND (0.037)				6-8ft: ND (0.04)				8-10ft: ND (0.039)			
PRE-17	0-2ft: ND(0.036)				2-4ft: ND (0.036)				4-6ft: ND (0.033)				6-8ft: ND (0.043)				8-10ft: ND (0.039)[ND (0.04)]			
PRE-18	0-2ft: 0.047				2-4ft: ND (0.037)				4-6ft: 0.09				6-8ft: ND (0.037)				--	--	--	--
PRE-19	0-2ft: ND(0.035)				2-4ft: ND (0.036)				4-6ft: 0.052				6-8ft: ND (0.043)				8-10ft: ND (0.044)			
PRE-20	0-2ft: ND(0.079)				2-4ft: ND (0.037)				4-6ft: ND (0.044)				6-8ft: ND (0.042)				--	--	--	--
PRE-21	0-2ft: 0.19				2-4ft: ND (0.035)				4-6ft: 0.28				6-8ft: ND (0.04)				8-10ft: ND (0.039)			
PRE-22	0-2ft: 0.143				2-4ft: ND (0.037)				4-6ft: 1.0				6-8ft: ND (0.041)				--	--	--	--
PRE-23	0-2ft: 0.13				2-4ft: ND (0.035)				4-6ft: 0.2				6-8ft: ND (0.043)				8-10ft: ND (0.042)			
PRE-24	0-2ft: 0.086				2-4ft: 0.76				[redacted]				6-8ft: ND (0.044)[ND (0.041)]				--	--	--	--
PRE-25	0-2ft: 0.067				2-4ft: 0.18				4-6ft: 0.54				6-8ft: 0.45				8-10ft: 0.065			
PRE-26	0-2ft: 0.13				2-4ft: 0.05				--	--	--	--	--	--	--	--	--	--	--	--

Notes:
1. -- = No sample collected.
2. ND (0.25) = Not detected; detection limit shown in parentheses.
3. [0.471] = Duplicate analysis result shown in brackets.

L:ON=*, OFF=0421975B,042197SS,GRID,REF,SH-255SYMOFF,SYM-B*
P: STD-PCP/DL
7/30/97 SYR-54-RLP, DMW, RCB
10184400\10184G02.DWG

GENERAL ELECTRIC COMPANY, PITTSFIELD MASSACHUSSETTS

SUPPLEMENTAL PHASE II REPORT FOR THE ALLENDALE SCHOOL PROPERTY

PCB SOIL ANALYTICAL DATA APRIL 1997

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 2

3. EXPOSURE ASSESSMENT

3.1 INTRODUCTION

The objectives of the exposure assessment are to estimate the nature, extent, and magnitude of potential exposure of human receptors to the COPCs at the Allendale School property. The major elements of the exposure assessment, listed below, are discussed in the following subsections:

- Land and water uses.
- Site conceptual model, including exposure scenarios and pathways.
- Exposure point concentrations.
- Daily doses.

3.2 LAND AND WATER USES

3.2.1 Land

As noted in Section 1 and presented in Figure 1-2, the Allendale School property is located approximately 1,500 feet north of the Housatonic River, near Hill 78. The Allendale School property is presently classified as residential (R-12) and this classification is unlikely to change in the next 20 to 25 years (03-0054). The R-12 classification requires that lot sizes be a minimum of 12,000 ft^2. While the property is likely to be used as a public school in the foreseeable future, it is possible that it could be developed in the future for residential occupation (03-0054). Based on the current use classification and the potential for future residential use, two scenarios have been developed. The first is a current use scenario based on exposure to school age children and toddlers through play-related activities, and on activities associated with a groundskeeper. The second is a future use scenario based on the possibility that the property may be developed for residential use in the future.

3.2.2 Water

There are no surface water bodies on the Allendale School property. Groundwater in the Pittsfield area is not currently used as a public water supply. There are no private wells within 50 feet of the Allendale School property. All of the drinking water for the City of Pittsfield currently is obtained from regional reservoirs. MADEP (09-0095) classifies groundwater as GW-1, GW-2, or GW-3. GW-1 is defined by MADEP as “either a current or future source of drinking water” if it has a high or medium yield according to U.S. Geological Survey (USGS) standards and fulfills a number of other criteria. Groundwater in the Pittsfield area does not meet these criteria and, therefore, is not classified by MADEP as a GW-1 source. GW-2 is defined as a potentially useful drinking water aquifer if it is within 30 feet of a currently occupied structure and the depth to groundwater is less than 15 feet (09-0095). GW-3 is the classification given to all groundwater in Massachusetts based on the potential to discharge to a surface water body. The Allendale School property fulfills the criteria of the GW-2 and GW-3 categories. Based on the classification as GW-2 and GW-3, and the lack of potential for use, groundwater exposure via ingestion of drinking water has not been evaluated for the current or future exposure scenarios.

3.3 SITE CONCEPTUAL MODEL

Table 3-1 is the RAGS Part D, Table 1. It presents the site conceptual model and exposure pathways that have been evaluated in this risk assessment. This table presents the sources of contamination, the exposure media, the exposure pathways with their rationale, the scenarios (current and future), and the populations evaluated. The following subsections discuss each scenario, the complete exposure pathways, and the rationale for their selection.

3.3.1 Current Use Scenario

The property is currently used as a primary school. According to the Principal Planner of the City of Pittsfield (03-0054), the designated use of the property in the foreseeable future will be as a public school. It is assumed that the subsurface soils will be undisturbed under the current use condition. Therefore, the receptors identified in the current use scenario will be potentially exposed only to surface soils. Three receptors have been evaluated in the current scenario—two child receptors and a groundskeeper.

3.3.1.1 Children

The area potentially used for recreational purposes is mainly vegetated with grass, although there are two ballfields on the southern portion of the property with exposed soil. Additionally, there is a small wetlands area in the southeastern portion of the property near the Tyler Street Extension. In order to gain a perspective on site-specific activities at the school, the Principal of the Allendale School was contacted on 22 June 1998 (03-0055). The following information was obtained:

- Children with an age range of approximately 5 to 11 years (kindergarten through grade 5) attend during the normal academic school year (i.e., September through June).
- During a typical school day, there is a 15-minute recess and a 20-minute lunch break for all students. The older school children (e.g., grades 4 and 5) may have an additional play period of 15 minutes on the ballfields.
- Younger and older children from local residences also access the unsecured property at various times for recreational activities. Although there are fences around the school property, the playing fields and other potential recreational areas are unsecured and easily accessible to local residents or visitors.
- In addition to school children, local residents with small children (e.g., toddlers) access the site on a regular basis in the “playset” area located off the capped area on the south side of the school building. This area is buffered with pebbles. (Note: It will be assumed that other areas of the property may be visited occasionally by young children with or without supervision.)
- Airborne dust is not noticeably generated on the site, including the ballfields, during the play periods. It should be noted that ballfield soil has been brought in as part of the existing cap.
- School children are instructed to avoid playing in the wetlands area.
- Older children up to the ages of about 13 or 14 years use the ballfields periodically for Little League and other sports activities outside school hours.

Based on this information, the following age groups were evaluated in the current use scenario:

- **Children aged 1 to 6 years—**This potentially exposed off-site age group visits the school property for play activities while being supervised by adults (parents, sitters, etc.). Incidental ingestion of soil and dermal contact with soil while playing were evaluated. Dust inhalation was not evaluated on the basis that the site is primarily vegetated, with little airborne dust potential during play activities. It was assumed that the upper range of this age group would be representative of the younger school student (e.g., aged 5 and 6 years). It was assumed that a young child’s head, hands, lower arms, lower legs, and feet would be exposed to soil from May through September. During the colder months of April and October, it was assumed that only the head and hands would be exposed. Specific exposure assumptions regarding incidental ingestion of soil and dermal contact with soil are discussed in Subsection 3.5.

- **Children aged 7 to 13 years—**This age group is generally representative of the school population and would be exposed to soils during normal school activities through incidental soil ingestion and dermal contact with soil. Dust inhalation was not evaluated on the basis that the site is primarily vegetated, with little airborne dust potential during play activities. The upper range of this age group would be representative of recreational off-site users such as recreational ball players or occasional visitors to the site for other similar play activities. It was assumed that a young child's head, hands, lower arms, lower legs, and feet would be exposed to soil from May through September. During the colder months of April and October, it was assumed that only the head and hands would be exposed. Specific exposure assumptions regarding incidental ingestion of soil and dermal contact with soil are discussed in Subsection 3.5.

3.3.1.2 Groundskeeper

The Principal of Allendale School also noted the following with regard to groundskeeping activities at the property (03-0055):

- The school system in Pittsfield employs a group of groundskeepers who cut the grass regularly during the spring, summer, and fall at all of the Pittsfield public schools. At Allendale, this activity consists of mowing the southern portion of the property with tractor-pulled gang mowers.

- The custodial staff at the Allendale School use a handmower to cut the northside lawn and may occasionally pick up papers and glass from the southern portion of the property.

Based on this information, the current use scenario also evaluated the exposure of an adult groundskeeper who cuts the grass and cleans the grounds approximately 30 days per year from April through October. It was assumed that a groundskeeper's head, hands, and forearms could be exposed to soils during regular work activities. Specific exposure assumptions regarding incidental ingestion of soil and dermal contact with soil are discussed in Subsection 3.5.

3.3.2 Future Use Scenario

Based on the zoning classification of the school property (R-12), a future residential scenario was developed. The exact location of potential future residences is highly uncertain, and therefore, the estimation of sitewide exposure point chemical concentrations in soil would be difficult to estimate. Therefore, the approach taken in the future use scenario was to estimate the vertically-averaged sample concentration of each contaminant at each sample location and to compare this information with chemical-specific RBCs developed from residential exposure assumptions (i.e., a reverse risk assessment process).

It was assumed that future residents (child aged 1 to 6 years, and an adult who lives at the site for 24 years) could be exposed to soils currently at a 0 to 10-foot depth as a result of the redistribution of these soils on the surface after excavation for residential homes. Primary activities relating to soil exposure at the Allendale School property would include playing (children), home gardening (adults), and the consumption of homegrown produce. As discussed previously, drinking water is assumed to be obtained from a municipal water supply unaffected by site-related contamination. It is also assumed that the future residential properties will be covered with grass, and, therefore, airborne dust inhalation will not be a significant exposure pathway. Infant ingestion of mother’s milk was not evaluated because it was reasoned that the risk would be very small compared to other pathways. The major sources of risk through mother’s milk ingestion are usually attributable to indirect pathways such as dairy milk, beef, and fish consumption pathways that are not an issue in this risk assessment.

3.4 ESTIMATION OF EXPOSURE POINT CONCENTRATIONS

3.4.1 Overview

Site data were evaluated by initially determining whether the data were log-normally distributed. SAS_{TM} software (PROC UNIVARIATE analysis) indicated that the surface soil data were log-normally distributed. Appendix B presents the documentation for this evaluation.

A sitewide 95% upper confidence limit (UCL) of the arithmetic mean was used as the exposure point concentration (EPC) for both the reasonable maximum exposure (RME) and central tendency exposure (CTE) scenarios for current exposures.

The methodology for estimating the 95% UCL of the mean was the “concentration term” guidance provided by EPA (99-0003). The following equation was used to estimate the sitewide soil exposure point concentration for the 0 to 1-foot surface soils (i.e., current use scenario):

$$\text{UCL} = e^{\left(\bar{x}_i + 0.5s^2 + \frac{sH}{\sqrt{n-1}}\right)}$$

Where:

UCL	=	95% upper confidence limit of the arithmetic mean.
e	=	Constant (natural log).
$\bar{x}_i$	=	Arithmetic mean of the log-transformed data for contaminant.
s	=	Standard deviation of the log-transformed data.

$$\left(s = \sqrt{\frac{\sum_{i=1}^{n} \left(x_i - \bar{x}_i\right)^2}{n-1}} \right)$$

H	=	Statistic determined by the standard deviation and sample size.
N	=	Sample size for contaminant in the particular media set.

3.4.2 Surface Soils (0 to 1 Foot)—Current Use Scenario

Prior to the development of a sitewide exposure point concentration, soil borings in the vertical range were arithmetically averaged. The sitewide EPC for each COPC was then averaged from the horizontal extent of the vertically averaged surface soil borings. The EPC for each COPC of concern in the current use scenario is presented in Table 3-2, which is RAGS Part D, Table 3.1.

3.4.3 Subsurface Soils (0 to 10 Feet)—Future Use Scenario

For conducting the risk evaluation of the future scenario, soil samples from 0 to 10 feet in depth were evaluated individually by sample location. As with surface soils, samples were vertically averaged by location. However, a sitewide exposure concentration was not developed for soils 0 to 10 feet deep. The vertically averaged sample concentrations were compared with the site-specific RBCs for the COPCs (refer to Section 5).

3.5 ESTIMATION OF DAILY DOSES

This subsection describes the mathematical models that were used to calculate the chronic daily intakes (CDIs; doses) of the COPCs for each age group through the applicable exposure pathways. Exposure assumptions for both the current use and future use scenarios are discussed. However, CDIs were only calculated for the current use exposure scenario. For the future use residential scenario, the algorithms for the calculation of site-specific RBCs (using the exposure assumptions discussed in Subsection 3.5.2) and the results are described in Section 5.

The exposure doses were expressed as intakes in milligrams of contaminant per kilogram body weight per day (mg/kg-day). Two types of doses are typically calculated in a risk assessment. The cancer dose (lifetime average daily dose [LADD]) is averaged over a 70-year lifetime. The noncancer average daily dose (ADD) is averaged over the actual exposure duration for each receptor.

3.5.1 Current Use Scenario

The mathematical models used to calculate intakes for the current use scenario are presented in Table 3-3 (RAGS Part D, Table 4.1-A), Table 3-4 (RAGS Part D, Table 4.1-B), and Table 3-5 (RAGS Part D, Table 4.1-C) for the 1- to 6-year old child, the 7- to 13-year old child, and the adult groundskeeper, respectively. Each table defines the exposure variables used in estimating doses and includes the assumptions (i.e., exposure parameters) and rationale used in the model.

The soil exposure algorithms were modified to evaluate only incidental ingestion of soil and dermal contact with soil (Tables 3-3, 3-4, and 3-5). It was assumed that windblown dust would not be a major exposure pathway because the site is generally vegetated with grass and trees. The only area that could potentially generate any dust in a current use scenario is the ballfield in the eastern section of the capped area. Because this area is covered with clean soil on top of a geotextile liner, any dust generation would not be anticipated to cause a health risk as a result of chemical exposure.

3.5.1.1 Body Weight

Body weights of the 1- to 6-year old child and the adult were assumed to be 15 kg and 70 kg, respectively (99-0002). For the 7- to 13-year old child, the body weight was calculated by obtaining the average 50^{th} percentile body weight for male and female children aged 7 through 13 years, as estimated from Tables 7-6 and 7-7 in the *Exposure Factors Handbook* (99-0007). The body weight was estimated as 35 kg (Appendix D, RAGS Part D, Table 4.1-B).

3.5.1.2 Exposure Frequency

Site-specific information (03-0055) and professional judgment were used to estimate exposure frequencies for the children and groundskeepers. The 1- to 6-year old child was assumed to visit the site 120 days per year (RME) or 60 days per year (CTE) during the months April through October. The RME value of 120 days per year represents 4 days per week exposure over a 7-month period. The CTE value was assumed to be 50% of the RME value (professional judgment). The 7- to 13-year old child was assumed to play on the site 150 days per year (RME) or 75 days per year (CTE) during the months of April and October. The RME value of 150 days per year represents 5 days per week exposure over a 7-month period. The CTE value was assumed to be 50% of the RME value (professional judgment). The RME and CTE frequency values for the groundskeeper were both assumed to be 30 days per year.

3.5.1.3 Exposure Duration

For both the 1- to 6-year old child and the 7- to 13-year old child, the exposure duration was assumed to be 6 years. For the groundskeeper, the duration was assumed to be 25 years, which represents the upper-bound level for individuals working at the same location (99-0089).

3.5.1.4 Averaging Time

Carcinogenic averaging time was assumed to be a 70-year lifetime for all age groups. The noncancer averaging times for the younger and older child were 2,190 days (365 days per year times 6 years). For the adult groundskeeper, the noncancer averaging time was 9,125 days (365 days per year times 25 years).

3.5.1.5 Incidental Ingestion of Soil

The assumptions for soil ingestion are summarized in Tables 3-3, 3-4, and 3-5. The following text describes in more detail how these assumptions were developed.

Incidental soil ingestion could result from placing dirt-contaminated hands or objects in the mouth. A soil ingestion rate of 200 mg/day, which is a conservative estimate of the mean soil ingestion rate (99-0007) was used for the younger child for the RME scenario. A soil ingestion rate of 100 mg/day, which is a more representative central estimate of the mean soil ingestion rate (99-0007), was used for the CTE scenario. For the older child, ingestion rates of 100 mg/day and 50 mg/day were used for the RME and CTE estimates, respectively. The value of 100 mg/day is considered by EPA to be a high end estimate for the adult (99-0007). For the adult groundskeeper, ingestion rates of 50 mg/day and 25 mg/day were used for both the RME and CTE scenarios, respectively. The CTE values for the older child and adult groundskeeper were determined by taking 50% of the RME values (professional judgment).

Professional judgment was used to estimate the fraction of contaminated soil ingested. For the RME children (1 to 6 years old, and 7 to 13 years old), it was assumed that the fraction of total soil ingested daily (FI) from the schoolyard was 50%. For the CTE children, it was assumed that the fraction of daily soil ingested would be 25%. For the groundskeeper, the FI for the RME calculation was assumed to be 100%, while for the CTE calculation it was assumed to be 50%.

3.5.1.6 Dermal Contact with Soil

The assumptions for dermal contact with soil are summarized in Tables 3-3, 3-4, and 3-5. The key factors in the dermal evaluation are exposed skin surface area (SA), the soil-to-skin adherence factor (AF), and the dermal absorption of chemicals. The following text describes in more detail how these assumptions were developed.

Exposed Skin Surface Area

Skin SA values were determined for each age group as shown in Table 3-6 (1- to 6-year old child), Table 3-7 (7- to 13-year old child), and Table 3-8 (groundskeeper). The SA values for the two child age groups were obtained from Table C.3 in the *Dermal Risk Assessment Interim*

Guidance (99-0123). The exposed SAs for the younger and older child were assumed to be equivalent to those associated with the head, hands, forearms, lower legs, and feet for the months of May through September (SA_1; i.e., the child is wearing a short-sleeved shirt, shorts, and no shoes) (99-0123). For the cooler months of April and October, the SAs for both child age groups were calculated assuming only the head and hands were exposed (SA_2).

Groundskeeper SA values were obtained from Tables 6-2 and 6-3 in the *Exposure Factors Handbook* (99-0007). The head, hands, and forearms of the groundskeeper were assumed to be exposed from April through October. These body parts were selected based on the assumption that an individual worker would wear a short-sleeved shirt, long pants, and shoes (99-0123).

Because precise information is lacking for SAs for forearms and lower legs of children (99-0007), the percentages of forearms-to-arms in both the younger and older child were estimated as approximately 44% based on adult proportions. Similarly, the percentage for lower legs-to-legs for both child age groups was determined to be approximately 40% (see Tables 3-6 and 3-7 for explanation).

Soil-to-Skin Adherence Factors

The soil-to-skin AF, expressed as milligrams soil per square centimeter of skin surface (mg/cm^2), was obtained for each age group according to specific body part (e.g., hands, forearms, lower legs, or feet) and activity as shown in Table 3-9. AF values were obtained from Table C.4 of the *Dermal Risk Assessment Interim Guidance* (99-0123). For children aged 1 to 6 years and 7 to 13 years, values for children playing in dry soil were used. For the adult groundskeeper, the “groundskeeper” values were used.

These activity and body-part-specific AF values were subsequently surface-area-weighted for total exposed skin SA under each of the two exposure periods (i.e., May through September, and the combination of April and October). Table 3-10 shows these values. For the child age group, AF_1 values are the surface-area-weighted AFs for each age group during the months of May through September. AF_2 values represent the surface-area-weighted AFs for exposure during the months of April and October. The groundskeeper AF value was surface-area-weighted from April to October because the exposed body parts were the same for all 7 months. The following equation (99-0123) was used to estimate the surface-area-weighted AF values shown in Table 3-10:

$$\text{Weighted AF} = [(SA_a * AF_a) + (SA_b * AF_b) + \ldots + (SA_i * AF_i)]/[SA_a + SA_b + \ldots + SA_i]$$

Where:

SA_i	=	Surface area for body part "i," cm^2.
AF_i	=	Soil-to-skin adherence factor for body part "i," mg/cm^2–day.

As discussed in the *Dermal Risk Assessment Interim Guidance* (99-0123), an appropriate method should be used to estimate a high-end surface-area-weighted AF value. This is done by either (1) selecting a central tendency (i.e., typical) soil contact activity and using the high-end weighted, body-part-specific AF (i.e., 95^{th} percentile) for that activity; or (2) selecting a high-end (i.e., reasonable worst case) soil contact activity and using the central tendency weighted body-part-specific AF (i.e., 50^{th} percentile) for that activity. For the children aged 1 to <6 years and 7 to <13 years, and the groundskeeper, the 95^{th} percentile body-part-specific values were used (see Table C.4; 99-0123) because the SAs used were from the 50^{th} percentile range.

It should be noted that no AF values were available for the head and feet of the child age groups or the groundskeeper (see Table C.4; 99-0123). Therefore, for the purposes of calculating the surface-area-weighted AF, the AF value for the face was used, assuming that the associated SA was one-third that of the head. Feet were not included in the calculations because there was no analogous body part AF value. (For the purposes of estimating the dermally absorbed dose [DAD], the SA of the head and feet are included in the total exposed SA calculation.)

In the child age group dermal exposure dose equations (Tables 3-3 and 3-4), the product of the exposed total SA and weighted AF is time-weighted over a total 7-month exposure period.

Dermal Absorption

Table 3-11 presents the dermal skin absorption factors and references for each COPC recommended by EPA Region I. These values represent the fraction of chemical that is believed to penetrate the skin following dermal contact with contaminated soils.

3.5.2 Future Residential Exposure

As discussed earlier, the future child and adult residents were assumed to be exposed to soil contamination directly by incidental soil ingestion and dermal contact, and indirectly through homegrown produce ingestion. Only RME assumptions were evaluated in the future residential scenario. The RBC algorithms with their exposure assumption inputs are presented in Section 5 of this report (there are no RAGS Part D tables that present these assumptions). The rationale for the exposure inputs into these equations is discussed in the following subsections.

3.5.2.1 Body Weight

Body weights of the 1- to 6-year old resident child and the adult resident were assumed to be 15 kg and 70 kg, respectively (99-0002).

3.5.2.2 Exposure Frequency

Exposure frequencies for incidental ingestion of soil and dermal contact with soil for both the child and adult residents were assumed to be the same as for the RME school child aged 7 to 13 years in the current use scenario (i.e., 150 days per year). It was assumed that outdoor exposure to soils would be limited during the late fall, winter, and early spring seasons. For homegrown vegetable ingestion, it was conservatively assumed that produce grown in the home garden during the growing season could be stored in freezers and consumed by the future resident throughout the year (i.e., 350 days per year).

3.5.2.3 Exposure Duration

The exposure duration for a child is 6 years (aged 1 to 6) and for an adult is 24 years. These values are upper-bound estimates and are based on the length of time spent at one residence in the United States (99-0007).

3.5.2.4 Averaging Time

Averaging times were calculated according to methods recommended by EPA (99-0002). For carcinogenic averaging time, a value of 25,550 days (365 days per year times 70 years) was used. For noncancer effects, an averaging time of 2,190 days (6 years) was used for the 1- to 6-year old child resident, and 8,760 days (24 years) was used for the adult resident.

3.5.2.5 Incidental Ingestion of Soil

For the child of the future resident, an incidental soil ingestion rate of 200 mg/day was used. This value is a conservative estimate of the mean soil ingestion rate (99-0007). For the future adult resident, a high end soil ingestion rate of 100 mg/day was used (99-0007). For both child and adult soil ingestion exposures, the fraction ingested of contaminated soil was assumed to be 1.

3.5.2.6 Dermal Contact with Soil

The dermal exposure methodology, assumptions, and rationale for SA and AF values used for the 1- to 6-year old child in the current scenario, as discussed in Subsection 3.5.1.6, were used for the future child resident. For the future adult resident, the exposed SA for May to September (SA_1, adult resident) was based on exposure to the head, forearms, hands, and lower legs, and for the months of April and October (SA_2, adult resident) was based on the head and hands. These values were calculated from the average of 50^{th} percentile male and female values obtained from Tables 6-2 and 6-3 of the *Exposure Factors Handbook* (99-0007). Table 3-8 shows these values. Tables 3-9 and 3-10 summarize the body-part-specific and surface-area-weighted AF values for the adult resident. Because the clothing scenario of the adult was a more high-end type of exposure, the 50^{th} percentile AF values were selected from Table C.4 (99-0123).

3.5.2.7 Homegrown Produce Ingestion

Exposure to COPCs from ingestion of produce can result from three possible mechanisms:

- Direct deposition of particles from an air emission source or from resuspension of contaminated soil.
- Vapor transfer of volatilized PCBs from the air to plant foliage.
- Root uptake from the soil and transfer to aboveground or belowground portions of the plant.

Direct deposition of particles is not evaluated quantitatively in this risk assessment because there is no air emission source, such as an incinerator, and because there is no acceptable methodology for calculating resuspension of soil onto plants in a garden setting. It is likely that resuspension of soil from backsplashing from rainfall events would be an extremely minor pathway for two reasons. One, the backsplashing phenomenon would be limited to plants close to the ground, such as leafy vegetables like lettuce; and two, such soil contamination would be evident and would be washed off as part of common produce preparation techniques prior to consumption.

Vapor transfer of volatilized PCBs also is not evaluated quantitatively in this risk assessment. This pathway would be expected to be a very small contributor to the overall risk. PCBs have a fairly wide range of volatility based on the degree of chlorination, with the less chlorinated congeners being more volatile than the more chlorinated congeners. The PCBs at the Allendale School site have been exposed in the environment for a long period of time and likely have lost most of their volatile fraction. Even if a future residential development becomes a reality and the soil at depth is exposed to the air, any remaining volatile fraction would be expected to be released from the soil in a short period of time and would have a minimal impact on long-term exposure and risk to the future resident. Uncertainties associated with the exclusion of both the deposition and vapor-phase exposure pathways will be discussed in the uncertainty section (Section 7).

This subsection focuses on the assumptions used to estimate the potential for indirect exposure of future residents to chemicals through ingestion of homegrown produce (aboveground and belowground vegetables) from root uptake. Two major factors are discussed here in relation to homegrown produce ingestion. First, the potential chemical uptake mechanisms and the amount of chemical accumulated from soil into plants are discussed. Second, the types and amounts of homegrown produce ingested by the future resident are evaluated. A presentation of the algorithms for estimating soil RBCs from vegetable ingestion is found in Section 5.

Estimation of Chemical Concentrations in Vegetables and Fruits

This discussion focuses on the equations used to predict vegetable and fruit concentrations based on soil concentrations of COPCs. Note that because average, sitewide soil concentrations of COPCs are not used in the future residential scenario (this is a reverse risk calculation), the equations for estimating plant concentrations of chemicals have been modified in Section 5 in order to back calculate soil RBCs.

Two general types of vegetables have been considered in this evaluation. The first type consists of aboveground vegetables, which include commonly grown and ingested crops such as lettuce (leafy vegetables) and tomatoes (fruits). The second type consists of belowground (root) vegetables such as carrots. Chemicals from the soils at the Allendale School property may be expected to accumulate in edible portions of both aboveground and belowground vegetables primarily through root uptake mechanisms.

The equation used to calculate the chemical concentration in aboveground vegetables by root uptake (Pr) is shown in Table 3-12. Plant-soil bioconcentration factors for produce (Br_{ag}) for organic chemicals are directly related to the log octanol-water partition coefficient (log K_{ow}) (99 -0091, 99-0080, 99-0127). For inorganic chemicals, $Br_{ag(veg)}$ values are determined using a weighted approach (99-0080). This assumes that aboveground vegetables consist of a leafy, vegetative portion (25%) and a fruiting, reproductive portion (75%). Except for arsenic, the specific uptake factors for chemicals in vegetative and reproductive portions of aboveground plants were obtained from Baes et al. (99-0027) (Bv and Br, respectively). For arsenic, the Br_{ag} value was taken directly from the *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (99-0127). Br_{ag} values for organic and inorganic chemicals were determined using the equations shown in Tables 3-13 and 3-14, respectively.

Table 3-15 presents the equation for determining belowground vegetable concentrations through plant-soil bioconcentration factors for root vegetables ($Br_{root\ veg}$). The $Br_{root\ veg}$ for organics is based on the root concentration factor (RCF) and the soil/water partition coefficient (Kd_s). Because the RCF value is based on uptake from water, it is divided by a soil/water partition coefficient (Kd_s) to estimate the amount of chemical in soil that would partition into water. A correction (VG_{bg}) of 0.01 is applied to account for reduced translocation of chemicals in bulky, belowground vegetables such as carrots and potatoes as compared to the barley shoots, on which the RCFs are based (99-0127). The chemical concentrations in barley shoots measured in the Briggs et al. study (99-0051) are most representative of the concentrations that would be expected in the outer millimeters (mm) of the root vegetable, and thus, are much higher than those expected in the whole root vegetable. The resulting concentrations in root vegetables are wet weight, and must be converted to dry weight concentrations, assuming an 87% moisture content in root vegetables (99-0127). The biotransfer factors for arsenic were obtained from the new combustion guidance (99-0127). $Br_{root\ veg}$ values for other organic and inorganic chemicals were determined using the equations shown in Tables 3-16 and 3-17, respectively.

The root uptake factors that are used to estimate the root vegetable concentrations for organics are based on the work of Briggs et al. (99-0051) who studied the uptake of organic chemicals from solution by barley shoots. The RCF is calculated based on the K_{ow} as shown in Table 3-18. Because $Br_{root\ veg}$ values are available for inorganics, RCFs are not required for metals.

Table 3-19 summarizes the physical-chemical values required to calculate chemical concentrations in aboveground and belowground vegetables.

Vegetable Ingestion Exposure Assumptions

Table 3-20 presents ingestion rates for a child and two separate age groups of adults over 24-year exposure periods. This table was extracted from the *Exposure Factors Handbook* (Table 9-23) (99-0007). The child ingestion rate for aboveground vegetables, which include leafy vegetables, legumes, and garden fruits, is 6.72 grams dry weight per day (g-dry weight/day). The child belowground ingestion rate is 0.67 g-dry weight/day, which includes all root vegetables, with the exception of potatoes, which are not typically grown in backyard gardens to a significant extent. For adults, the aboveground vegetable consumption rate for the 45- to 70-year old adult (17.0 g-dry weight/day) was used because it is slightly higher than the consumption rate for the 20- to 44-year old adult. Conversely, the belowground consumption rate for the 20- to 44-year old adult (1.77 g-dry weight/day) was used because it was slightly higher than the rate for the older adult.

For both the child and the adult, it was assumed that 25% of the vegetables they consume would be homegrown (i.e., FI = 0.25) (99-0127). This is a conservative estimate based on data for homegrown vegetable consumption in the Northeast (99-0007).

3.5.3 Exposure Doses

Appendix D presents the carcinogenic and noncancer doses for each receptor in the current use scenario. The tables are numbered as follows:

- Table D-1 – RME Cancer doses, soil ingestion, child 1 to 6 years.
- Table D-2 – RME Cancer doses, soil ingestion, child 7 to 13 years.
- Table D-3 – RME Cancer dose, soil ingestion, adult groundskeeper.
- Table D-4 – RME Cancer doses, dermal contact, child 1 to 6 years.
- Table D-5 – RME Cancer doses, dermal contact, child 7 to 13 years.
- Table D-6 – RME Cancer doses, dermal contact, adult groundskeeper.
- Table D-7 – CTE Cancer doses, soil ingestion, child 1 to 6 years.
- Table D-8 – CTE Cancer doses, soil ingestion, child 7 to 13 years.
- Table D-9 – CTE Cancer dose, soil ingestion, adult groundskeeper.
- Table D-10 – CTE Cancer doses, dermal contact, child 1 to 6 years.
- Table D-11 – CTE Cancer doses, dermal contact, child 7 to 13 years.
- Table D-12 – CTE Cancer doses, dermal contact, adult groundskeeper.
- Table D-13 – RME Noncancer doses, soil ingestion, child 1 to 6 years.
- Table D-14 – RME Noncancer doses, soil ingestion, child 7 to 13 years.
- Table D-15 – RME Noncancer dose, soil ingestion, adult groundskeeper.
- Table D-16 – RME Noncancer doses, dermal contact, child 1 to 6 years.
- Table D-17 – RME Noncancer doses, dermal contact, child 7 to 13 years.
- Table D-18 – RME Noncancer doses, dermal contact, adult groundskeeper.
- Table D-19 – CTE Noncancer doses, soil ingestion, child 1 to 6 years.
- Table D-20 – CTE Noncancer doses, soil ingestion, child 7 to 13 years.
- Table D-21 – CTE Noncancer dose, soil ingestion, adult groundskeeper.
- Table D-22 – CTE Noncancer doses, dermal contact, child 1 to 6 years.
- Table D-23 – CTE Noncancer doses, dermal contact, child 7 to 13 years.
- Table D-24 – CTE Noncancer doses, dermal contact, adult groundskeeper.

No exposure doses were estimated for the future residential scenario as discussed previously. The methodology for estimating RBCs for the future scenario are discussed in Section 5.

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TABLE 3-1

RAGS PART D TABLE 1

SELECTION OF EXPOSURE PATHWAYS

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Soil	Soil	Surface soil-Schoolyard (0 to 1 foot)	Resident	Child (1-6 yrs)	Ingestion	On-Site	Quantitative	Residents nearby bring young children to play at the school property
						Dermal	On-Site	Quantitative	
				School child	Child (7-13 yrs)	Ingestion	On-Site	Quantitative	School children and older child from off-site may use schoolyard for recess, non-school activities (e.g., little league baseball, soccer, etc.)
						Dermal	On-Site	Quantitative	
				Groundskeeper	Adult	Ingestion	On-Site	Quantitative	Groundskeepers employed by school system periodically cut the grass
						Dermal	On-Site	Quantitative	
Future	Soil	Soil	Subsurface soil-schoolyard (1) (0 to 10 feet)	Resident	Child (1-6 yrs)	Ingestion	On-Site	Quantitative	Child resident lives on-site, plays outdoors, consumes home-grown produce
						Dermal	On-Site	Quantitative	
						Vegetable Ingestion	On-Site	Quantitative	
				Resident	Adult	Ingestion	On-Site	Quantitative	Adult resident lives on-site, gardens outdoors, consumes home-grown produce
						Dermal	On-Site	Quantitative	
						Vegetable Ingestion	On-Site	Quantitative	

(1) Subsurface soil will be brought to surface for construction.

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TABLE 3-2

RAGS PART D TABLE 3.1

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Surface Soil
Exposure Medium:	Surface Soil
Exposure Point:	Dermal Contact with Soil/Soil Ingestion

Chemical of Potential Concern	Units	Arithmetic Mean (1)	95% UCL of Normal Data (1)	Maximum Detected Concentration (1)	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
							Medium EPC Value (1)	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value (1)	Medium EPC Statistic	Medium EPC Rationale
1234678-HpCDD	mg/kg	1.25E-07	2.48E-07	2.70E-07		mg/kg	2.70E-07	Max (2)	W-Test (3)	2.70E-07	Max (2)	W-Test (3)
1234678-HpCDF	mg/kg	5.16E-08	1.37E-07	1.60E-07		mg/kg	1.60E-07	Max (2)	W-Test (3)	1.60E-07	Max (2)	W-Test (3)
123478-HxCDF	mg/kg	2.36E-07	5.90E-07	6.80E-07		mg/kg	6.80E-07	Max (2)	W-Test (3)	6.80E-07	Max (2)	W-Test (3)
23478-PeCDF	mg/kg	9.74E-07	2.65E-06	3.10E-06		mg/kg	3.10E-06	Max (2)	W-Test (3)	3.10E-06	Max (2)	W-Test (3)
2378-TCDF	mg/kg	8.30E-07	2.06E-06	2.40E-06		mg/kg	2.40E-06	Max (2)	W-Test (3)	2.40E-06	Max (2)	W-Test (3)
OCDD	mg/kg	9.13E-08	1.64E-07	1.70E-07		mg/kg	1.70E-07	Max (2)	W-Test (3)	1.70E-07	Max (2)	W-Test (3)
OCDF	mg/kg	7.80E-09	1.56E-08	1.60E-08		mg/kg	1.60E-08	Max (2)	W-Test (3)	1.60E-08	Max (2)	W-Test (3)
2,3,7,8-TCDD (TEQ)	mg/kg	2.32E-06	5.86E-06	6.80E-06		mg/kg	6.80E-06	Max (2)	W-Test (3)	6.80E-06	Max (2)	W-Test (3)
Total PCBs	mg/kg	1.62E-01	2.05E-01	8.00E+00		mg/kg	1.81E-01	95% UCL-L	W-Test (3)	1.81E-01	95% UCL-L	W-Test (3)
Benz(a)anthracene	mg/kg	6.95E-01	1.80E+00	2.10E+00		mg/kg	2.10E+00	Max (2)	W-Test (3)	2.10E+00	Max (2)	W-Test (3)
Benzo(a)pyrene	mg/kg	7.83E-01	2.06E+00	2.40E+00		mg/kg	2.40E+00	Max (2)	W-Test (3)	2.40E+00	Max (2)	W-Test (3)
Benzo(b)fluoranthene	mg/kg	8.05E-01	2.14E+00	2.50E+00		mg/kg	2.50E+00	Max (2)	W-Test (3)	2.50E+00	Max (2)	W-Test (3)
Benzo(k)fluoranthene	mg/kg	6.13E-01	1.55E+00	1.80E+00		mg/kg	1.80E+00	Max (2)	W-Test (3)	1.80E+00	Max (2)	W-Test (3)
Dibenz(a,h)anthracene	mg/kg	2.88E-01	4.55E-01	5.00E-01		mg/kg	5.00E-01	Max (2)	W-Test (3)	5.00E-01	Max (2)	W-Test (3)
Indeno(1,2,3-cd)pyrene	mg/kg	4.66E-01	1.12E+00	1.30E+00		mg/kg	1.30E+00	Max (2)	W-Test (3)	1.30E+00	Max (2)	W-Test (3)
Phenanthrene	mg/kg	8.45E-01	2.23E+00	2.60E+00		mg/kg	2.60E+00	Max (2)	W-Test (3)	2.60E+00	Max (2)	W-Test (3)
Arsenic	mg/kg	6.78E+00	9.08E+00	9.70E+00		mg/kg	9.70E+00	Max (2)	W-Test (3)	9.70E+00	Max (2)	W-Test (3)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-L); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

(1) For dioxin/furan congeners, the values presented are the TEQs. In the exposure assessment, a separate congener-specific dose, expressed as mg TEQ/kg-d, was calculated. A total 2,3,7,8-TCDD TEQ dose was then calculated for purposes of comparison with the 2,3,7,8-TCDD cancer slope factor.

(2) 95% UCL exceeds maximum detected concentration. Therefore , maximum concentration used for EPC

(3) Shapiro-Wilkes Test indicates data are lognormally distributed.

TABLE 3-3
RAGS PART D TABLE 4.1A
VALUES USED FOR DAILY INTAKE CALCULATIONS
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil
Exposure Point: Soil - Schoolyard
Receptor Population: Child
Receptor Age: 1 - 6 years

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	See Table 3-2	See Table 3-2	See Table 3-2	See Table 3-2	
	IRS	Ingestion rate of soil	mg/day	200	EPA, 1991	100 [1]	EPA, 1997	Chronic daily intake (CDI)(mg/kg-day) =
	FI	Fraction ingested	unitless	0.5	[2]	0.25	[2]	
	EF	Exposure frequency	days/year	120	[2]	60	[2]	$CS \times IRS \times CF \times FI \times ABS_o \times EF \times ED$
	ED	Exposure duration	years	6	EPA, 1991	6	EPA, 1991	$\times 1/BW \times 1/AT$
	CF	Conversion factor	kg/mg	1.00E-06		1.00E-06		
	ABS_o	Gastrointestinal absorption factor	unitless	Chem-specific	Various - see text	Chem-specific	Various - see text	
	BW	Body weight	kg	15	EPA, 1989	15	EPA, 1989	
	AT_c	Averaging time - cancer	days	25,550	EPA, 1989	25,550	EPA, 1989	
	AT_n	Averaging time - noncancer	days	2,190	EPA, 1989	2,190	EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	See Table 3-2	See Table 3-2	See Table 3-2	See Table 3-2	
	SA_1	Skin surface area (May to Sep)	cm^2/day	2,900	EPA, 1997	2,900	EPA, 1997	Chronic daily intake (CDI)(mg/kg-day) =
	SA_2	Skin surface area (Apr and Oct)	cm^2/day	1,340	EPA, 1997	1,340	EPA, 1997	
	AF_1	Weighted adherence factor (May to Sep)	mg/cm^2	0.24	Kissel et al., 1998	0.24	Kissel et al., 1998	$[CS \times CF \times ABS_d \times EF \times ED / (BW \times AT)] \times$
	AF_2	Weighted adherence factor (Apr and Oct)	mg/cm^2	0.23	Kissel et al., 1998	0.23	Kissel et al., 1998	$[(SA_1 \times AF_1 \times 5/7) + (SA_2 \times AF_2 \times 2/7)]$
	EF	Exposure frequency	days/year	120	[2]	60	[2]	
	ED	Exposure duration	years	6	EPA, 1991	6	EPA, 1991	
	CF	Conversion factor	kg/mg	1.00E-06		1.00E-06		
	ABS_d	Dermal absorption factor	unitless	Chem-specific	Various - see text	Chem-specific	Various - see text	
	BW	Body weight	kg	15	EPA, 1989	15	EPA, 1989	
	AT_c	Averaging time - cancer	days	25,550	EPA, 1989	25,550	EPA, 1989	
	AT_n	Averaging time - noncancer	days	2,190	EPA, 1989	2,190	EPA, 1989	

[1] A mean value for children aged 1-6 years may be closer to 100 mg/day (p. 4-20, EPA, 1997)

[2] Professional judgement

EPA, 1989 Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual, Part A Interim Final, OERR, EPA/540/1-89/002.

EPA, 1997 Exposure Factors Handbook. Volume I of III - General Factors EPA/600/P-25/002Fa. August 1997.

EPA, 1991 Risk Assessment Guidance For Superfund, Vol 1. Human Health Evaluation Manual, - Supplemental Guidance. Standard Default Exposure Factors, Interim Final. OSWER Directive 9285.6-03

PTI 1993 PTI Environmental Services. Gastrointestinal Absorption of Selected Chemicals. Review of Evidence for Deriving Relative Absorption Factors. EPA contract No. 68-WO-0032 July 1993

Kissel et al. 1998. Investigation of Dermal Contact with Soil Using a Fluorescent Marker. J. Soil Contamination (Accepted)

TABLE 3-4

RAGS PART D TABLE 4.1B

VALUES USED FOR DAILY INTAKE CALCULATIONS

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil
Exposure Point: Soil - Schoolyard
Receptor Population: Child
Receptor Age: 7-13 years

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	See Table 3-2	See Table 3-2	See Table 3-2	See Table 3-2	
	IRS	Ingestion rate of soil	mg/day	100	EPA, 1991	50 [1]	EPA, 1997	Chronic daily intake (CDI)(mg/kg-day) =
	FI	Fraction ingested	unitless	0.5	[2]	0.25	[2]	
	EF	Exposure frequency	days/year	150	[2]	75	[2]	CS x IRS x CF x FI x ABS_o x EF x ED
	ED	Exposure duration	years	6	EPA, 1991	6	EPA, 1991	x 1/BW x 1/AT
	CF	Conversion factor	kg/mg	1.00E-06		1.00E-06		
	ABS_o	Gastrointestinal absorption factor	unitless	Chem-specific	Various - see text	Chem-specific	Various - see text	
	BW	Body weight	kg	35	EPA, 1997	35	EPA, 1997	
	AT_c	Averaging time - cancer	days	25,550	EPA, 1989	25,550	EPA, 1989	
	AT_n	Averaging time - noncancer	days	2,190	EPA, 1989	2,190	EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	See Table 3-2	See Table 3-2	See Table 3-2	See Table 3-2	
	SA_1	Exposed skin surface area (May to Sep)	cm^2/day	4,620	EPA, 1997	4,620	EPA, 1997	Chronic daily intake (CDI)(mg/kg-day) =
	SA_2	Exposed skin surface area (Apr and Oct)	cm^2/day	1,790	EPA, 1997	1,790	EPA, 1997	
	AF_1	Weighted adherence factor (May to Sep)	mg/cm^2	0.26	EPA, 1997	0.26	Kissel et al., 1998	[CS x CF x ABS_d x EF x ED / (BW x AT)] x
	AF_2	Weighted adherence factor (Apr and Oct)	mg/cm^2	0.26	Kissel et al., 1998	0.26	Kissel et al., 1998	[(SA_1 x AF_1 x 5/7) + (SA_2 x AF_2 x 2/7)]
	EF	Exposure frequency	days/year	150	[2]	75	[2]	
	ED	Exposure duration	years	6	EPA, 1991	6	EPA, 1991	
	CF	Conversion factor	kg/mg	1.00E-06		1.00E-06		
	ABS_d	Dermal absorption factor	unitless	Chem-specific	Various - see text	Chem-specific	Various - see text	
	BW	Body weight	kg	35	EPA, 1997	35	EPA, 1997	
	AT_c	Averaging time - cancer	days	25,550	EPA, 1989	25,550	EPA, 1989	
	AT_n	Averaging time - noncancer	days	2,190	EPA, 1989	2,190	EPA, 1989	

[1] A mean soil ingestion rate in adults may be 50 mg/day (p. 4-21, EPA, 1997)

[2] Professional judgement

EPA. 1989. Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual, Part A, Interim Final, OERR, EPA/540/1-89/002.

EPA, 1997: Exposure Factors Handbook. Volume I of III - General Factors. EPA/600/P-25/002Fa. August 1997.

EPA. 1991: Risk Assessment Guidance For Superfund, Vol. 1: Human Health Evaluation Manual. - Supplemental Guidance. Standard Default Exposure Factors, Interim Final, OSWER Directive 9285.6-03

PTI. 1993. PTI Environmental Services. Gastrointestinal Absorption of Selected Chemicals. Review of Evidence for Deriving Relative Absorption Factors. EPA Contract No. 68-WO-0032. July 1993.

Kissel et al. 1998. Investigation of Dermal Contact with Soil Using a Fluorescent Marker. J. Soil Contamination (Accepted)

TABLE 3-5

RAGS PART D TABLE 4.1C

VALUES USED FOR DAILY INTAKE CALCULATIONS

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface soil
Exposure Point: Soil - Schoolyard
Receptor Population: Groundskeeper
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	See Table 3-2	See Table 3-2	See Table 3-2	See Table 3-2	
	IRS	Ingestion rate of soil	mg/day	50	EPA, 1991	25	EPA, 1991	Chronic daily intake (CDI)(mg/kg-day) =
	FI	Fraction ingested	unitless	1	[1]	0.5	[1]	
	EF	Exposure frequency	days/year	30	[1]	30	[1]	CS x IRS x CF x FI x ABS_o x EF x ED
	ED	Exposure duration	years	25	EPA, 1991	25	EPA, 1991	x 1/BW x 1/AT
	CF	Conversion factor	kg/mg	1.00E-06		1.00E-06		
	ABS_o	Gastrointestinal absorption factor	unitless	Chem-specific	Various - see text	Chem-specific	Various - see text	
	BW	Body weight	kg	70	EPA, 1989	70	EPA, 1989	
	AT_c	Averaging time - cancer	days	25,550	EPA, 1989	25,550	EPA, 1989	
	AT_n	Averaging time - noncancer	days	9,125	EPA, 1989	9,125	EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	See Table 3-2	See Table 3-2	See Table 3-2	See Table 3-2	
	SA	Exposed skin surface area (Apr to Oct)	cm^2/day	3,300	EPA, 1997	3,300	EPA, 1997	Chronic daily intake (CDI)(mg/kg-day) =
	AF	Weighted adherence factor (Apr to Oct)	mg/cm^2	0.71	Kissel et al., 1998	0.71	Kissel et al., 1998	
	EF	Exposure frequency	days/year	30	[1]	30	[1]	[CS x CF x ABS_d x EF x ED x SA x AF /(BW x AT)]
	ED	Exposure duration	years	25	EPA, 1991	25	EPA, 1991	
	CF	Conversion factor	kg/mg	1.00E-06		1.00E-06		
	ABS_d	Dermal absorption factor	unitless	Chem-specific	Various - see text	Chem-specific	Various - see text	
	BW	Body weight	kg	70	EPA, 1989	70	EPA, 1989	
	AT_c	Averaging time - cancer	days	25,550	EPA, 1989	25,550	EPA, 1989	
	AT_n	Averaging time - noncancer	days	9125	EPA, 1989	9,125	EPA, 1989	

[1] Professional judgement

EPA, 1989: Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual, Part A, Interim Final, OERR, EPA/540/1-89/002

EPA, 1997: Exposure Factors Handbook. Volume I of III - General Factors. EPA/600/P-25/002Fa. August 1997

EPA, 1991: Risk Assessment Guidance For Superfund. Vol. 1: *Human Health Evaluation Manual. - Supplemental Guidance. Standard Default Exposure Factors. Interim Final*, OSWER Directive 9285.6-03

Kissel et al., 1998. Investigation of Dermal Contact with Soil Using a Fluorescent Marker. J. Soil Contamination (Accepted)

Table 3-6

Skin Surface Area (SA) for Child 1 to 6 Years Old, Allendale School, Pittsfield, MA

Body Part	Child, 1 to 6 Years Old		
	50th Percentile		
	Fraction[a] Total SA	Total SA[b] (m^2)	Exposed SA (cm^2)
Head	0.149	0.656	977
Hands	0.055	0.656	361
Forearms[c]	0.060	0.656	394
Lower legs[c]	0.099	0.656	649
Feet	0.069	0.656	453
SA_1[d]			2,900
SA_2[d]			1,340

[a] Mean fraction total SA child 1 to <6 obtained from Table C.3 (99-0123).

[b] Total SA for 1 to <6-year-old obtained from Table C.3 (99-0123).

[c] For a child, it was assumed that the same relationships existed between forearms to total arms SA and lower legs to total legs SA as described for adults in Table 6-5 (99-0007). The fraction of adult forearms to arms was estimated at 0.444 and the fraction of lower legs to legs as 0.40.

[d]Total SA was rounded off.

SA_1 = Surface area of all exposed body parts (May to September).
SA_2 = Surface area of head and hands (April and October).

Table 3-7

Skin Surface (SA) for Child 7 to 13 Years Old, Allendale School, Pittsfield, MA

Body Part	Child, 7 to 13 Years Old		
	50th Percentile		
	Fraction[a] Total SA	Total SA[b] (m^2)	Exposed SA (cm^2)
Head	0.104	1.13	1,176
Hands	0.053	1.13	606
Forearms[c]	0.059	1.13	664
Lower legs[c]	0.119	1.13	1,343
Feet	0.073	1.13	828
SA_1[d]			4,620
SA_2[d]			1,790

[a] Mean fraction total SA child 7 to <13 obtained from Table C.3 (99-0123).

[b] Total SA determined by averaging 50th percentile SA by body part for males/females aged 7 to <13 from Table C.3 (99-0123).

[c] For a child, it was assumed that the same relationships existed between forearms to total arms SA and lower legs to total legs SA as described for adults in Table 6-5 (99-0007). The fraction of adult forearms to arms was estimated at 0.444 and the fraction of lower legs to legs as 0.40.

[d]Total SA was rounded off.

SA_1 = Surface area of all exposed body parts (May to September).
SA_2 = Surface area of head and hands (April and October).

Table 3-8

Skin Surface Area (SA) for Groundskeeper and Adult Resident, Allendale School, Pittsfield, MA

Body Part	Exposed Adult SA[a] 50th Percentile (cm^2)
Head	1,205
Hands	904
Forearms	1,166
Lower legs	2,370
SA—Groundskeeper[b,c]	3,300
SA_1—Adult resident[c,d]	5,700
SA_2—Resident[c,e]	2,100

[a]Data are the average of the 50th percentile SAs of the male and female and were obtained from Tables 6-2 and 6-3 (99-0007).

[b]Surface area of head, forearms, and hands (from April to October).

[c]Total surface area values are rounded off.

[d]Surface area of head, forearms, hands, and lower legs (May to September).

[e]Surface area of head and hands (April and October).

Table 3-9

Body-Part, Activity-Specific Adherence Factors (AF) for All Receptors[a], Allendale School, Pittsfield, MA

Receptor	Body-Part-Specific AF Value (mg/cm^2)				
	Face[b]	Hands	Forearms	Lower Legs	Feet
Child 1 to <6	0.022	0.413	0.135	0.329	NAF
Child 7 to <13	0.022	0.413	0.135	0.329	NAF
Groundskeeper	0.422	0.778	0.745	NA	NA
Adult resident[c]	0.053	0.19	0.052	0.041	NAF

[a] Data taken from Table C.4 (99-0123).

[b] As discussed in Subsection 3.5.1.6, body-part-specific AF values were not available for the head or feet of the receptors. The AF value for the face was used in concert with the surface area of the face (one-third of the head surface area). For the purposes of the calculations, feet were not included.

[c] For the adult resident, AF values for the gardener were used as presented in Table C.4 (99-0123).

NA = Not applicable.

NAF = No adherence factor value available.

Table 3-10

High-End Surface-Area-Weighted Adherence Factors (AF) for All Receptors, Allendale School, Pittsfield, MA

Receptor	AF_1 (mg/cm^2)	AF_2 (mg/cm^2)	AF (mg/cm^2)
	May to September	April and October	April to October
Child 1 to <6[a]	0.24	0.23	NA
Child 7 to <13[a]	0.26	0.26	NA
Groundskeeper[b]	NA	NA	0.71
Adult resident[c]	0.07	0.15	NA

[a] Exposed surface area equivalent to head, hands, forearms, lower legs, and feet for the months of May to September. For April and October, the exposed surface area is equivalent to head and hands.

[b] Exposed surface area equivalent to face, hands, and forearms from April through October.

AF_1 = Adherence factor based on exposure to face, hands, forearms, and lower legs.

AF_2 = Adherence factor based on exposure to face and hands.

AF = Adherence factor based on exposure to face, forearms, and hands.

NA = Not applicable.

Table 3-11

Recommended Dermal Absorption Factors from Soil, Allendale School, Pittsfield, MA

Chemical	Dermal Absorption Factor
Dioxins/Furans	
2,3,7,8-TCDD (<10% organic soil)	0.03
Polychlorinated Biphenyls	
Total PCBs (Aroclors-1254 and -1260)	0.14
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	0.13
Benzo(a)pyrene	0.13
Benzo(b)fluoranthene	0.13
Benzo(k)fluoranthene	0.13
Dibenz(a,h)anthracene	0.13
Indeno(1,2,3-cd)pyrene	0.13
Phenanthrene	0.13
Metals	
Arsenic	0.03
Thallium	0.01

Source: Table C.4; 99-0123.

Table 3-12

Plant Chemical Concentration Due to Root Uptake in Aboveground Plants (Pr_i), Allendale School, Pittsfield, MA

Organics $Pr_i = (CS)(Br_{agi})$

Inorganics $Pr_i = (CS)(Br_{ag(veg)i})$

Parameter	Definition	Value
Pr_i	Chemical concentration in i^{th} aboveground plant group due to root uptake, mg chemical/kg plant tissue, dry weight (DW).	This equation was incorporated into the RBC algorithm for soil based on aboveground vegetable ingestion in Section 5.
CS*	Soil chemical concentration, mg chemical/kg soil.	See “RBC” for aboveground vegetables in Section 5.
Br_{ag} $Br_{ag(veg)}$	Plant-soil bioconcentration factor for produce for the i^{th} plant group, [mg chemical/kg plant tissue, dry weight]/[mg chemical/kg soil].	See Tables 3-13, 3-14, and 3-19.

* “CS” will become the risk-based soil concentration defined in Section 5. The term “Br_{ag}” has been substituted in the aboveground vegetable risk-based soil algorithm.

Table 3-13

Plant/Soil Uptake Factor for Organic Chemicals for Aboveground Plants (Br_{ag}), Allendale School, Pittsfield, MA

$$\text{Log } Br_{agi} = 1.588 - 0.578 \text{ Log } K_{ow}$$

Parameter	Definition	Value
Br_{ag}	Plant/soil uptake factor for organic chemicals for aboveground plants, [mg chemical/kg plant tissue, dry weight]/[mg chemical/kg soil].	Calculated (see Table 3-19).
K_{ow}	Octanol-water partition coefficient, unitless.	Chemical-specific (see Table 3-19).

Source: 99-0127

Table 3-14

Plant/Soil Uptake Factor for Inorganic Chemicals for Aboveground Plants ($Br_{ag\ (veg)}$), Allendale School, Pittsfield, MA

Arsenic $Br_{ag(veg)}$ = 6.33E-03 Other inorganic COPCs $Br_{ag(veg)}$ = 0.75 * RGV + 0.25 * VGV		
Parameter	**Definition**	**Value**
$Br_{ag(veg)}$	Plant-soil bioconcentration factors for aboveground produce, [mg chemical/kg plant tissue, dry weight]/[mg chemical/kg soil].	Calculated
RGV	Reproductive (nonvegetative) growth value, [mg chemical/kg plant, dry weight]/[mg chemical/kg soil].	Thallium = 4E-4
VGV	Vegetative growth value, [mg chemical/kg plant, dry weight]/[mg chemical/kg soil].	Thallium = 4E-3

Source: 99-0127

Table 3-15

Plant Chemical Concentration Due to Root Uptake in Root Vegetables (Pr_{bg})[a], Allendale School, Pittsfield, MA

Pr_{bg} = (CS) ($Br_{root\ veg}$) (VG_{bg})		
Parameter	**Definition**	**Value**
Pr_{bg}	Chemical concentration in belowground plant group (i.e., root vegetables) due to root uptake, mg chemical/kg plant tissue, dry weight.	This equation was incorporated into the RBC algorithm for soil based on belowground vegetable ingestion in Section 5.
CS[b]	Soil chemical concentration, mg chemical/kg soil.	See “RBC” for belowground vegetables in Section 5.
VG_{bg}	Empirical correction factor, unitless.	0.01 for chemicals with a log K_{ow} >4. 1.0 for chemicals with a log K_{ow} >4.[a]
$Br_{root\ veg}$	Plant-soil bioconcentration factor in root vegetables, kg soil/kg plant tissue, dry weight.	See Table 3-19.

[a] 99-0127.

[b] “CS” will become the risk-based soil concentration defined in Section 5 for belowground vegetables. The term $Br_{root\ veg}$ has been substituted in the belowground risk-based soil algorithm.

Table 3-16

Plant-Soil Bioconcentration Factors for Organics in Root Vegetables ($Br_{root\ veg}$), Allendale School, Pittsfield, MA

$$Br_{root\ veg} = \frac{RCF}{Kd_s * (1 - F_w)}$$

Parameter	Definition	Value
$Br_{root\ veg}$	Plant-soil bioconcentration factor in root vegetables, kg soil/kg plant tissue, dry weight.	Calculated (see Table 3-19)
RCF	Root concentration factor, L water/ kg plant tissue, wet weight.	Chemical-specific (see Table 3-19)
Kd_s	Soil/water partition coefficient, L water/kg soil.	Chemical-specific (see Table 3-19)
F_w	Water fraction in root vegetables.	0.87*

Source: 99-0127

Table 3-17

Plant-Soil Bioconcentration Factors for Inorganics in Root Vegetables ($Br_{root\ veg}$), Allendale School, Pittsfield, MA

Arsenic $Br_{root\ veg}$ = 8.00E-03 Other inorganic COPCs $Br_{root\ veg}$ = RGV		
Parameter	**Definition**	**Value**
$Br_{root\ veg}$	Plant-soil bioaccumulation factor in root vegetables, kg soil/kg plant tissue, dry weight.	Calculated (see Table 3-19)
RGV	Reproductive (nonvegetative) growth value [mg chemical/kg plant, dry weight]/[mg chemical/kg soil].	Thallium = 4E-4

Source: 99-0127

Table 3-18

Root Concentration Factor (RCF) for Organic Chemicals for Root Vegetables, Allendale School, Pittsfield, MA

Log (RCF – 0.82) = 0.77 Log K_{ow} – 1.52		
Parameter	**Definition**	**Value**
RCF	Root concentration factor for organic chemicals for belowground plants, L soil water/kg plant tissue, wet weight.	Calculated (see Table 3-19)
K_{ow}	Octanol-water partition coefficient, unitless.	Chemical-specific (see Table 3-19)

Source: 99-0127

Table 3-19

Physical and Chemical Values Used to Estimate
Aboveground and Belowground Vegetable Concentrations
Allendale School
Pittsfield, MA

Chemical	Log Kow	Koc[a]	RCF[b] (L water/kg plant tissue WW)	Kd_s[c] (L water/kg soil)	Br_{ag} and $Br_{ag\ (veg)}$[d] [mg chemical/kg plant tissue DW]/ [mg chemical/kg soil]	$Br_{root\ veg}$[e] (kg soil/kg plant tissue DW)
Dioxins/Furans						
2,3,7,8-TCDD	6.64E+00	3.84E+06	3.92E+03	3.84E+04	5.62E-03	7.84E-01
1,2,3,7,8-PCDD	6.64E+00	3.84E+06	3.92E+03	3.84E+04	5.62E-03	7.84E-01
1,2,3,4,7,8-HxCDD	7.79E+00	5.43E+07	3.01E+04	5.43E+05	1.22E-03	4.26E-01
1,2,3,7,8,9-HxCDD	7.30E+00	1.76E+07	1.26E+04	1.76E+05	2.34E-03	5.53E-01
1,2,3,6,7,8-HxCDD	7.30E+00	1.76E+07	1.26E+04	1.76E+05	2.34E-03	5.53E-01
1,2,3,4,6,7,8-HpCDD	8.20E+00	1.39E+08	6.22E+04	1.39E+06	7.05E-04	3.43E-01
OCDD	7.59E+00	3.42E+07	2.11E+04	3.42E+05	1.59E-03	4.74E-01
2,3,7,8-TCDF	6.53E+00	2.98E+06	3.22E+03	2.98E+04	6.51E-03	8.31E-01
2,3,4,7,8-PCDF	6.92E+00	7.32E+06	6.43E+03	7.32E+04	3.87E-03	6.76E-01
1,2,3,7,8-PCDF	6.79E+00	5.43E+06	5.11E+03	5.43E+04	4.61E-03	7.24E-01
1,2,3,4,7,8-HxCDF[f]	7.30E+00	1.76E+07	1.26E+04	1.76E+05	2.34E-03	5.53E-01
1,2,3,6,7,8-HxCDF[f]	7.30E+00	1.76E+07	1.26E+04	1.76E+05	2.34E-03	5.53E-01
1,2,3,7,8,9-HxCDF[f]	7.30E+00	1.76E+07	1.26E+04	1.76E+05	2.34E-03	5.53E-01
2,3,4,6,7,8-HxCDF[f]	7.30E+00	1.76E+07	1.26E+04	1.76E+05	2.34E-03	5.53E-01
1,2,3,4,6,7,8-HpCDF	7.92E+00	7.32E+07	3.79E+04	7.32E+05	1.02E-03	3.98E-01
1,2,3,4,7,8,9-HpCDF	7.90E+00	6.99E+07	3.66E+04	6.99E+05	1.05E-03	4.02E-01
OCDF	8.78E+00	5.30E+08	1.74E+05	5.30E+06	3.26E-04	2.52E-01
Pesticides						
Dieldrin	4.09E+00	1.08E+04	4.34E+01	1.08E+02	1.67E-01	3.08E+00
Polychlorinated Biphenyls						
Total PCBs	6.30E+00	1.76E+06	2.14E+03	1.76E+04	8.84E-03	9.39E-01
Polynuclear Aromatic Hydrocarbons						
Benz(a)anthracene	5.61E+00	3.58E+05	6.31E+02	3.58E+03	2.22E-02	1.35E+00
Benzo(a)pyrene	6.11E+00	1.13E+06	1.53E+03	1.13E+04	1.14E-02	1.04E+00
Benzo(b)fluoranthene	6.12E+00	1.17E+06	1.57E+03	1.17E+04	1.12E-02	1.03E+00
Benzo(k)fluoranthene	6.84E+00	6.09E+06	5.58E+03	6.09E+04	4.31E-03	7.05E-01
Dibenz(a,h)anthracene	6.50E+00	2.78E+06	3.06E+03	2.78E+04	6.78E-03	8.45E-01
Indeno(1,2,3-cd)pyrene	6.58E+00	3.38E+06	3.55E+03	3.38E+04	6.06E-03	8.08E-01
Phenanthrene	4.57E+00	3.27E+04	1.01E+02	3.27E+02	8.84E-02	2.37E+00

Table 3-19

**Physical and Chemical Values Used to Estimate
Aboveground and Belowground Vegetable Concentrations
Allendale School
Pittsfield, MA**

Chemical	Log Kow	Koc[a]	RCF[b] (L water/kg plant tissue WW)	Kd_s[c] (L water/kg soil)	Br_{ag} and $Br_{ag\ (veg)}$[d] [mg chemical/kg plant tissue DW]/ [mg chemical/kg soil]	$Br_{root\ veg}$[e] (kg soil/kg plant tissue DW)
Metals						
Arsenic	NA	NA	NA	NA	6.33E-03	8.00E-03
Thallium	NA	NA	NA	NA	1.30E-03	4.00E-04

NA = Not applicable.

[a] Koc = 0.88*10^$^{Log\ Kow}$-0.114

[b] Refer to Table 3-18 for RCF calculation.

[c] Kd_s = Soil-water partition coefficient; Kd_s for each chemical is calculated by multiplying the organic carbon partition coefficient (K_{oc}) and the fraction of organic carbon in soil (f_{oc}).
Foc was assumed to be 0.01 (99-0080).

[d] Refer to Tables 3-13 and 3-14 for Br_{ag} and $Br_{ag\ (veg)}$ calculation.

[e] Refer to Tables 3-16 and 3-17 for $Br_{root\ veg}$ calculation.

[f] HxCDF Log Kow values were not available, but since the Log Kow of the other like-numbered homologs of dioxins and furans were similar, average Log Kow values for HxCDDs was used.

Table 3-20

Ingestion Rates (IR) for Aboveground and Belowground Vegetables, Allendale School, Pittsfield, MA

Vegetable	Child (1-5 years) (g-dry weight/day)	Adult (20-44 years) (g-dry weight/day)	Adult (45-70 years) (g-dry weight/day)
Aboveground			
Leafy vegetables	0.49	2.16	2.65
Legumes	4.56	9.81	9.50
Garden fruits	1.67	4.75	4.86
Aboveground IR	6.72	16.7	17.0
Belowground			
Root vegetables	0.67	1.77	1.64
Belowground IR	0.67	1.77	1.64

Source: Modified from EPA (99-0007), Table 9-23.

4. TOXICITY ASSESSMENT

4.1 INTRODUCTION

The purpose of the toxicity assessment is to identify and characterize the toxicity values used to estimate risk or RBCs. Chemicals that have evidence of carcinogenicity are referred to as carcinogens. Excessive exposure to all chemicals potentially can produce adverse noncancer health effects, while the potential for causing cancer is limited to carcinogens; therefore, noncancer toxicity values can be developed for most chemicals, while cancer toxicity values can be developed only for carcinogens. The noncancer toxicity values are termed reference doses (RfDs), and the cancer toxicity values are termed cancer slope factors (CSFs).

EPA databases and documents were the preferred source of toxicity values. Of the EPA sources, values entered into the *Integrated Risk Information System* (IRIS) (99-0011) were preferentially used because these values have undergone extensive EPA review. If a toxicity value was not present on IRIS, EPA's *Health Effects Assessment Summary Tables* (HEAST) (99-0006) was consulted for an appropriate value. If a toxicity value could not be obtained or derived for a chemical by the procedures described previously, the potential carcinogenic risks or noncancer health effects posed by that chemical through the applicable exposure routes were not evaluated quantitatively.

4.2 CARCINOGENIC EFFECTS

The *Proposed Guidelines for Carcinogen Risk Assessment* (99-0106) proposes a different scheme for weighing evidence of carcinogenicity than has been traditionally used in risk assessments (99-0128). Previous risk assessment guidance assigned a weight-of-evidence classification to each evaluated chemical as follows: Group A (human carcinogen), Group B (probable human carcinogen), Group C (possible human carcinogen), Group D (not classifiable), or Group E (no evidence of carcinogenicity). PCBs are classified as B1 carcinogens (limited human data and adequate animal data). The proposed guidelines recommend replacing these classifications with descriptions of "known likely," "cannot be determined," or "not likely."

However, because most chemicals are still classified by the old system in the IRIS database, the older system has been retained in this risk assessment. Table 4-1 presents these classifications.

In the development of CSFs, it is assumed that the risk of cancer is related to dose. The CSFs are usually developed from animal studies but are sometimes based on human epidemiological evidence in which the subjects have been exposed to relatively high doses. The approach in developing CSFs assumes that the results of these studies using high doses can be extrapolated to low dose exposures (typical of environmental exposures), with some risk of cancer remaining until the dose reaches zero. This is a no-threshold approach that assumes even a small number of molecules of the chemical (perhaps even a single molecule) causes changes in a cell that could eventually lead to cancer. EPA usually derives CSFs using a linearized, multistage (LMS) model with the resultant slope factor reflecting the 95% upperbound confidence limit of the cancer potency of the chemical. The LMS model is believed to be highly protective (i.e., it is likely to over-predict the true cancer potency of a chemical). The CSFs are typically expressed as an inverse dose (i.e., risk per milligrams of chemical per kilogram of body weight per day, $[\text{mg/kg-day}]^{-1}$).

Although EPA has developed oral slope factors for a number of carcinogens, dermal slope factors have not been derived for any chemicals. EPA has published guidance, however, for calculating dermal slope factors for chemicals for which an oral slope factor is available. In accordance with EPA guidance (99-0002), a dermal slope factor was derived for PCBs by dividing its oral slope factor by an appropriate absorption factor. This results in the conversion of the oral slope factor, which represents the carcinogenic potency of the administered dose, to a dermal slope factor, which represents the carcinogenic potency of the absorbed dose. The conversion is necessary to be able to calculate risk through the dermal pathway. The dermal slope factors must be consistent with the dermal doses, which are calculated in the exposure assessment as absorbed doses. The oral and inhalation doses, by contrast, are calculated as administered doses, and are evaluated using CSFs based on the administered dose.

Table 4-2 presents the oral and dermal CSFs for the COPCs used for the risk assessment at the Allendale School property in the RAGS Part D format (99-0010). The CSF used for PCBs was 2 $(\text{mg/kg-day})^{-1}$ and was obtained from the *Integrated Risk Information System* (IRIS; 99-0011).

EPA Region I recommended that a 100% gastrointestinal (GI) absorption factor for PCBs be used (99-0096). A 100% gastrointestinal absorption factor was used for all the other COPCs as recommended by EPA Region I. Dermal CSFs were derived by dividing the oral CSF by the selected gastrointestinal absorption value (EPA, 1989a). Therefore, the oral CSF was the same as the dermal CSF.

4.2.1 Toxicity Equivalence Factors for Dioxins and Furans

For the polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) (i.e., dioxins), EPA has developed toxicity equivalence factors (TEFs) (99-0092). The TEFs relate the carcinogenic potency of the chemicals in these groups to the carcinogenic potency of a reference chemical for which a CSF has been derived. The reference compound is 2,3,7,8-TCDD. Table 4-3 presents these TEF values.

For the forward risk assessment (current use scenario), the soil exposure concentrations for each dioxin congener of concern were adjusted by a TEF, thereby expressing the concentrations as 2,3,7,8-TCDD toxic equivalents (TEQs). The congener-specific 2,3,7,8-TCDD TEQs were summed to yield a total 2,3,7,8-TCDD TEQ. This value was used as the exposure concentration in the incidental ingestion and dermal contact algorithms. The CSF for 2,3,7,8-TCDD was multiplied by the 2,3,7,8-TCDD TEQ dose to calculate the risk posed by each congener.

4.2.2 Relative Potency Factors for Polycyclic Aromatic Hydrocarbons (PAHs)

A number of polycyclic aromatic hydrocarbons (PAHs), including benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene, are considered by EPA to be carcinogenic. EPA has derived an oral slope factor of 7.3 $(mg/kg\text{-}day)^{-1}$ for benzo(a)pyrene (99-0011); however, the remaining six PAHs listed have not been assigned CSFs because of the limitations of the cancer studies performed on these chemicals.

Until chemical-specific oral CSFs are developed for each of the other six carcinogenic PAHs, EPA (99-0082) recommends an interim relative potency approach to evaluating oral carcinogenic potential. The approach, which is based on the results of a group of carcinogenicity studies in animals, evaluates the carcinogenic potential of each of the six carcinogenic PAHs relative to the carcinogenic potential of benzo(a)pyrene. Benzo(a)pyrene has been assigned a relative potency of 1.0, which is equivalent to an oral slope factor of 7.3 $(mg/kg\text{-}day)^{-1}$, and the other carcinogenic PAHs have been assigned relative potencies between 0.1 and 1.0, as shown in Table 4-4.

Each of the PAHs considered in this assessment is evaluated separately with regard to quantifying human doses. The relative potency factors are applied in the toxicity assessment to calculate provisional CSFs for each of the evaluated carcinogenic PAHs. Provisional slope factors were derived for each of these chemicals by multiplying the CSF for benzo(a)pyrene by the relative potency factor developed for the chemical.

4.3 NONCANCER HEALTH EFFECTS

The toxicity values used to estimate the potential for adverse noncancer health effects are termed reference doses (RfDs). A chronic RfD is defined as an estimate (with uncertainty spanning an order of magnitude or greater) of a daily exposure level for the human population, including sensitive subpopulations, i.e., likely to be without appreciable risk of deleterious effects during a lifetime. As the RfD decreases in value, the toxicity of the chemical increases. RfDs are expressed as a dose in units of milligrams per kilogram per day (mg/kg-day). Unlike the approach used in deriving CSFs, it is assumed when deriving RfDs that a threshold dose exists below which there is no potential for toxicity (99-0002).

EPA has not derived dermal RfDs for any chemical, but has provided guidance for deriving those values for chemicals for which an oral RfD is available (99-0002). The gastrointestinal absorption factor for each chemical was selected based on recommendations from PTI (99-0096). Most oral RfDs are based on animal studies where the chemical is expressed as an “administered” dose. Because dermal exposure doses are expressed as an “absorbed” dose, the oral RfD must be expressed as an absorbed dose as well. This adjustment is made by determining how much of the drug is absorbed systemically (i.e., gastrointestinal absorption factor) following oral dosing and multiplying this fraction by the oral RfDs.

Table 4-5 presents the oral (administered) and dermal (orally absorbed) RfDs developed for the COPCs at the Allendale School property in the RAGS Part D format. Only chronic RfDs were used. The oral RfD for Aroclor-1254 (IRIS; 99-0011) was used to represent the oral carcinogenicity of all Aroclor compounds detected at the Allendale School property. Because the oral RfD for naphthalene was used to screen the noncarcinogenic PAHs, this value was used to represent the oral RfD for phenanthrene.

4.4 TOXICITY PROFILES

4.4.1 Dieldrin (99-0129)

Dieldrin is an insecticide used to control corn and citrus pests, and belongs to a class of pesticide compounds called the cyclodienes. Cyclodienes are chlorinated cyclic hydrocarbons of which aldrin, endosulfan, heptachlor, and chlordane are also members. Dieldrin is extremely persistent in the environment because of its low volatility and low solubility in water. Because of this, in 1974 EPA prohibited its manufacture. Due to its long persistence, it is still found in the environment.

Acute toxicity associated with dieldrin exposure may consist of (depending on the dose) dizziness, headache, nausea, vomiting, motor hyperexcitability, hyperreflexia, myoclonic jerking, general malaise, convulsive seizures, and generalized convulsions. Signs and symptoms of low dose chronic exposure may consist of manifestations of the acute effects as well as skin rashes, ataxia (unsteady gait), slurred speech, visual difficulties, nervousness, irritability, muscle weakness and tremors of the hands, and impairment of spermatogenesis.

4.4.2 Polycyclic Aromatic Hydrocarbons (PAHs) (99-0132, 99-0082)

PAHs represent a group of chemicals that are formed during the incomplete burning of coal, oil, gas, wood, garbage, or other organic substances, such as tobacco and charbroiled meat. They also occur naturally from forest fires and volcanic eruptions. There are more than 100 different PAHs. PAHs generally occur as complex mixtures (e.g., as part of combustion products such as soot), not as single compounds. PAHs occur in the environment not only naturally, but also as a result of commercial processes (e.g., coal tar creosote production, use, and disposal). They can also be found in substances such as crude oil, coal, tar pitch, creosote, and roofing tar. They are found throughout the environment in the air, water, and soil. In the air, they can occur either attached to dust particles, or as solids in soil or sediment.

These compounds usually occur together in the environment and may have similar toxicological effects. People may be exposed to PAHs in the home, workplace, and environment. Nonoccupational PAH exposure occurs through the inhalation of tobacco smoke and smoke from burning wood, and from the ingestion of contaminated water, smoked meats, contaminated grains and vegetables, and processed foods. The greatest potential exposure for most people results from either working or living in areas surrounding coal-tar production plants, coking plants, asphalt production facilities, smokehouses, power and heat generating stations, coal-tarring activities, and municipal trash incinerators.

The greatest health concern with low-level, long-term exposure to PAHs is their potential for carcinogenicity. The PAHs most commonly studied toxicologically are acenaphthene, acenaphthylene, anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(e)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(j)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, phenanthrene, and pyrene.

Studies regarding human exposure to PAHs are limited; most of the information is provided from occupationally exposed coal and coke workers. Coal tar and its by-products have been associated with bronchogenic cancer, buccal-pharyngeal cancer, cancer of the lip, gastrointestinal cancers, bladder cancer, scrotal cancer, and skin tumors.

Not all of these PAHs are believed to be carcinogenic. EPA has determined that acenaphthylene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene, phenanthrene, and pyrene are not classifiable as to human carcinogenicity. The International Agency for Research on Cancer (IARC) has determined that benz(a)anthracene and benzo(a)pyrene are probably carcinogenic to humans; benzo(b)fluoranthene, benzo(j)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3-c,d)pyrene are possibly carcinogenic in humans; and anthracene, benzo(g,h,i)perylene, benzo(e)pyrene, chrysene, fluoranthene, fluorene, phenanthrene, and pyrene are not classifiable as to their carcinogenicity in humans. The following seven PAHs have been classified by EPA as

B2 carcinogens: benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene. The B2 weight-of-evidence classification as a probable human carcinogen is based on sufficient evidence of carcinogenicity in multiple animal studies in several species and by several routes of administration, but inadequate evidence in humans.

The PAH most extensively studied for carcinogenicity is benzo(a)pyrene (BaP). The quantitative oral carcinogenic potency of benzo(a)pyrene is based on and supported by several animal studies (several species of rodents and primates) in which benzo(a)pyrene has been shown to produce tumors both at the site of application as well as at distant sites. Additionally, carcinogenesis has been demonstrated in studies using a variety of routes of administration (e.g., gavage, dietary feeding; inhalation; dermal application; subcutaneous, intravenous, and intraperitoneal injection; intratracheal instillation; and implantation in the stomach, lung, renal parenchyma, and brain). The primary tumors reported are of the forestomach, esophagus, and larynx.

Although human data are inadequate to assess quantitatively the carcinogenic potency of benzo(a)pyrene, sufficient human data are available to indicate that mixtures of PAHs that include benzo(a)pyrene are carcinogenic when inhaled or contacted by the skin. Benzo(a)pyrene is also positive in a number of prokaryotic and mammalian genotoxicity assays. A good correlation exists between the cancer-causing potential of PAHs and their ability to cause genetic toxicity.

It is difficult to ascertain quantitatively the systemic toxicity or carcinogenicity of the component PAHs in mixtures because of the potential interactions that could occur and the presence of other toxic substances in the mixtures. However, most of the available information on the health effects of PAHs in humans can be inferred qualitatively from studies that reported the effects of exposure to complex mixtures that contain PAHs. Several epidemiological studies have shown increased mortality due to lung cancer in humans exposed to coke oven emissions, roofing-tar emissions, and cigarette smoke. Each of these mixtures contains benzo(a)pyrene, dibenz(a,h)anthracene, chrysene, benz(a)anthracene, and benzo(b)fluoranthene, as well as other potentially carcinogenic PAHs, tumor promoters, initiators, and co-carcinogens such as nitrosamines, coal tar pitch, and creosote. Thus, it is impossible to evaluate the contribution of any individual PAH to the total carcinogenicity of these mixtures in humans because of the complexity of the mixtures and the presence of other carcinogens.

In the past EPA has recommended that quantitative risk estimates for mixtures of PAHs should assume that all carcinogenic PAHs are equipotent to benzo(a)pyrene, and that the carcinogenic effects of the mixture can be estimated by the sum of the effects of each individual PAH (99-0082). It has been recognized that some PAHs are less carcinogenic in animal studies than is benzo(a)pyrene, so that application of this policy could result in an over-estimation of the effect of those PAHs. On the other hand, PAH mixtures are likely to contain carcinogenic PAHs that are not considered indicator compounds and thus would not be measured. Some PAHs have also been shown to be more potent animal carcinogens than benzo(a)pyrene.

EPA has developed the order of estimated potency approach for evaluating the relationships among the various carcinogenic PAHs. A primary factor that has led to the development of the order of estimated potency approach has been the observation that a number of studies have consistently demonstrated that some PAHs are less potent than benzo(a)pyrene by several routes of administration (99-0082).

Reports of skin tumors among individuals exposed to mixtures containing PAHs lend some qualitative support to their potential for carcinogenicity in humans. The earliest of these is the report of scrotal cancer among chimney sweeps. More recently, skin cancer among those dermally exposed to shale oils has been reported. However, these reports provide only qualitative suggestions pertaining to the human carcinogenic potential of all of the 17 PAHs discussed in this profile, or at least the compounds found in chimneys and shale oils, such as benzo(a)pyrene, chrysene, dibenz(a,h)anthracene, benz(a)anthracene, and benzo(b)fluoranthene. Limitations in these reports include no quantification of exposure to individual PAHs and concurrent exposure to other putative carcinogens in the mixtures.

Cancer induction by PAHs and other chemicals, however, may have a synergistic relationship, implying that the carcinogenic qualities of PAHs may be augmented when present with other industrial by-products. Other studies have revealed that chronic exposure may also have noncancer effects including ocular photosensitivity and irritation, respiratory irritation, cough, bronchitis, dermatitis and hyperkeratosis, and leukoplakia. One study reported an increased incidence of melanosis of the colon and the rectum following chronic ingestion of anthracene-containing laxatives. Tissues with rapid cellular regeneration such as bone marrow, intestinal epithelium, lymphoid tissues, and some reproductive tissues may be more susceptible to PAH toxicity.

Certain subsections of the population may be more susceptible to PAH toxicity than others. These subsections include people with genetically inducible aryl hydrocarbon hydroxylase (AHH) activity, nutritional deficiencies, genetic diseases that influence the efficiency of DNA repair, immunodeficiency due to age or illness, and fetuses. Other susceptible populations to PAH toxicity include smokers, people who have experienced excessive sun exposure, people with liver or skin diseases, and women, especially of child-bearing age.

4.4.3 Polychlorinated Biphenyls (PCBs) (99-0017, 99-0031, 99-0094, 99-0098)

PCBs are synthetic halogenated aromatic hydrocarbons that were first made in 1881 and have been used since 1930. They were made by direct chlorination of biphenyl, resulting in a commercial product consisting of complex mixtures of chlorinated biphenyls. These commercial mixtures were manufactured under various tradenames such as Aroclors. Traditionally, PCBs have been environmentally measured as Aroclors (e.g., Aroclor-1254, Aroclor-1260). Recent advances in the understanding of PCB chemistry have allowed the measurement of individual congeners of PCBs. There are 209 known PCB congeners with various degrees of chlorination. Mounting evidence suggests that after PCB mixtures (i.e., Aroclors) are released into the environment, they undergo significant alterations as a result of media partitioning, transformation, and bioaccumulation over time. Environmental concentrations of individual congeners may differ substantially from those present in the original Aroclor mixture at various times after the initial PCB release. It is generally agreed among scientists that certain congeners of PCBs have more potential to be carcinogenic than others. Aroclor-1254 and Aroclor-1260, the two PCB mixtures present in soil samples at the Allendale School property, are mixtures of the higher chlorinated congeners.

Aroclors have been used for purposes such as heat transfer agents, lubricants, dielectric agents, flame retardants, plasticizers, and waterproofing materials. They were used mainly as insulating or cooling agents in electrical systems after 1971. Although the production and sale of these chemicals were discontinued in 1977, they are still present in transformers now in use and in those that may have been disposed of in the environment. Environmental contamination resulted from industrial discharges, leaks, and disposal by a variety of methods, including landfills, sewage treatment plants, and incineration.

In general, the environmental persistence of PCB congeners increases with increasing chlorine content because of lower volatility and biodegradation and higher sorption characteristics. Therefore, Aroclor mixtures that have congeners with higher chlorine contents (e.g., Aroclor-1260) will tend to be more persistent in media such as soils. The same properties that allow PCBs to bind strongly to soil and sediment particles also enable PCBs to bioaccumulate in organisms. Because PCBs are resistant to degradation, they are very persistent in organisms. PCBs are extremely stable compounds and thus, are slow to degrade under environmental conditions. They do not undergo oxidation, reduction, addition, elimination, or substitution reactions, except under extreme conditions. PCBs introduced into aquatic systems will adsorb to sediments. Low water solubility and high lipid (fat) solubility are the factors influencing the high affinity of PCBs for suspended solids, especially those high in organic content. Once they bind to the sediments, PCBs may remain there for many years. Thus, the release of PCBs from sediments poses a long-term pollution problem.

Major exposure routes to humans are through consumption of contaminated food and water, inhalation of contaminated air, swimming in polluted water, and handling of PCB-containing equipment or waste materials.

In terms of noncancer health in laboratory animals, Aroclor-1254 was more potent than Aroclor-1260 in producing liver effects such as cellular hypertrophy, lipid accumulation, adenofibrosis, and porphyria. Subchronic ingestion by rats also had reproductive effects, including reduced litter size and decreased offspring survival. Dermal application to rabbits resulted in loss of weight; hyperplasia; hyperkeratosis of epidermal and follicular epithelium; centrilobular liver cell degeneration; hydropic degeneration of renal convoluted tubules and renal tubular dilatation with cast formation; atrophy of the thymus; and lymphopenia. Chronic ingestion by female rats produced hepatocellular carcinomas and neoplastic nodules in the liver. Liver carcinomas, thymoma, and tumors of the skin, testes, and pituitary gland occurred in male rats following chronic ingestion.

EPA has classified all PCBs as Group B2 (probable human) carcinogens based on sufficient animal data but inadequate human data. Animal studies suggest that Aroclors-1254 and –1260 produce tumors in various laboratory species, primarily through oral ingestion. Recent evidence suggests that the chlorine content and/or three-dimensional structure of the PCB congener may result in differing exposure potentials and toxicities of individuals (99-0031). It has also been demonstrated in the last few years that some congeners may have dioxin-like activity. Therefore, measuring Aroclor concentrations in the environment may not be a true indicator of the quantity or type of specific PCB congeners present (i.e., because of partitioning, transformation, and bioaccumulation, different fractions of the original mixture are encountered through specific exposure pathways). A total of 13 PCB congeners have been assigned TEFs based on their potential to produce dioxin-like toxic effects.

4.4.4 2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) (99-0122)

2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) is one of 210 structurally related chemicals referred to as chlorinated dibenzo-p-dioxins (CDDs) and chlorinated dibenzofurans (CDFs). The various congeners have different degrees of chlorination (chlorine content). Collectively, they are sometimes called “dioxins.” The most widely studied of these compounds is 2,3,7,8-TCDD, which is considered the most toxic of all dioxins.

Dioxins are neither naturally occurring nor manufactured directly in industry. Rather, they are an impurity from the manufacture of herbicides and germicides, and from the incineration of municipal and industrial wastes. Thus, compounds derived from 2,4,5-trichlorophenol (TCP), such as the herbicide 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), will contain TCDD as a contaminant. The major sources of dioxin in the environment include application of 2,3,7,8-TCDD-contaminated herbicides, industrial discharges, and hazardous waste sites. Over the years there have been a number of stringent federal regulations that have aided in reducing environmental concentrations of dioxin. For example, Agent Orange was banned in 1970; hexachlorophene was banned in soaps and deodorants in 1972; and production of 2,4,5-T and Silvex was halted in the United States in 1979. Each of these products contains dioxin as a contaminant. Although these measures have helped reduce dioxin in the environment, contamination still persists from the past and is still occurring, mainly from burning or heating of chlorophenates and pyrolysis of PCBs contaminated with trichlorobenzenes.

People may be exposed to 2,3,7,8-TCDD by inhaling contaminated air, consuming contaminated food and milk, or directly contacting contaminated soil, vegetation, or industrial by-products. 2,3,7,8-TCDD is highly persistent in the environment as well as in human and animal tissues. Dioxins are environmentally and chemically stable, highly lipid-soluble, relatively insoluble in water, are concentrated in the fat tissue of organisms, and are not readily excreted. Microbial degradation of dioxin in soil is slow, and in one study was estimated to have a half-life in soils of 2.9 years.

Of the 210 dioxin congeners, 17 are currently believed to have carcinogenic activity, with 2,3,7,8-TCDD being the most potent carcinogen. Relative potency factors (TEFs) have been assigned to these 17 congeners such that the equivalent (toxic equivalent; TEQ) amount of 2,3,7,8-TCDD in an environmental sample can be estimated. The relative toxicities of the dioxin and furan congeners were determined from the ability of these compounds to stimulate the activity of a liver enzyme in animals called aryl hydrocarbon hydroxylase (AHH). Stimulation of the intracellular aryl hydrocarbon (Ah) receptor in the liver also is thought to correlate very highly with the biological activity of the dioxin-like compounds and to be predictive of the ability of 2,3,7,8-TCDD and dioxin-like compounds to cause cancer. EPA has classified 2,3,7,8-TCDD as a B2 carcinogen. Group B2 indicates that 2,3,7,8-TCDD is a probable human carcinogen based on sufficient animal data (i.e., rats, mice, and hamsters) but inadequate human data. Chronic oral studies with rats and mice have revealed an increase in tumors in the lungs, liver, hard palate, and nasal turbinate.

There is considerable scientific controversy surrounding the quantitative noncancer potency of dioxins. EPA has concluded that adequate evidence exists to suggest that exposure to 2,3,7,8-TCDD and related congeners results in a broad spectrum of noncancer health effects in animals, some of which may occur in humans. There is a considerable range of toxic doses among species. Guinea pigs, rats, and mice exposed to various doses of 2,3,7,8-TCDD have been reported to experience wasting syndrome, liver toxicity, immunotoxicity, gastrointestinal disorders, decreased fetal weight, or decreased longevity.

Toxic effects such as chloracne, immunotoxicity, hyperpigmentation, hyperkeratosis, hirsutism, hepatotoxicity, hypertriglyceridemia and hypercholesterolemia, aching muscles, weight loss, gastrointestinal disorders, and neurological disorders have all been observed in humans following ingestion of and dermal exposure to chemical mixtures containing 2,3,7,8-TCDD. However, it is not clear whether these results were due to exposure to 2,3,7,8-TCDD itself or to other chemicals in the mixture. It is felt that many of these effects are seen at background levels of exposure, with increasing severity of toxicity as the dioxin levels increase above typical background levels. It is well known that individual animal species vary in their sensitivity to different effects resulting from exposure to 2,3,7,8-TCDD. The available evidence indicates that humans are most likely in the middle of the range of sensitivity rather than at either extreme. To date, EPA has not verified an RfD for 2,3,7,8-TCDD.

4.4.5 Arsenic (99-0131)

Arsenic is a widely distributed natural element that occurs in air, water, and soil. Inorganic arsenic compounds are more toxic than organic arsenic compounds. Inorganic forms of arsenic occur naturally in many kinds of rock, especially in ores that contain copper or lead. Arsenic is used as a preservative for wood, and as an insecticide, herbicide, fungicide, and algaecide. Arsenic can enter the environment through the air as dust generated during smelting or through the burning of wastes. Most arsenic compounds can dissolve in water, and therefore, are found in lakes, rivers, or groundwater as a result of runoff from land. Once in lakes and streams, arsenic can also partition to sediment and thus expose the benthic environment.

Inorganic arsenic is well absorbed in the intestinal tract following ingestion. Once absorbed, trivalent arsenic (As^{+3}; arsenite) is partially oxidized to the pentavalent form (As^{+5}; arsenate). Arsenates are in turn partially reduced back to arsenites. Arsenites undergo enzymatic methylation in the liver to create additional forms of arsenic. Most arsenic is excreted in the urine as a mixture of trivalent and pentavalent species. Some arsenic may remain bound to tissues, depending on the rate and extent of methylation. In general, trivalent arsenic (As^{+3}) and inorganic species of arsenic are more toxic than pentavalent (As^{+5}) species of arsenic.

Acute exposure to arsenic has caused death due to heart and lung failure, but it can also be fatal following exposure to low, chronic doses. The primary mode of arsenic toxicity as As^{+3} is through the reaction with sulfhydryl groups in cellular proteins, which results in the inhibition of critical enzymes. Inorganic arsenic is toxic by the inhalation and oral routes. The greatest effect via inhalation is the increased risk of lung cancer. Orally, the effects most likely to be seen are gastrointestinal irritation, nerve and blood problems, and a group of skin diseases, including skin cancer. The main effect of direct dermal contact with inorganic arsenic is local irritation and dermatitis. Skin lesions are early signs of toxicity following chronic oral exposure to inorganic arsenic.

Following oral exposure, arsenic may be toxic to the cardiovascular system (thickening and vascular occlusion of blood vessels); gastrointestinal tract (intestinal irritation, diarrhea, cramping); blood-forming organs (decreased heme synthesis); liver (enlargement of the common bile duct); and nervous system (single high doses lead to brain dysfunction, seizures, and coma; and peripheral nerve damage with lower-level, chronic exposure). Injuries to the lung have been more pronounced following high (near lethal) oral doses. Reproductive/developmental effects have been reported in animals such as fetal (animal) skeletal defects, increased incidence of fetal mortality (possibly as a result of severe maternal toxicity), decreased number of offspring per litter, and slightly altered male to female sex ratios. Inhalation of inorganic arsenic dusts (mainly, arsenic trioxide) irritates the nasal passages. Anemia and leukopenia are common observations in humans exposed to inorganic arsenic by the oral and inhalation routes.

Arsenic may be genotoxic in some animals. Certain lesions (i.e., hyperkeratinized corns) may develop into skin cancer. Human data indicate that exposure to inorganic arsenic increases the chances of developing cancer. Lung cancer is the predominant effect by the inhalation route; however, some tumors have been observed at other sites. Increased skin cancer incidence has been observed in several populations consuming drinking water with high arsenic concentrations. Based on these findings EPA has categorized arsenic as a Group A carcinogen (known human carcinogen).

4.4.6 Thallium (99-0130)

Pure thallium is a naturally occurring metal that is found in trace amounts in the earth's crust. It is present in air, soil, and water. Thallium can be found in the environment mixed with other metals in the form of alloys or combined with elements such as, bromine, chlorine, fluorine, and iodine to form salts. Thallium is used mostly in manufacturing electronic devices, switches, and closures, primarily for the semiconductor industry, and has limited use in the manufacture of special glass and for certain medical procedures.

Thallium can enter the environment through the combustion of coal and smelting of the metal. Humans can be exposed to thallium in air, water, and food; however, the greatest exposure occurs through the ingestion of food, mostly homegrown fruits and green vegetables contaminated by thallium (thallium is taken up readily by plants). Individuals who smoke cigarettes have been found to contain twice as much thallium in their bodies as do non-smokers.

Oral absorption data show that thallium is readily absorbed from the gastrointestinal tract in experimental animals. Distribution from oral exposure indicates that the kidneys accumulate the greatest concentrations, with smaller amounts being taken up by the testes, brain, lungs, heart, liver, and spleen.

Temporary hair loss, vomiting, diarrhea, and death have occurred in humans following the ingestion of high levels of thallium over short time periods. Human case studies have reported respiratory effects following acute oral exposure such as lung damage to the alveoli and fluid accumulation (pulmonary edema). Oral exposures in humans have been reported to cause myocardial damage, changes in the electrocardiogram, liver and kidney necrosis, nerve deterioration and myelin loss, fatty changes in the liver, and altered serum enzyme levels. Neurological symptoms include ataxia, tremor, numbness of the toes and fingers ("burning feet" phenomenon), and muscle cramps. Animal studies suggest that thallium is genotoxic and that the male reproductive system may be susceptible to the toxic action of thallium. The carcinogenic effects of thallium have not been studied in humans or animals; therefore, the potential for thallium to cause cancer cannot be determined.

4.4.7 N-Nitrosopiperidine (99-0126)

Although this chemical was not selected as a COPC in the Allendale School risk assessment, its potential for exposure and toxicity is briefly presented here. N-nitrosopiperidine is a by-product of epoxy resin manufacture. Individuals having the highest exposure potential are cancer researchers, organic chemists, and workers engaged in the production of epoxy resins. The general population may be exposed to the compound through cigarette smoking, and ingestion of fish and certain other foods (e.g., bacon, hotdogs).

The IARC classifies n-nitrosopiperidine as a IIB carcinogen (potential human carcinogen) based on sufficient animal data. The compound has been reported as a positive mutagen in a number of in vitro and in vivo mutagenicity tests.

Table 4-1

EPA Carcinogenicity Categorizations Based on Human and Animal Evidence, Allendale School, Pittsfield, MA

EPA Carcinogenicity Categorization					
	Animal Evidence				
Human Evidence	Sufficient	Limited	Inadequate	No Data	No Evidence
Sufficient	A	A	A	A	A
Limited	B1	B1	B1	B1	B1
Inadequate	B2	C	D	D	D
No Data	B2	C	D	D	E
No Evidence	B2	C	D	D	E

Source: 99-0128.

Key:

Group A — Human carcinogen (sufficient evidence from epidemiological studies).

Group B1 — Probable human carcinogen (at least limited evidence of carcinogenicity to humans).

Group B2 — Probable human carcinogen (a combination of sufficient evidence in animals and inadequate data in humans).

Group C — Possible human carcinogen (limited evidence in animals in the absence of human data).

Group D — Not classified (inadequate animal and human data).

Group E — No evidence for carcinogenicity (no evidence for carcinogenicity in at least two adequate animal tests in different species, or in both epidemiological and animal studies).

TABLE 4-2

RAGS PART D TABLE 6.1

CANCER TOXICITY DATA -- ORAL/DERMAL

ALLENDALE SCHOOL

PITTSFIELD, MA

Chemical of Potential Concern	Oral Cancer Slope Factor (Administered)	Absorption Fraction from Toxicity Study (1)	Oral Cancer Slope Factor (Absorbed) (2)	Units	Weight of Evidence/ Cancer Guideline Description	Source Target Organ	Date (MM/DD/YY)
2,3,7,8-Tetrachlorodibenzodioxin	1.50E+05	1E+00	1.50E+05	$(mg/kg\text{-}day)^{-1}$	B2	HEAST	07/01/97
Dieldrin	1.60E+01	1E+00	1.60E+01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	07/01/93
Polychlorinated biphenyls (PCBs)(3)	2.00E+00	1E+00	2.00E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	06/01/97
Benz(a)anthracene	7.30E-01	1E+00	7.30E-01	$(mg/kg\text{-}day)^{-1}$	B2	EPA, 1993	07/01/97
Benzo(a)pyrene	7.30E+00	1E+00	7.30E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	11/01/94
Benzo(b)fluoranthene	7.30E-01	1E+00	7.30E-01	$(mg/kg\text{-}day)^{-1}$	B2	EPA, 1993	07/01/97
Benzo(k)fluoranthene	7.30E-02	1E+00	7.30E-02	$(mg/kg\text{-}day)^{-1}$	B2	EPA, 1993	07/01/97
Dibenz(a,h)anthracene	7.30E+00	1E+00	7.30E+00	$(mg/kg\text{-}day)^{-1}$	B2	EPA, 1993	07/01/97
Indeno(1,2,3-cd)pyrene	7.30E-01	1E+00	7.30E-01	$(mg/kg\text{-}day)^{-1}$	B2	EPA, 1993	07/01/97
Phenanthrene	NTV	1E+00	NTV	$(mg/kg\text{-}day)^{-1}$	D	IRIS	12/01/90
Arsenic	1.50E+00	1E+00	1.50E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	04/10/98
Thallium Chloride	NTV	1E+00	NTV	$(mg/kg\text{-}day)^{-1}$	D	IRIS	09/01/90

NTV = No Toxicity Value Available

IRIS = Integrated Risk Information System

HEAST = Health Effects Assessment Summary Tables

(1) Refer to RAGS, Part A and Table 3-11.

(2) Oral CSF multiplied by 1.

(3) Upper-bound slope factor.

EPA Group:

A - Human carcinogen

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans.

D - Not classified as a human carcinogen

EPA, 1993: Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. Washington, D.C. EPA/600/R-93-089.

HEAST, 1997: Washington, D.C. EPA-540-R-97-036.

IRIS, 1998: Accessed October 28, 1998.

Table 4-3

Toxicity Equivalence Factors (TEFs) for Dioxins and Furans Allendale School, Pittsfield, MA

Compound	TEF
Chlorodibenzo-p-dioxins (CDDs)	
2,3,7,8-TCDD	1
1,2,3,7,8-PeCDD	0.5
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	0.1
1,2,3,4,6,7,8-HpCDD	0.01
OCDD	0.001
Chlorodibenzofurans (CDFs)	
2,3,7,8-TCDF	0.1
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF	0.05 0.5
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 2,3,4,6,7,8-HxCDF	0.1
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF	0.01
OCDF	0.001

Source: 99-0122.

Table 4-4

Relative Oral Potency Factors for Carcinogenic Polycyclic Aromatic Hydrocarbons (PAHs), Allendale School, Pittsfield, MA

PAH	Relative Oral Potency Factor
Benzo(a)pyrene	1.0
Benz(a)anthracene	0.1
Benzo(b)fluoranthene	0.1
Benzo(k)fluoranthene	0.01
Chrysene	0.001
Dibenz(a,h)anthracene	1.0
Indeno(1,2,3-cd)pyrene	0.1

Source: 99-0082.

TABLE 4-5

RAGS PART D TABLE 5.1

NON-CANCER TOXICITY DATA -- ORAL/DERMAL

ALLENDALE SCHOOL,

PITTSFIELD, MA

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value (Administered)	Oral RfD Units	Absorption Fraction from Toxicity Study (1)	Oral RfD (Absorbed) (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (MM/DD/YY)
2,3,7,8-Tetrachlorodibenzodioxin		NTV		N/A	NTV		N/A	NA	NTV	NA
Dieldrin	Chronic	5.00E-05	mg/kg-day	1.00	5.00E-05	mg/kg-day	Liver lesions	100	IRIS	09/01/90
Polychlorinated biphenyls (3)	Chronic	2.00E-05	mg/kg-day	1.00	2.00E-05	mg/kg-day	Ocular/Immunologic	300	IRIS	11/01/96
Benz(a)anthracene		NTV		N/A	NTV		N/A	NA	NTV	NA
Benzo(a)pyrene		NTV		N/A	NTV		N/A	NA	NTV	NA
Benzo(b)fluoranthene		NTV		N/A	NTV		N/A	NA	NTV	NA
Benzo(k)fluoranthene		NTV		N/A	NTV		N/A	NA	NTV	NA
Dibenz(a,h)anthracene		NTV		N/A	NTV		N/A	NA	NTV	NA
Indeno(1,2,3-cd)pyrene		NTV		N/A	NTV		N/A	NA	NTV	NA
Phenanthrene (4)	Chronic	2.00E-02	mg/kg-day	1.00	2.00E-02	mg/kg-day	Decreased mean terminal body weight in males	3000	IRIS	09/17/98
Arsenic	Chronic	3.00E-04	mg/kg-day	1.00	3.00E-04	mg/kg-day	Hyperpigmentation, keratosis and possible vascular complications	3	IRIS	02/01/93
Thallium Chloride	Chronic	8.00E-05	mg/kg-day	1.00	8.00E-05	mg/kg-day	Increased levels of SGOT and LDH	3000	IRIS	09/01/90

IRIS = Integrated Risk Information System

N/A = Not Applicable

NTV = No Toxicity Value Available

(1) Refer to RAGS, Part A and Table 3-11.

(2) Oral RfD divided by 1.

(3) Aroclor-1254 value.

(4) Naphthalene value.

5. SITE-SPECIFIC RISK-BASED CONCENTRATIONS

5.1 INTRODUCTION

Site-specific soil-based RBCs for each COPC were developed for the future use residential scenario. This section discusses the approach and presents the algorithms used to estimate the RBCs for their comparison with average 0 to 10-foot soil concentrations of the COPCs. The details of the exposure assumptions in the algorithms have been presented in Section 3.

5.2 METHODOLOGY FOR CALCULATION OF RBCs

Carcinogenic and noncancer RBCs for soils at the Allendale School property were calculated for the selected COPCs. The RBCs were based on the following pathways of exposure for the 1- to 6-year old child and the adult future resident:

- Incidental soil ingestion.
- Dermal contact with soil.
- Ingestion of homegrown vegetables—aboveground.
- Ingestion of homegrown vegetables—belowground.

5.2.1 Carcinogenic RBCs

The RBCs for carcinogenic effects for incidental soil ingestion, dermal contact with soil, and aboveground and belowground vegetable ingestion were calculated as recommended by EPA Region IX in their PRG table (99-0057). A target carcinogenic risk of 1E-04 was used. A separate RBC was calculated for each of the four pathways of exposure. Each pathway-specific RBC was then integrated to provide a composite carcinogenic RBC for all four pathways, as discussed in Subsection 5.3.

Tables 5-1, 5-2, 5-3, and 5-4 show the algorithms used for calculating the soil RBCs based on incidental soil ingestion, dermal contact with soil, aboveground vegetable ingestion, and belowground vegetable ingestion, respectively. Receptor and age-specific exposure inputs are provided in the tables. The rationale for these inputs was discussed previously in Subsection 3.5. Age-adjusted soil ingestion factors, dermal contact factors, aboveground vegetable ingestion factors, and belowground vegetable ingestion factors were calculated as shown in Tables 5-5, 5-6, 5-7, and 5-8, respectively.

Modifications were made in the carcinogenic risk-based soil algorithms based on vegetable ingestion because the calculation of vegetable concentrations is dependent on soil concentration (CS), which is an unknown in the reverse risk assessment process. These modifications involved substituting plant uptake and concentration equations in place of actual plant concentration values and rearranging the algorithms.

For the estimation of a 2,3,7,8-TCDD RBC, the following approach was taken. First, the RBC (non-TEQ value) for each congener was calculated based on congener-specific chemical data (i.e., see Table 3-19). Second, each congener-specific RBC was multiplied by its TEF to yield a TEQ-based RBC value. Last, the congener RBCs were summed to yield a 2,3,7,8-TCDD RBC as a TEQ.

5.2.2 Noncancer RBCs

Tables 5-9, 5-10, 5-11, and 5-12 show the algorithms used to calculate the noncancer health-effect-based RBCs for incidental soil ingestion, dermal contact with soil, ingestion of aboveground vegetables, and ingestion of belowground vegetables, respectively, for children aged 1 to 6 years. A target hazard quotient (HQ) of 1 was used. Specific exposure inputs are presented in the tables. The rationale for these inputs was discussed previously in Subsection 3.5. Each pathway-specific RBC was later integrated to provide a composite noncancer RBC for all four exposure pathways, as discussed in Subsection 5.3.

Modifications were made in the noncancer risk-based soil algorithms based on vegetable ingestion because the calculation of vegetable concentrations is dependent on soil concentration, which is an unknown in the reverse risk assessment process. These modifications involved substituting plant uptake and concentration equations in place of actual plant concentration values and rearranging the algorithms.

As mentioned in the toxicity assessment (Subsection 4.3), the toxicity value for naphthalene was substituted for phenanthrene in order to estimate its noncancer RBC.

5.3 INTEGRATED RBCs FOR ALL EXPOSURE PATHWAYS

Table 5-13 presents the algorithm used to estimate the integrated RBCs for the COPCs. The algorithm used is based on the method of Rosenblatt et al. (99-0097). Table 5-14 presents the RBCs based on carcinogenic risk for each pathway and for all pathways (integrated). Table 5-15 presents the RBCs based on noncancer risk for each pathway and for all pathways (integrated).

Table 5-1

Model for Carcinogenic Risk-Based Concentrations
for Soil Ingestion for RME Future Residents
Allendale School
Pittsfield, Massachusetts

$$\text{RBC (mg/kg)} = \frac{TR \times AT_c}{FI \times EF \times IFS_{adj} \times ABS_o \times CSF_o \times CF}$$

Where:

TR	=	Target risk (1E-04).
AT_c	=	Averaging time (25,550 days) (99-0002).
FI	=	Fraction of contaminated soil ingested (1.0) (Professional judgement).
EF	=	Exposure frequency (150 days/year) (Professional judgement).
IFS_{adj}	=	Age-adjusted soil ingestion factor (114 mg-year/kg-day) (see Table 5-5).
ABS_o	=	Gastrointestinal absorption factor (1.0) (99-0096).
CSF_o	=	Oral cancer slope factor, chemical-specific (see Table 4-2).
CF	=	Conversion factor (1E-06 kg/mg).

Table 5-2

Model for Carcinogenic Risk-Based Concentrations
for Dermal Contact With Soil for RME Future Residents
Allendale School
Pittsfield, Massachusetts

$$\text{RBC (mg/kg)} = \frac{TR \times AT_c}{EF \times SFS_{adj} \times ABS_d \times CSF_d \times CF}$$

Where:

TR	=	Target risk (1E-04).
AT_c	=	Averaging time (25,550 days) (99-0002).
EF	=	Exposure frequency (150 days/year) (Professional judgement).
CSF_d	=	Dermal cancer slope factor, chemical-specific (see Table 4-2).
SFS_{adj}	=	Age-adjusted soil contact factor for soils (362.7 mg-year/kg-day) (see Table 5-6).
ABS_d	=	Dermal absorption factor, chemical-specific (see Table 3-11).
CF	=	Conversion factor (1E-06 kg/mg).

Table 5-3

Model for Carcinogenic Risk-Based Concentrations
for Aboveground Vegetable Ingestion for RME Future Residents
Allendale School
Pittsfield, Massachusetts

$$\text{RBC (mg/kg)} = \frac{TR \times AT_c}{FI \times EF \times IFV\text{-}AG_{adj} \times Br_{ag} \times CSF_o \times CF}$$

Where:

TR	=	Target risk (1E-04).
AT_c	=	Averaging time (25,550 days) (99-0002).
FI	=	Fraction of contaminated vegetables ingested (0.25) (99-0127).
EF	=	Exposure frequency (350 days/year) (99-0080).
$IFV\text{-}AG_{adj}$	=	Age-adjusted aboveground vegetable ingestion factor (8.5 g_{DW}-year/kg-day) (see Table 5-7).
Br_{ag}	=	Plant-soil bioconcentration factor for produce (kg soil/kg plant tissue, DW) (see Tables 3-13, 3-14 and 3-19).
CSF_o	=	Oral cancer slope factor, chemical-specific (see Table 4-2).
CF	=	Conversion factor (1E-03 kg/g).

DW = Dry weight.

Table 5-4

Model For Carcinogenic Risk-Based Concentrations
For Belowground Vegetable Ingestion For RME Future Residents
Allendale School
Pittsfield, Massachusetts

$$\text{RBC (mg/kg)} = \frac{\text{TR x AT}_c}{\text{FI x EF x IFV-BG}_{adj}\text{ x CSF}_o\text{ x Br}_{root\ veg}\text{ x VG}_{bg}\text{ x CF}}$$

Where:

TR	=	Target risk (1E-04).
AT_c	=	Averaging time (25,550 days) (99-0002).
FI	=	Fraction of contaminated vegetables ingested (0.25) (99-0127).
EF	=	Exposure frequency (350 days/year) (99-0080).
$IFV\text{-}BG_{adj}$	=	Age-adjusted belowground vegetable ingestion factor (0.87 g_{DW}-year/kg-day) (see Table 5-8).
CSF_o	=	Oral cancer slope factor, chemical specific (see Table 4-2).
VG_{bg}	=	Empirical correction factor, based on Log Kow (99-0127) (see Table 3-14).
$Br_{root\ veg}$	=	Plant-soil concentration factor in root vegetables (kg soil/kg plant tissue, DW) (see Table 3-19).
CF	=	Conversion factor (1E-03 kg/g).

DW = Dry weight.

Table 5-5

Calculation of Age-Adjusted Soil Ingestion Factor for RME Future Residents
Allendale School
Pittsfield, Massachusetts

$$IFS_{adj}\,(\text{mg-yr/kg-d}) = \frac{ED_c \times IRS_c}{BW_c} + \frac{ED_a \times IRS_a}{BW_a}$$

Where:

IFS_{adj} = Age-adjusted ingestion factor (114 mg-year/kg-day).
ED_c = Exposure duration, child (6 years) (99-0002).
ED_a = Exposure duration, adult (24 years) (99-0002).
IRS_c = Soil ingestion rate, child (200 mg/day) (99-0089).
IRS_a = Soil ingestion rate, adult (100 mg/day) (99-0089).
BW_c = Body weight, child (15 kg) (99-0089).
BW_a = Body weight, adult (70 kg) (99-0089).

Table 5-6

Calculation of Age-Adjusted Soil Contact Factor for RME Future Residents
Allendale School
Pittsfield, Massachusetts

$$SFS_{adj}\ (\text{mg-yr/kg-d}) = [ED_c / BW_c][((AF_{c-1} * SA_{c-1} * 5) + (AF_{c-2} * SA_{c-2} * 2))/7] + [ED_a / BW_a][((AF_{a-1} * SA_{a-1} * 5) + (AF_{a-2} * SA_{a-2} * 2))/7]$$

Where:

SFS_{adj} = Age-adjusted soil contact factor for soils (362.7 mg-year/kg-day).
ED_c = Exposure duration, child (6 years) (99-0002).
BW_c = Body weight, child (15 kg) (99-0089).
AF_{c-1} = Weighted soil adherence factor[a], child; May to September (0.24 mg/cm^2) (99-0093) (see Table 3-10).
SA_{c-1} = Skin surface area, child; represents head, hands, forearms, lower legs, and feet (2,900 cm^2/day) (99-0007) (see Table 3-6).
AF_{c-2} = Weighted soil adherence factor[a], child; April and October (0.23 mg/cm^2) (99-0093) (see Table 3-10).
SA_{c-2} = Skin surface area, child; represents head and hands (1,340 cm^2/day) (99-0007) (see Table 3-6).
ED_a = Exposure duration, adult (24 years) (99-0002).
BW_a = Body weight, adult (70 kg) (99-0089).
AF_{a-1} = Weighted soil adherence factor[a], adult; May to September (0.07 mg/cm^2) (99-0093) (see Table 3-10).
SA_{a-1} = Skin surface area, adult; represents head, hands, forearms, and lower legs (5,700 cm^2/day) (99-0007) (see Table 3-8).
AF_{a-2} = Weighted soil adherence factor[a], adult; April and October (0.15 mg/cm^2) (99-0093) (see Table 3-10).
SA_{a-2} = Skin surface area, adult; represents head and hands (2,100 cm^2/day) (99-0007) (see Table 3-8).

[a] Adherence factors were weighted based on activity and body-part specific variables (see Subsection 3.5.1.6). For the months of May through September, weighted adherence factors for the resident child were based on the face, hands, forearms, lower legs and feet. For the adult, feet were not included. For the months of April and October, weighted adherence factors were based by face and hands for both the adult and child.

Table 5-7

Calculation of Age-Adjusted Aboveground Vegetable Ingestion Factor for RME Future Residents Allendale School Pittsfield, Massachusetts

$$IFV\text{-}AG_{adj}\ (\text{g-yr/kg-d}) = \frac{ED_c \times IRV\text{-}AG_c}{BW_c} + \frac{ED_a \times IRV\text{-}AG_a}{BW_a}$$

Where:

$IFV\text{-}AG_{adj}$ = Age-adjusted aboveground vegetable ingestion factor (8.5 g-year/kg-day).
ED_c = Exposure duration, child (6 years) (99-0002).
ED_a = Exposure duration, adult (24 years) (99-0002).
$IRV\text{-}AG_c$ = Aboveground vegetable ingestion rate, child (6.72 g/day, DW) (99-0007) (see Table 3-20).
$IRV\text{-}AG_a$ = Aboveground vegetable ingestion rate, adult (17 g/day, DW) (99-0007) (see Table 3-20).
BW_c = Body weight, child (15 kg) (99-0089).
BW_a = Body weight, adult (70 kg) (99-0089).

DW = Dry weight.

Table 5-8

Calculation of Age-Adjusted Belowground Vegetable Ingestion Factor for RME Future Residents Allendale School Pittsfield, Massachusetts

$$IFV\text{-}BG_{adj}\,(g\text{-}yr/kg\text{-}d) = \frac{ED_c \times IRV\text{-}BG_c}{BW_c} + \frac{ED_a \times IRV\text{-}BG_a}{BW_a}$$

Where:

$IFV\text{-}BG_{adj}$ = Age-adjusted belowground vegetable ingestion factor (0.87 g-year/kg-day).
ED_c = Exposure duration, child (6 years) (99-0002).
ED_a = Exposure duration, adult (24 years) (99-0002).
$IRV\text{-}BG_c$ = Belowground vegetable ingestion rate, child (0.67 g/day, DW) (99-0007) (see Table 3-20).
$IRV\text{-}BG_a$ = Belowground vegetable ingestion rate, adult (1.77 g/day, DW) (99-0007) (see Table 3-20).
BW_c = Body weight, child (15 kg) (99-0089).
BW_a = Body weight, adult (70 kg) (99-0089).

DW = Dry weight.

Table 5-9

Model for Noncancer Risk-Based Concentrations
for Soil Ingestion for RME Future Child Resident
Allendale School
Pittsfield, Massachusetts

$$\text{RBC (mg/kg)} = \frac{\text{THQ x BW x AT}_n}{\text{EF x ED x 1/RfD}_o\text{ x IRS x CF}}$$

Where:

THQ = Target hazard quotient (1).
BW = Body weight (15 kg) (99-0089).
AT_n = Averaging time (2,190 days) (99-0002).
EF = Exposure frequency (150 days/year) (Professional judgement).
ED = Exposure duration (6 yrs) (99-0002).
RfD_o = Oral reference dose, chemical-specific (see Table 4-5).
IRS = Soil ingestion rate (200 mg/day) (99-0089).
CF = Conversion factor (1E-06 kg/mg).

Table 5-10

Model for Noncancer Soil Risk-Based Concentrations for Dermal Contact with Soil for RME Future Child Resident
Allendale School
Pittsfield, Massachusetts

$$RBC\ (mg/kg) = \frac{THQ \times BW \times AT_n}{EF \times ED \times 1/RfD_d \times [((AF_1{*}SA_1{*}5) + (AF_2{*}SA_2{*}2))/7] \times ABS_d \times CF}$$

Where:

THQ	=	Target hazard quotient (1).
AT_n	=	Averaging time, child (2,190 days) (99-0002).
BW	=	Body weight (15 kg) (99-0002).
EF	=	Exposure frequency (150 days/year) (Professional judgement).
ED	=	Exposure duration (6 years) (99-0002).
RfD_d	=	Dermal reference dose, chemical-specific (see Table 4-5).
AF_1	=	Weighted soil adherence factor[a]; May to September (0.24 mg/cm^2) (99-0093) (see Table 3-10).
AF_2	=	Weighted soil adherence factor[a]; April and October (0.23 mg/cm^2) (99-0083) (see Table 3-10).
SA_1	=	Skin surface area; represents head, hands, forearms, lower legs, and feet (2,900 cm^2/day) (99-0007) (see Table 3-6).
SA_2	=	Skin surface area; represents face and hands (1,340 cm^2/day) (99-0007) (see Table 3-6).
ABS_d	=	Dermal absorption factor, chemical-specific (see Table 3-11).
CF	=	Conversion factor (1E-06 kg/mg).

[a] Adherence factors were weighted based on activity and body-part specific variables (see Subsection 3.5.1.6). For the months of May through September, weighted adherence factors for the resident child were based on the face, hands, forearms, lower legs and feet. For the months of April and October, body parts were represented by face and hand.

Table 5-11

Model for Noncancer Risk-Based Concentrations for Aboveground Vegetable Ingestion for RME Future Child Resident Allendale School Pittsfield, Massachusetts

$$RBC\ (mg/kg) = \frac{THQ \times BW \times AT_n}{FI \times EF \times ED \times 1/RfD_o \times IRV\text{-}AG \times Br_{ag} \times CF}$$

Where:

THQ	=	Target hazard quotient (1).
BW	=	Body weight (15 kg) (99-0002).
AT_n	=	Averaging time (2,190 days) (99-0002).
FI	=	Fraction of contaminated vegetables ingested (0.25) (99-0127).
EF	=	Exposure frequency (350 days/year).
ED	=	Exposure duration (6 years) (99-0002).
RfD_o	=	Oral reference dose, chemical-specific (see Table 4-5).
IRV-AG	=	Aboveground vegetable ingestion rate (6.72 g/day DW) (99-0007) (see Table 3-20).
Br_{ag}	=	Plant-soil bioconcentration factor for produce (kg soil/kg plant tissue, DW) (see Table 3-19).
CF	=	Conversion factor (1E-03 kg/g).

DW = Dry weight.

Table 5-12

Model for Noncancer Risk-Based Concentrations
for Belowground Vegetable Ingestion for RME Future Child Resident
Allendale School
Pittsfield, Massachusetts

$$\text{RBC (mg/kg)} = \frac{\text{THQ x BW x AT}_n}{\text{FI x EF x ED x 1/RfD}_o \text{ x IRV-BG x Br}_{\text{root veg}} \text{ x VG}_{bg} \text{ x CF}}$$

Where:

THQ = Target hazard quotient (1).
BW = Body weight (15 kg) (99-0002).
AT_n = Averaging time (2,190 days) (99-0002).
FI = Fraction of contaminated vegetables ingested (0.25) (99-0127).
EF = Exposure frequency (350 days/year).
ED = Exposure duration (6 years) (99-0002).
RfD_o = Oral reference dose, chemical-specific (see Table 4-5).
IRV-BG = Belowground vegetable ingestion rate (0.67 g/day DW) (99-0007) (see Table 3-20).
VG_{bg} = Empirical correction factor, based on Log Kow (99-0127) (see Table 3-14).
$Br_{\text{root veg}}$ = Plant-soil concentration factor in root vegetables (kg soil/kg plant tissue, DW) (see Table 3-16).
CF = Conversion factor (1E-03 kg/g).

DW = Dry weight.

Table 5-13

Model for Calculating Risk-Based Chemical Concentrations Through Combined Oral and Dermal Exposure Pathways For A Given Receptor Allendale School Pittsfield, Massachusetts

$$RBC_{int} = [(RBC_{soil\text{-}ing})^{-1} + (RBC_{der})^{-1} + (RBC_{ag\text{-}ing})^{-1} + (RBC_{bg\text{-}ing})^{-1}]^{-1}$$

Where:

RBC_{int} = Integrated risk-based concentration for all pathways combined.

$RBC_{soil\text{-}ing}$ = Risk-based concentration for the ingestion of soil.

RBC_{der} = Risk-based concentration for the dermal contact with soil.

$RBC_{ag\text{-}ing}$ = Risk-based concentration for soil based on the ingestion of aboveground vegetables.

$RBC_{bg\text{-}ing}$ = Risk-based concentration for soil based on the ingestion of belowground vegetables.

Method of Rosenblatt et al. (99-0097)

Table 5-14

Carcinogenic Risk-Based Concentrations - Future Resident[a]
Allendale School
Pittsfield, MA

Chemical	Risk-Based Soil Concentrations[b] (mg/kg)				
	Soil Ingestion	Dermal Contact with Soil	Above Ground Vegetable Ingestion	Below Ground Vegetable Ingestion	Integrated[c]
Dioxins/Furans					
Total 2,3,7,8 TCDD (TEQ)	9.94E-04	1.04E-02	1.82E-02	9.45E-02	8.56E-04
Pesticides					
Dieldrin	9.32E+00	2.94E+01	1.28E+00	6.76E+01	1.07E+00
Polychlorinated Biphenyls					
Total PCBs	7.45E+01	1.68E+02	1.94E+02	1.78E+03	3.98E+01
Polynuclear Aromatic Hydrocarbons					
Benz(a)anthracene	2.04E+02	4.95E+02	2.12E+02	3.38E+03	8.38E+01
Benzo(a)pyrene	2.04E+01	4.95E+01	4.12E+01	4.40E+02	1.04E+01
Benzo(b)fluoranthene	2.04E+02	4.95E+02	4.20E+02	4.43E+03	1.05E+02
Benzo(k)fluoranthene	2.04E+03	4.95E+03	1.09E+04	6.48E+04	1.25E+03
Dibenz(a,h)anthracene	2.04E+01	4.95E+01	6.93E+01	5.41E+02	1.17E+01
Indeno(1,2,3-cd)pyrene	2.04E+02	4.95E+02	7.75E+02	5.66E+03	1.19E+02
Phenanthrene	NC	NC	NC	NC	NA
Metals					
Arsenic	9.94E+01	1.04E+03	3.61E+02	2.78E+03	7.07E+01
Thallium	NC	NC	NC	NC	NA

NC = Not classified as a carcinogen.

NA =Not applicable.

[a] Age-adjusted for child 1-6 years old and adult 7-30 years old.

[b] Target risk is 1E-04.

[c] Method of Rosenblatt et al. (99-0097) used to estimate the pathway-weighted (integrated) risk-based concentration.

Table 5-15

Noncancer Risk-Based Concentrations - Future Child Resident
Allendale School
Pittsfield, MA

Chemical	Risk-Based Soil Concentrations[a] (mg/kg)				
	Child (1-6 years)				
	Soil Ingestion	Dermal Contact with Soil	Above Ground Vegetable Ingestion	Below Ground Vegetable Ingestion	Integrated[b]
Dioxins/Furans					
Total 2,3,7,8 TCDD (TEQ)	NTV	NTV	NTV	NTV	NA
Pesticides					
Dieldrin	9.13E+00	3.12E+01	2.78E+00	1.51E+02	1.97E+00
Polychlorinated Biphenyls					
Total PCBs	3.65E+00	8.91E+00	2.11E+01	1.99E+02	2.28E+00
Polynuclear Aromatic Hydrocarbons					
Benz(a)anthracene	NTV	NTV	NTV	NTV	NA
Benzo(a)pyrene	NTV	NTV	NTV	NTV	NA
Benzo(b)fluoranthene	NTV	NTV	NTV	NTV	NA
Benzo(k)fluoranthene	NTV	NTV	NTV	NTV	NA
Dibenz(a,h)anthracene	NTV	NTV	NTV	NTV	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NTV	NTV	NA
Phenanthrene	3.65E+03	9.60E+03	2.11E+03	7.89E+04	1.16E+03
Metals					
Arsenic	5.48E+01	6.24E+02	4.41E+02	3.50E+03	4.46E+01
Thallium	1.46E+01	4.99E+02	5.73E+02	1.87E+04	1.38E+01

NTV = No toxicity value available.

NA =Not applicable.

[a] Target hazard quotient is 1.

[b] Method of Rosenblatt et al. (99-0097) used to estimate the pathway-weighted (integrated) risk-based concentration.

6. RISK CHARACTERIZATION

6.1 INTRODUCTION

The objective of the risk characterization section is to evaluate the likelihood of carcinogenic risks and adverse noncancer health effects occurring as a result of exposure to COPCs. The potential for risk is evaluated using the exposure doses calculated in the exposure assessment for each receptor (Section 3) and the toxicity values identified in the toxicity assessment (Section 4). Noncancer health effects were evaluated for all COPCs (i.e., including carcinogens) for which RfDs were available. Carcinogenic risks were calculated for those COPCs with evidence of carcinogenicity and for which CSFs were available. The potential for human carcinogenic risks and noncancer health effects of COPCs are evaluated separately because of differences in the processes by which these health effects are believed to occur.

The general approaches used to calculate carcinogenic risks and evaluate noncancer health effects are discussed in Subsection 6.2. The results of the risk evaluation are summarized in Subsections 6.3 (Results—Current Scenario) and 6.4 (Results—Future Scenario). RAGS Part D, Tables 7, 8, and 9, have been included in Appendix E.

6.2 APPROACHES TO EVALUATING RISKS POSED BY CHEMICAL EXPOSURE

6.2.1 Lifetime Carcinogenic Risks

In accordance with EPA policy (EPA, 1989c), carcinogenic risk is expressed as the probability that an individual will develop cancer during a 70-year lifetime. Therefore, the carcinogenic risk in this report represents the lifetime risk to the specific receptors in excess of the background probability of developing cancer. As an example, a lifetime excess risk of 2E-06 means that the risk of developing cancer during an individual’s lifetime due to exposure to contaminants at the Allendale School property is 2 chances in 1 million, in addition to the background probability.

Carcinogenic risk was calculated for each carcinogenic chemical through each applicable exposure route (i.e., oral or dermal) using the following equation:

Lifetime Excess Carcinogenic Risk = LADD x CSF

Where:

LADD = Lifetime average daily intake (dose) of the carcinogen averaged over a 70-year lifetime (mg/kg-day).

CSF = Chemical- and route-specific cancer slope factor $(mg/kg\text{-}day)^{-1}$.

The total lifetime excess cancer risk for each receptor was estimated by summing the cancer risks calculated for all chemicals through all applicable exposure routes. This approach is in accordance with EPA guidelines on chemical mixtures, in which risks associated with carcinogens are considered additive (99-0128).

In the current use scenario (i.e., forward risk assessment), carcinogenic risk was calculated separately for each age group. It is important to understand that the carcinogenic risks that were calculated based on these age groups represent the risk to that individual over a 70-year lifetime, not during the period of exposure. For example, the risk calculated for a child does not represent the probability that the individual will develop cancer during childhood, but the probability that the individual will develop cancer sometime during their lifetime as a result of exposure as a child.

6.2.2 Noncancer Health Effects

The potential for noncancer toxicity to occur in an individual through a given exposure route was evaluated for each chemical by comparing the estimated daily intake of the chemical received through that exposure route during a specified exposure period with an RfD derived for a similar exposure period. This ratio is the HQ:

HQ = CDI/RfD

Where:

HQ = Hazard quotient.

CDI = Chronic daily intake for the chemical averaged over the exposure period (mg/kg-day).

RfD = Chemical- and route-specific reference dose (mg/kg-day) derived for a similar exposure period.

As discussed previously, chronic RfDs were used to evaluate noncancer health effects for all receptors.

The total potential for adverse noncancer health effects was evaluated for each receptor by summing the HQs calculated for all chemicals and exposure routes. This sum is called the hazard index (HI). If the HI is less than or equal to one, it is believed that there is no significant potential for noncancer health effects to that receptor, even in the most susceptible members of the population. If the HI exceeds one, there may be a risk of noncancer health effects. However, a value greater than one does not mean an adverse effect will definitely occur. The assumptions used to derive RfDs are conservative, so that a daily exposure dose somewhat greater than the RfD may not actually cause adverse effects.

The summation of the HQs for different chemicals assumes that the noncancer effects of all chemicals are additive. However, many chemicals exert their toxicities by acting on different organs by different toxicological mechanisms. In addition, RfDs generally are developed based on the most sensitive endpoint, or critical toxicity effect, experimentally measured for the chemical (i.e., that organ or tissue showing toxicity at the lowest dose of the chemical). Consequently, the HQs calculated for these chemicals, which reflect different chemical-specific toxic effects, may not be additive. The summing of the HQs to calculate an HI over-estimates the potential for noncancer health effects.

It should be noted that the calculation of the HI also does not take into account possible antagonistic and synergistic interactions between chemicals. A synergistic interaction is one where the net effect is greater than the sum of the individual effects. An antagonistic interaction is one where the net effect is less than the sum of the individual effects.

Unlike excess lifetime cancer risks, the HQs and HIs are not a measure of the probability of the occurrence of adverse health effects. An HQ or HI of one serves as a benchmark of concern, above which further evaluation may be warranted.

6.3 RESULTS – CURRENT SCENARIO

The risks in the current scenario have been estimated using a forward approach, as described in Section 1. Risk summary tables are presented in the subsections that follow. Future scenario risks have been indirectly estimated by back calculating from site-specific RBCs. The results for the future scenario are presented in Subsection 6.4.

6.3.1 Lifetime Excess Carcinogenic Risks

The carcinogenic risks predicted for each of the receptor groups for the current scenario are presented in the following paragraphs. Both the RME and the CTE risks are included.

Child (1 to 6 Years)

Table 6-1 presents a summary of the total lifetime excess carcinogenic risks to the RME child (1 to 6 years).

The total predicted risk from all chemicals and all exposure pathways is about 1-in-100,000 (1.2E-05). Of the total risk, soil ingestion contributed about 65%, and dermal contact contributed about 35%. Benzo(a)pyrene, dibenz(a,h)anthracene, and arsenic account for the majority of the total risk and represent the only chemicals with risks greater than 1-in-1 million (1E-06). The risks from exposure to PCBs and 2,3,7,8-TCDD are well below 1-in-1 million (1E-06).

Table 6-2 presents the CTE risk estimates. The total risk is about 3E-06 with benzo(a)pyrene as the only chemical with a total pathway risk greater than 1E-06. Dermal exposure pathways contributed approximately 68% of the total risk.

Child (7 to 13 Years)

Table 6-3 presents a summary of the total lifetime excess carcinogenic risk to the RME child (7 to 13 years). The total risk from all chemicals is approximately 6E-06. About 65% of the total risk was attributable to dermal contact. The risks from exposure to PCBs and 2,3,7,8-TCDD are very low. Benzo(a)pyrene and arsenic are the only chemicals with risks greater than 1E-06.

Table 6-4 presents the CTE risk estimates. The total risks are about 2E-06 with only benzo(a)pyrene risks exceeding 1E-06. Dermal contact contributed the majority (88%) of the risk.

Groundskeeper

Table 6-5 presents a summary of the total excess lifetime carcinogenic risk to the RME groundskeeper. All chemicals through all exposure pathways result in a total risk of about 5E-06. Dermal contact contributed approximately 81% to the total risk. Only benzo(a)pyrene exceeded a 1E-06 risk level.

Table 6-6 presents the CTE risks for the groundskeeper. The total risk from all pathways and chemicals is approximately 4E-06 with only benzo(a)pyrene risks exceeding IE-06. Dermal contact contributed approximately 94% of the total risk.

6.3.2 Noncancer Health Effects

The potential for noncancer health effects, expressed as the hazard index (HI), to each of the receptor groups is presented in the following paragraphs. Both the RME and the CTE results are included. Noncancer HIs could only be calculated for PCBs, phenanthrene, and arsenic. There are no verified RfDs for dioxins/furans or any of the other PAHs.

Child (1 to 6 Years)

Table 6-7 presents the noncancer HIs for the RME child (1 to 6 years). The individual chemical HQs are below one and the total HI is also less than one (0.12). Soil ingestion represented about 76% of the total HI. Table 6-8 presents the CTE risks. These HIs are even lower with a total HI of about 0.03.

Child (7 to 13 Years)

Table 6-9 presents the noncancer HIs for the RME child (7 to 13 years). The total HI is well below one (0.05). Table 6-10 presents the CTE risks. The total HI is approximately 0.02.

Groundskeeper

Tables 6-11 (RME) and 6-12 (CTE) present the noncancer HIs for the groundskeeper. As can be seen, the total noncancer HIs are very small (RME = 0.009; CTE = 0.007).

6.3.3 Results—RAGS Part D Tables

The results presented in Subsection 6.3.1 and 6.3.2 are also summarized in RAGS Part D format. Because of the large number of tables (30), the RAGS Part D tables are included as Appendix E. RAGS Part D, Tables 7.1 through 7.6 (for both the RME and CTE exposures) present noncancer risks for each receptor and exposure medium. RAGS Part D, Tables 8.1 through 8.6, present the same information for carcinogenic risk estimates. RAGS Part D, Tables 9.1 through 9.3, summarize the noncancer and carcinogenic risk estimates for each receptor for both the RME and CTE exposures.

6.4 RESULTS – FUTURE SCENARIO

The future exposure scenario was evaluated differently than the current scenario. Chemical-specific RBCs were developed for the future residential scenario. The approaches to these calculations are presented in Sections 3 and 5.

Table 6-13 summarizes the results by identifying the most conservative RBC (cancer or noncancer based), the range of vertically averaged concentrations for that compound, the frequency of vertically averaged detections, and the number of vertically averaged soil-boring concentrations that exceed the RBC at a risk level of 1E-04 or an HQ of 1. As can be seen from the table, PCBs had by far the most exceedances (39) of RBCs in the future scenario. Note that the PCB RBC was based on its noncancer health effects. Dieldrin, benzo(a)pyrene, and thallium each had one exceedance of their respective RBC. Appendix F presents comparisons of the vertically averaged 0 to 10-foot boring concentrations of each COPC with the chemical-specific RBC for every soil-boring location. Table F-1 (Appendix F) compares each vertically averaged soil concentration to the RBC based on a cancer risk of 1E-04. Table F-2 compares the values with the child-derived RBC based on an HQ of 1.0. Only child-based RBCs for noncancer effects were calculated because these values will be more conservative than the future adult-based values.

The exceedances identified in Table 6-13 for PCBs were mapped using geographic information system (GIS) methods to show the location of the vertically averaged soil borings that exceed the RBC. Figure 6-1 shows the sample locations on the site that exceed the RBC for PCBs based on an HI of 1.0.

Table 6-1

Summary of Potential Cancer Risks for the Child (1-6 years)
Reasonable Maximum Exposure Approach
Current Scenario
Allendale School
Pittsfield, MA

Chemical	Soil Ingestion	Dermal Contact	Total
Dioxins/Furans			
Total 2,3,7,8-TCDD (TEQ)	1.92E-07	3.36E-08	2.25E-07
Polychlorinated Biphenyls			
Total PCBs	6.79E-08	5.56E-08	1.24E-07
Polynuclear Aromatic Hydrocarbons			
Benz(a)anthracene	2.88E-07	2.19E-07	5.07E-07
Benzo(a)pyrene	3.29E-06	2.50E-06	5.80E-06
Benzo(b)fluoranthene	3.43E-07	2.61E-07	6.04E-07
Benzo(k)fluoranthene	2.47E-08	1.88E-08	4.35E-08
Dibenz(a,h)anthracene	6.86E-07	5.22E-07	1.21E-06
Indeno(1,2,3-cd)pyrene	1.78E-07	1.36E-07	3.14E-07
Phenanthrene	NTV	NTV	NA
Metals			
Arsenic	2.73E-06	4.80E-07	3.21E-06
Total	**7.80E-06**	**4.23E-06**	**1.20E-05**

TEQ = Toxicity equivalent concentration.
NTV = No toxicity value.
NA =Not applicable.

Table 6-2

Summary of Potential Cancer Risks for the Child (1-6 years)
Central Tendency Exposure Approach
Current Scenario
Allendale School
Pittsfield, MA

Chemical	Soil Ingestion	Dermal Contact	Total
Dioxins/Furans			
Total 2,3,7,8-TCDD (TEQ)	2.39E-08	1.68E-08	4.07E-08
Polychlorinated Biphenyls			
Total PCBs	4.24E-09	1.39E-08	1.82E-08
Polynuclear Aromatic Hydrocarbons			
Benz(a)anthracene	3.60E-08	1.10E-07	1.46E-07
Benzo(a)pyrene	4.11E-07	1.25E-06	1.66E-06
Benzo(b)fluoranthene	4.29E-08	1.30E-07	1.73E-07
Benzo(k)fluoranthene	3.09E-09	9.39E-09	1.25E-08
Dibenz(a,h)anthracene	8.57E-08	2.61E-07	3.47E-07
Indeno(1,2,3-cd)pyrene	2.23E-08	6.78E-08	9.01E-08
Phenanthrene	NTV	NTV	NA
Metals			
Arsenic	3.42E-07	2.40E-07	5.82E-07
Total	**9.71E-07**	**2.10E-06**	**3.07E-06**

TEQ = Toxicity equivalent concentration.
NTV = No toxicity value.
NA = Not applicable.

Table 6-3

Summary of Potential Cancer Risks for the Child (7-13 years)
Reasonable Maximum Exposure Approach
Current Scenario
Allendale School
Pittsfield, MA

Chemical	Soil Ingestion	Dermal Contact	Total
Dioxins/Furans			
Total 2,3,7,8-TCDD (TEQ)	5.13E-08	3.05E-08	8.18E-08
Polychlorinated Biphenyls			
Total PCBs	1.82E-08	5.05E-08	6.87E-08
Polynuclear Aromatic Hydrocarbons			
Benz(a)anthracene	7.71E-08	1.99E-07	2.76E-07
Benzo(a)pyrene	8.82E-07	2.27E-06	3.15E-06
Benzo(b)fluoranthene	9.18E-08	2.37E-07	3.28E-07
Benzo(k)fluoranthene	6.61E-09	1.70E-08	2.36E-08
Dibenz(a,h)anthracene	1.84E-07	4.73E-07	6.57E-07
Indeno(1,2,3-cd)pyrene	4.78E-08	1.23E-07	1.71E-07
Phenanthrene	NTV	NTV	NA
Metals			
Arsenic	7.32E-07	4.35E-07	1.17E-06
Total	**2.09E-06**	**3.84E-06**	**5.93E-06**

TEQ = Toxicity equivalent concentration.

NTV = No toxicity value.

NA = Not applicable.

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Table 6-4

Summary of Potential Cancer Risks for the Child (7-13 years)
Central Tendency Exposure Approach
Current Scenario
Allendale School
Pittsfield, MA

Chemical	Soil Ingestion	Dermal Contact	Total
Dioxins/Furans			
Total 2,3,7,8-TCDD (TEQ)	6.41E-09	1.53E-08	2.17E-08
Polychlorinated Biphenyls			
Total PCBs	1.14E-09	1.26E-08	1.38E-08
Polynuclear Aromatic Hydrocarbons			
Benz(a)anthracene	9.64E-09	9.94E-08	1.09E-07
Benzo(a)pyrene	1.10E-07	1.14E-06	1.25E-06
Benzo(b)fluoranthene	1.15E-08	1.18E-07	1.30E-07
Benzo(k)fluoranthene	8.27E-10	8.52E-09	9.34E-09
Dibenz(a,h)anthracene	2.30E-08	2.37E-07	2.60E-07
Indeno(1,2,3-cd)pyrene	5.97E-09	6.15E-08	6.75E-08
Phenanthrene	NTV	NTV	NA
Metals			
Arsenic	9.15E-08	2.18E-07	3.09E-07
Total	**2.60E-07**	**1.91E-06**	**2.17E-06**

TEQ = Toxicity equivalent concentration.

NTV = No toxicity value.

NA = Not applicable.

Table 6-5

Summary of Potential Cancer Risks for the Groundskeeper
Reasonable Maximum Exposure Approach
Current Scenario
Allendale School
Pittsfield, MA

Chemical	Soil Ingestion	Dermal Contact	Total
Dioxins/Furans			
Total 2,3,7,8-TCDD (TEQ)	2.14E-08	3.00E-08	5.14E-08
Polychlorinated Biphenyls			
Total PCBs	7.58E-09	4.97E-08	5.73E-08
Polynuclear Aromatic Hydrocarbons			
Benz(a)anthracene	3.21E-08	1.96E-07	2.28E-07
Benzo(a)pyrene	3.67E-07	2.24E-06	2.61E-06
Benzo(b)fluoranthene	3.83E-08	2.33E-07	2.71E-07
Benzo(k)fluoranthene	2.76E-09	1.68E-08	1.95E-08
Dibenz(a,h)anthracene	7.65E-08	4.66E-07	5.43E-07
Indeno(1,2,3-cd)pyrene	1.99E-08	1.21E-07	1.41E-07
Phenanthrene	NTV	NTV	NA
Metals			
Arsenic	3.05E-07	4.29E-07	7.34E-07
Total	**8.71E-07**	**3.78E-06**	**4.65E-06**

TEQ = Toxicity equivalent concentration.
NTV = No toxicity value.
NA = Not applicable.

Table 6-6

Summary of Potential Cancer Risks for the Groundskeeper
Central Tendency Exposure Approach
Current Scenario
Allendale School
Pittsfield, MA

Chemical	Soil Ingestion	Dermal Contact	Total
Dioxins/Furans			
Total 2,3,7,8-TCDD (TEQ)	5.34E-09	3.00E-08	3.54E-08
Polychlorinated Biphenyls			
Total PCBs	9.47E-10	2.49E-08	2.58E-08
Polynuclear Aromatic Hydrocarbons			
Benz(a)anthracene	8.04E-09	1.96E-07	2.04E-07
Benzo(a)pyrene	9.18E-08	2.24E-06	2.33E-06
Benzo(b)fluoranthene	9.57E-09	2.33E-07	2.43E-07
Benzo(k)fluoranthene	6.89E-10	1.68E-08	1.75E-08
Dibenz(a,h)anthracene	1.91E-08	4.66E-07	4.85E-07
Indeno(1,2,3-cd)pyrene	4.97E-09	1.21E-07	1.26E-07
Phenanthrene	NTV	NTV	NA
Metals			
Arsenic	7.63E-08	4.29E-07	5.05E-07
Total	**2.17E-07**	**3.75E-06**	**3.97E-06**

TEQ = Toxicity equivalent concentration.

NTV = No toxicity value.

NA = Not applicable.

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Table 6-7

Summary of Hazard Quotients and Hazard Indices for the Child (1-6 years)
Reasonable Maximum Exposure Approach
Current Scenario
Allendale School
Pittsfield, MA

Chemical	Soil Ingestion	Dermal Contact	Hazard Index
Dioxins/Furans			
Total 2,3,7,8-TCDD (TEQ)	NTV	NTV	NA
Polychlorinated Biphenyls			
Total PCBs	1.98E-02	1.62E-02	3.60E-02
Polynuclear Aromatic Hydrocarbons			
Benz(a)anthracene	NTV	NTV	NA
Benzo(a)pyrene	NTV	NTV	NA
Benzo(b)fluoranthene	NTV	NTV	NA
Benzo(k)fluoranthene	NTV	NTV	NA
Dibenz(a,h)anthracene	NTV	NTV	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NA
Phenanthrene	2.85E-04	2.17E-04	5.02E-04
Metals			
Arsenic	7.09E-02	1.24E-02	8.33E-02
Total	**9.10E-02**	**2.89E-02**	**1.20E-01**

TEQ = Toxicity equivalent concentration.
NTV = No toxicity value.
NA = Not applicable.

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Table 6-8

Summary of Hazard Quotients and Hazard Indices for the Child (1-6 years)
Central Tendency Exposure Approach
Current Scenario
Allendale School
Pittsfield, MA

Chemical	Soil Ingestion	Dermal Contact	Hazard Index
Dioxins/Furans			
Total 2,3,7,8-TCDD (TEQ)	NTV	NTV	NA
Polychlorinated Biphenyls			
Total PCBs	2.48E-03	8.11E-03	1.06E-02
Polynuclear Aromatic Hydrocarbons			
Benz(a)anthracene	NTV	NTV	NA
Benzo(a)pyrene	NTV	NTV	NA
Benzo(b)fluoranthene	NTV	NTV	NA
Benzo(k)fluoranthene	NTV	NTV	NA
Dibenz(a,h)anthracene	NTV	NTV	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NA
Phenanthrene	3.56E-05	1.08E-04	1.44E-04
Metals			
Arsenic	8.86E-03	6.22E-03	1.51E-02
Total	**1.14E-02**	**1.44E-02**	**2.58E-02**

TEQ = Toxicity equivalent concentration.
NTV = No toxicity value.
NA = Not applicable.

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Table 6-9

Summary of Hazard Quotients and Hazard Indices for the Child (7-13 years)
Reasonable Maximum Exposure Approach
Current Scenario
Allendale School
Pittsfield, MA

Chemical	Soil Ingestion	Dermal Contact	Hazard Index
Dioxins/Furans			
Total 2,3,7,8-TCDD (TEQ)	NTV	NTV	NA
Polychlorinated Biphenyls			
Total PCBs	5.30E-03	1.47E-02	2.00E-02
Polynuclear Aromatic Hydrocarbons			
Benz(a)anthracene	NTV	NTV	NA
Benzo(a)pyrene	NTV	NTV	NA
Benzo(b)fluoranthene	NTV	NTV	NA
Benzo(k)fluoranthene	NTV	NTV	NA
Dibenz(a,h)anthracene	NTV	NTV	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NA
Phenanthrene	7.63E-05	1.97E-04	2.73E-04
Metals			
Arsenic	1.90E-02	1.13E-02	3.03E-02
Total	**2.44E-02**	**2.62E-02**	**5.06E-02**

TEQ = Toxicity equivalent concentration.
NTV = No toxicity value.
NA = Not applicable.

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Table 6-10

Summary of Hazard Quotients and Hazard Indices for the Child (7-13 years)
Central Tendency Exposure Approach
Current Scenario
Allendale School
Pittsfield, MA

Chemical	Soil Ingestion	Dermal Contact	Hazard Index
Dioxins/Furans			
Total 2,3,7,8-TCDD (TEQ)	NTV	NTV	NA
Polychlorinated Biphenyls			
Total PCBs	6.63E-04	7.36E-03	8.02E-03
Polynuclear Aromatic Hydrocarbons			
Benz(a)anthracene	NTV	NTV	NA
Benzo(a)pyrene	NTV	NTV	NA
Benzo(b)fluoranthene	NTV	NTV	NA
Benzo(k)fluoranthene	NTV	NTV	NA
Dibenz(a,h)anthracene	NTV	NTV	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NA
Phenanthrene	9.54E-06	9.83E-05	1.08E-04
Metals			
Arsenic	2.37E-03	5.64E-03	8.02E-03
Total	**3.05E-03**	**1.31E-02**	**1.61E-02**

TEQ = Toxicity equivalent concentration.

NTV = No toxicity value.

NA = Not applicable.

Table 6-11

Summary of Hazard Quotients and Hazard Indices for the Groundskeeper
Reasonable Maximum Exposure Approach
Current Scenario
Allendale School
Pittsfield, MA

Chemical	Soil Ingestion	Dermal Contact	Hazard Index
Dioxins/Furans			
Total 2,3,7,8-TCDD (TEQ)	NTV	NTV	NA
Polychlorinated Biphenyls			
Total PCBs	5.30E-04	3.48E-03	4.01E-03
Polynuclear Aromatic Hydrocarbons			
Benz(a)anthracene	NTV	NTV	NA
Benzo(a)pyrene	NTV	NTV	NA
Benzo(b)fluoranthene	NTV	NTV	NA
Benzo(k)fluoranthene	NTV	NTV	NA
Dibenz(a,h)anthracene	NTV	NTV	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NA
Phenanthrene	7.63E-06	4.65E-05	5.41E-05
Metals			
Arsenic	1.90E-03	2.67E-03	4.57E-03
Total	**2.44E-03**	**6.20E-03**	**8.63E-03**

TEQ = Toxicity equivalent concentration.
NTV = No toxicity value.
NA = Not applicable.

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Table 6-12

Summary of Hazard Quotients and Hazard Indices for the Groundskeeper
Central Tendency Exposure Approach
Current Scenario
Allendale School
Pittsfield, MA

Chemical	Soil Ingestion	Dermal Contact	Hazard Index
Dioxins/Furans			
Total 2,3,7,8-TCDD (TEQ)	NTV	NTV	NA
Polychlorinated Biphenyls			
Total PCBs	1.33E-04	3.48E-03	3.61E-03
Polynuclear Aromatic Hydrocarbons			
Benz(a)anthracene	NTV	NTV	NA
Benzo(a)pyrene	NTV	NTV	NA
Benzo(b)fluoranthene	NTV	NTV	NA
Benzo(k)fluoranthene	NTV	NTV	NA
Dibenz(a,h)anthracene	NTV	NTV	NA
Indeno(1,2,3-cd)pyrene	NTV	NTV	NA
Phenanthrene	1.91E-06	4.65E-05	4.84E-05
Metals			
Arsenic	4.75E-04	2.67E-03	3.14E-03
Total	**6.09E-04**	**6.20E-03**	**6.80E-03**

TEQ = Toxicity equivalent concentration.

NTV = No toxicity value.

NA = Not applicable.

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Table 6-13

Comparison of Site-Wide Average[a] Soil Boring Concentrations (0-10')
for Chemicals of Concern to Lowest Site-Specific Risk-Based Concentrations
Allendale School
Pittsfield, MA

Chemical	Site-Specific RBC[b] (mg/kg)		Range of Averaged Concentrations[c] (mg/kg)	Frequency of Detection	Number of Samples Exceeding Site-Specific RBC
Dioxins/Furans					
Total 2,3,7,8-TCDD (TEQ)	8.56E-04	C	7.56E-07 - 4.61E-04	18 / 27	0
Pesticides					
Dieldrin	1.07E+00	C	9.30E-03 - 6.40E+00	3 / 28	1
Polychlorinated Biphenyls					
Total PCBs	2.28E+00	NC_c	1.00E-02 - 1.10E+03	247 / 297	39
Polynuclear Aromatic Hydrocarbons					
Benz(a)anthracene	8.38E+01	C	3.80E-02 - 1.50E+01	11 / 27	0
Benzo(a)pyrene	1.04E+01	C	4.60E-02 - 1.60E+01	13 / 27	1
Benzo(b)fluoranthene	1.05E+02	C	4.60E-02 - 1.40E+01	14 / 27	0
Benzo(k)fluoranthene	1.25E+03	C	4.40E-02 - 1.20E+01	14 / 27	0
Dibenz(a,h)anthracene	1.17E+01	C	7.80E-02 - 2.50E+00	4 / 27	0
Indeno(1,2,3-cd)pyrene	1.19E+02	C	4.40E-02 - 3.80E+00	8 / 27	0
Phenanthrene	1.16E+03	NC_c	4.70E-02 - 1.20E+01	15 / 27	0
Metals					
Arsenic	4.46E+01	NC_c	2.70E+00 - 1.70E+01	28 / 28	0
Thallium	1.38E+01	NC_c	1.00E+00 - 1.70E+01	3 / 28	1

NTV = No toxicity value.

C = Cancer effects.

NC_c = Noncancer effects, child 1-6 years.

NA = Not applicable.

TEQ = Toxicity equivalent concentration.

[a] Soil borings were vertically averaged over the first 10 feet to yield an average concentration of each chemical of concern at each sample location.

[b] RBC is based on a target cancer risk of 1E-04 or a target hazard quotient of 1.

[c] Represents the range of vertically averaged soil boring concentrations across the site.

Boring Locations

Trees and Brush

Chain Link Fence

Depth of April 1998 Excavation:

0.5 '

1'

3'

Map produced by WESTON, adapted from Geographic Information System (GIS) database provided by TechLaw Inc.

N
W E
S

Scale in Feet

120 0 120 240

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Figure 6-1
Locations of Average 0 to 10 Foot Soil Borings for PCBs Exceeding Risk-Based Concentrations

Target Hazard Quotient 1.0

Allendale School
Pittsfield, MA

| I:/gepitt/aprs/risk61.apr | Risk1 | I:/gepitt/plots/risk61.eps | 12/8/1998 |

7. UNCERTAINTY ANALYSIS

There are uncertainties associated with each component of the human health risk assessment process. Conservative assumptions are typically made in the risk assessment to ensure that real risks to the public are not under-estimated. The intention of this approach is to ensure the protection of public health. In the uncertainty analysis, these assumptions are reviewed to determine their impact on the risk results. It is important to develop an understanding of the level and direction of the uncertainty in a risk assessment to put the results of the risk assessment in perspective for the risk manager (99-0088).

The results of the current use scenario evaluation indicate that no significant carcinogenic risks or noncancer health effects in any of the hypothetical receptors are likely to occur from exposure to soils. This is not surprising, even with the typically conservative assumptions used in the risk assessment, given the fact that there have been significant surface soil remediation activities performed at the site. In addition, the risks from exposure to the primary site contaminant, PCBs, are well below typical levels of concern, i.e., below 1E-06. Because the risk assessment process would tend to over-estimate risks, and the calculated risks are low despite the conservative nature of the analysis, a detailed discussion of uncertainty for the current use scenario is not presented.

The future use scenario was evaluated under the assumption that the site would eventually be changed from the existing use as a public school to a residential development, thereby exposing individuals to site soils at depths to 10 feet below grade. This assumption of residential development was applied to the estimation of RBCs for the COPCs. This is the most significant uncertainty in the future use scenario and the results associated with this assumption (see Figure 6-1, Section 6) would clearly be an over-estimation of risk (i.e., result in an overly conservative RBC value) if such a residential development were not to occur.

Another uncertainty in the future residential evaluation is the nature and extent of exposure through the vegetable ingestion pathway. As discussed in Subsection 3.5.2.7, it was assumed for the purposes of quantitative evaluation, that a chemical would accumulate within edible plants in the home garden setting only through root uptake. Processes of soil deposition on aboveground plants and volatilization from soil to plant foliar stomata (i.e., air-to-leaf transfer) were not evaluated because they were assumed to be quantitatively less significant pathways relative to root uptake processes. Nevertheless, it is possible that some vegetable contamination potentially could result from these migration pathways, and therefore, there is a potential under-estimation of risk associated with not evaluating these pathways.

Rain splashing is the primary mechanism by which soil contamination could adhere to aboveground plants. Visible evidence of soil contamination on the edible portion of the plant would presumably trigger an individual to wash the produce prior to eating. Washing would be likely to remove the external contamination. Therefore, although deposition of soil onto aboveground produce might result in an increase in external vegetable contamination, it could be reasonably argued that this would be a negligible contribution to overall chemical concentrations in the vegetable following produce washing.

Potential risk also may have been under-estimated through vegetable consumption because air-to-leaf transfer of vapor-phase chemicals was not evaluated. Although there were no volatile organic compounds (VOCs) selected as COPCs at the Allendale School, some air-to-leaf transfer of semivolatile organic compounds (SVOCs) could occur. However, this process is also expected to be minor relative to root uptake. First, it would be expected that the source of PCBs that could volatilize to air from the soil would be significantly depleted following excavation of the subsurface soils to the surface. This is a reasonable assumption in view of the length of time expected (i.e., a minimum of 6 months to 1 year) between excavation (for remediation or construction proposes) and the actual habitation of the plots by future residents and planting of vegetable gardens. Second, the primary PCB mixtures present in the Allendale School soil are Aroclors-1254 and –1260. These mixtures are composed predominantly of low volatility (i.e., higher chlorinated) congeners.

Another assumption that could theoretically under-estimate risk in the future scenario would be the approach used to vertically average soil borings down to 10 feet. If excavation and soil placement during home construction resulted in only the higher soil concentrations of PCBs from within the 0- to 10-foot interval being available for exposure, the exposure point concentration, and, therefore, the risk to the future resident, could be under-estimated.

In summary, while there are approaches and assumptions used in both scenarios that could either under- or over-estimate risk, it is expected that their net effect would be to over-estimate risk. For the future scenario, the over-estimation would be high if the future land use did not include residential development.

8. REFERENCES

03-0006 BBL (Blasland & Bouck Engineers, P.C., Blasland, Bouck & Lee, Inc.). 1991. *Study of Potential Remedial Options for PCB-Containing Soils at the Allendale School Property*. General Electric Company, Pittsfield, MA. September 1990 (Revised April 1991).

03-0007 BBL (Blasland, Bouck & Lee, Inc.). 1993. *MCP Interim Phase II Report for the Allendale School Property*. General Electric Company, Pittsfield, MA. January 1993.

03-0015 BBL (Blasland, Bouck & Lee, Inc.). 1996. *MCP Supplemental Phase II Scope of Work for the Allendale School Property*. General Electric Company, Pittsfield, MA. November 1996.

03-0023 BBL (Blasland, Bouck & Lee, Inc.). 1997. *MCP Supplemental Phase II Report for the Allendale School Property*. General Electric Company, Pittsfield, MA. August 1997.

03-0030 GE (General Electric Company). 1996. *Pittsfield 1-0960* GE/Allendale Schoolyard, Laboratory Results for Playset Location-Quanterra Laboratory (Letter to Lyn Cutler, MADEP from R.W. Gates, GE. 7 November 1996).

03-0032 BBL (Blasland, Bouck & Lee, Inc.). 1998. *Analytical Data Validation Report for the Allendale School Property*. Volume II of IV. General Electric Company, Pittsfield, MA. March 1998.

03-0033 BBL (Blasland, Bouck & Lee, Inc.). 1998. *Analytical Data Validation Report for the Allendale School Property*. Volume III of IV. General Electric Company, Pittsfield, MA. March 1998.

03-0034 BBL (Blasland, Bouck & Lee, Inc.). 1998. *Analytical Data Validation Report for the Allendale School Property*. Volume IV of IV. General Electric Company, Pittsfield, MA. March 1998.

03-0037 HMM (HMM Associates, Inc.). 1991. A*llendale School Drainage Analysis, Pittsfield, Massachusetts.* February 1991.

03-0038 HMM (HMM Associates, Inc.). 1991. *Allendale School Drainage Analysis, Pittsfield, Massachusetts.* April 1991.

03-0039 BBL (Blasland, Bouck & Lee, Inc.). 1998. *Remedial Action Work Plan for Limited Soil Removal at Allendale School (MCP Site No. 1-0960).* General Electric Company, Pittsfield, MA. March 1998.

03-0040 BBL (Blasland, Bouck & Lee, Inc.). 1998. *Addendum to the MCP Supplemental Phase II Report for the Allendale School Property*. Volume I of III. General Electric Company, Pittsfield, MA. June 1998.

03-0040 BBL (Blasland, Bouck & Lee, Inc.). 1998. *Addendum to the MCP Supplemental Phase II Report for the Allendale School Property*. Volume II of III. General Electric Company, Pittsfield, MA. August 1997.

03-0040 BBL (Blasland, Bouck & Lee, Inc.). 1998. *MCP Supplemental Phase II Report for the Allendale School Property*. Volume III of III. General Electric Company, Pittsfield, MA. August 1997.

03-0041 ChemRisk (ChemRisk-McLaren/Hart, Inc.). 1998. *Proposal for Streamlined Risk Characterization for Allendale School Property.* Prepared for General Electric Company, Pittsfield, MA. 23 June 1998.

03-0044 BBL (Blasland, Bouck & Lee, Inc.). 1998. *Analytical Data Validation Report for the Allendale School Property*. Volume I of IV. General Electric Company, Pittsfield, MA. March 1998.

03-0045 Geraghty & Miller (Geraghty & Miller, Inc.). 1990. *Results of the April 1990 Soil Sampling Program – Allendale School Yard and Vicinity, Pittsfield, Massachusetts*. July 1990.

03-0046 Geraghty & Miller (Geraghty & Miller, Inc.). 1990. *Results of the July 1990 Soil Sampling Program – Allendale School Yard, Pittsfield, Massachusetts*. September 1990.

03-0051 Geraghty and Miller (Geraghty & Miller, Inc.). 1991. *Allendale School Altresco Tree Planting Sampling Results. QA/QC Report.* Project: Pittsfield, Mass. Bill Gray. Task No. 910222P. 7 March 1991.

03-0052 Geraghty & Miller (Geraghty & Miller, Inc.). 1990. *Results of the February 1990 Soil Sampling Program – Allendale School Yard and Vicinity, Pittsfield, Massachusetts*. March 1990.

03-0053 Geraghty & Miller (Geraghty & Miller, Inc.). 1990. *Results of the August 1990 Soil Sampling Program – Allendale School Yard, Pittsfield, Massachusetts.* September 1990.

03-0054 WESTON (Roy F. Weston, Inc.). 1998. Telephone conversation between Bob Warwick (Technical Manager, WESTON) and David Hathaway (Principal Planner, City of Pittsfield, Massachusetts). Subject – Residential zoning of Allendale School property. 29 July 1998.

03-0055 WESTON (Roy F. Weston, Inc.). 1998. Telephone conversation between Bob Warwick (Technical Manager, WESTON) and Anne Kuhn (Principal, Allendale

School). Subject – Site-specific exposure issues at Allendale School. 22 June 1998.

03-0059 EPA (U.S. Environmental Protection Agency). 1998. Review of *Draft Human Health Risk Assessment, Allendale School (OU 3), Pittsfield, MA.* Prepared by Roy F. Weston, Inc. 2 September 1998. Submitted by Ms. Ann Marie Burke, Toxicologist, Technical Support Section, EPA Region I, to Mr. Chet Janowoski, RPM, GE Team, 21 September 1998.

99-0002 EPA (U.S. Environmental Protection Agency). 1989. *Risk Assessment Guidance for Superfund*, Volume I, *Human Health Evaluation Manual (Part A)*, Interim Final. Office of Emergency and Remedial Response. EPA/540/1-89/002.

99-0003 EPA (U.S. Environmental Protection Agency). 1992. *Supplemental Guidance to RAGS: Calculating the Concentration Term*. Office of Solid Waste and Emergency Response, Publication 9285.7-08l. May 1992.

99-0005 EPA (U.S. Environmental Protection Agency). 1996. “New England Risk Updates,” Number 4. November 1996.

99-0006 EPA (U.S. Environmental Protection Agency). 1997. *Health Effects Assessment Summary Tables (HEAST), FY-1997 Update*. Office of Solid Waste and Emergency Response. Washington, DC. EPA-540-R-97-036. PB 97-921199. July 1997.

99-0007 EPA (U.S. Environmental Protection Agency). 1997. *Exposure Factors Handbook*, Volume I. *General Factors*. Office of Research and Development, Washington, DC. EPA/600/P-95/002Fa. August 1997.

99-0008 EPA (U.S. Environmental Protection Agency). 1997. *Exposure Factors Handbook,* Volume II. *Food Ingestion Factors*. Office of Research and Development, Washington, DC. EPA/600/P-95/002Fa. August 1997.

99-0009 EPA (U.S. Environmental Protection Agency). 1997. *Exposure Factors Handbook*, Volume III. *Activity Factors*. Office of Research and Development, Washington, DC. EPA/600/P-95/002Fa. August 1997.

99-0010 EPA (U.S. Environmental Protection Agency). 1998. *Risk Assessment Guidance for Superfund:* Volume 1 – *Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments). Interim.* Office of Solid Waste and Emergency Response. EPA 540-R-97-033. OSWER 9285.7-01D. January 1998.

99-0011 IRIS (Integrated Risk Information System). 1998. Database of Toxicological Information for Hazardous Chemicals. Maintained by U.S. Environmental Protection Agency.

99-0017 ATSDR (Agency for Toxic Substances and Disease Registry). 1995. *Toxicological Profile for Polychlorinated Biphenyls*. Draft Publication for Comment (Update). U.S. Department of Health and Human Services, Public Health Service. Prepared by Research Triangle Institute, Contract No. 205-93-0606. August 1995.

99-0027 Baes, C.F., R.D. Sharp, A.L. Sjoreen, and R.W. Shor. 1984. *A Review and Analysis of Parameters for Assessing Transport of Environmentally Released Radionuclides through Agriculture.* Oak Ridge National Laboratory, Oak Ridge, TN. Prepared for the U.S. Department of Energy. ORNL-5786.

99-0031 EPA (U.S. Environmental Protection Agency). 1996. *PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures.* National Center for Environmental Assessment. Office of Research and Development. Washington, DC. EPA/600/P-96/001F. September 1996.

99-0051 Briggs, G.G., R.H. Bromilow, and A.A. Evan. 1982. "Relationships Between Lipophilicity and Root Uptake and Translocation of Non-ionized Chemicals by Barley." *Pesticide Science* 13: 495-504.

99-0057 EPA (U.S. Environmental Protection Agency). 1998. *Region 9 PRGs*. May 1998.

99-0073 EPA (U.S. Environmental Protection Agency). 1998. Meeting with EPA Region I and WESTON on June 10th and 11th, 1998 in Lenox, MA, and subsequent discussions by phone.

99-0074 EPA (U.S. Environmental Protection Agency). 1996. *Soil Screening Guidance: User's Guide.* EPA/540/R-96/018. Office of Emergency and Remedial Response, Washington, DC. PB96-963505.

99-0078 EPA (U.S. Environmental Protection Agency). 1996. *Soil Screening Guidance: Technical Background Document.* EPA/540/R-956/128. Office of Emergency and Remedial Response, Washington, DC. PB96-963502.

99-0080 EPA (U.S. Environmental Protection Agency). 1994. *Guidance for Performing Screening Level Risk Analyses at Combustion Facilities Burning Hazardous Wastes*. Office of Emergency and Remedial Response.

99-0082 EPA (U.S. Environmental Protection Agency). 1993. *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons*. Office of Research and Development, Washington, DC. EPA/600/R-93/089.

99-0086 EPA (U.S. Environmental Protection Agency). 1992. *Guidance for Data Usability in Risk Assessment (Part A)*. Office of Emergency and Remedial Response. Publication 9285.7-09A, PB92-963356.

99-0087 EPA (U.S. Environmental Protection Agency). 1992. *Dermal Exposure Assessment: Principles and Applications. Interim Report.* Office of Research and Development, Washington, DC. EPA/600/8-91/011B. January 1992.

99-0088 EPA (U.S. Environmental Protection Agency). 1992. *Guidance on Risk Characterization for Risk Managers and Risk Assessors*. Memorandum from F. Henry Habicht, II to Assistant and Regional Administrators. 26 February 1992.

99-0089 EPA (U.S. Environmental Protection Agency). 1991. *Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors*. Office of Solid Waste and Emergency Response. Washington, DC. OSWER Directive 9285.6-03.

99-0090 EPA (U.S. Environmental Protection Agency). 1991. *Risk Assessment Guidance for Superfund,* Volume I - *Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals). Interim.* Office of Emergency and Remedial Response. Washington, DC. Publication 9285.7-01B. December 1991.

99-0091 EPA (U.S. Environmental Protection Agency). 1990. *Methodology for Assessing Health Risks Associated with Indirect Exposure to Combustor Emissions*. Interim Final. Office of Health and Environmental Assessment. EPA/600/6-90/003.

99-0092 EPA (U.S. Environmental Protection Agency). 1989. *Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Dibenzofurans (CDDs and CDFs) and 1989 Update.* Risk Assessment Forum. EPA/625/3-89/016.

99-0093 Kissel, J., J.H. Sharai, K.Y. Richter, and R.A. Fenske. 1998. "Investigation of Dermal Contact with Soil Using a Fluorescent Marker." *J. Soil Contamination* (Accepted).

99-0094 Mayes, B.A., E.E. McConnell, B.H. Neal, M.J. Brunner, S.B. Hamilton, T.M. Sullivan, A.C. Peters, M.J. Ryan, J.D. Toft, A.W. Singer, J.F. Brown, Jr., R.G. Menton, and J.A. Moores. 1998. "Comparative Carcinogenicity in Sprague-Dawley Rats of the Polychlorinated Biphenyl Mixtures of Aroclors 1016, 1242, 1254, and 1260." *Toxicological Sciences* 41: 62-76, 1998.

99-0095 MADEP (Massachusetts Department of Environmental Protection). 1995. *Guidance for Disposal Site Risk Characterization (In Support of the Massachusetts Contingency Plan)*. Bureau of Waste Site Cleanup and Office of Research and Standards. July 1995.

99-0096 PTI (PTI Environmental Services). 1993. *Gastrointestinal Absorption of Selected Chemicals, Review of Evidence for Deriving Relative Absorption Factors*. EPA Contract No. 68-WO-0032. July 1993.

99-0097 Rosenblatt, D., J. Dacre, and D. Cogley. 1982. "An Environmental Fate Model Leading to Preliminary Pollutant Limit Values for Human Health Effects." In: *Environmental Risk Analysis for Chemicals*. R.A. Conway (Editor). Van Nostrand Reinhold Co.

99-0098 Safe, S.H. 1994. "Polychlorinated Biphenyls (PCBs): Environmental Impact, Biochemical and Toxic Responses, and Implications for Risk Assessment." *Critical Reviews in Toxicology* 242(2): 87-149.

99-0099 Wester, R.C., H.I. Maibach, L. Sedik, J. Melendres and M. Wade. 1993. "Percent Absorption of PCBs from Soil: In Vivo Rhesus Monkeys, In Vitro Human Skin, and Binding to Powdered Human Stratum Corneum." *J. Toxicol. Environ Health* 39: 375-382.

99-0106 EPA (U.S. Environmental Protection Agency). 1996. *Proposed Guidelines for Carcinogen Risk Assessment.* Office of Research and Development. EPA/600/P-92/003C. April 1996.

99-0122 EPA (U.S. Environmental Protection Agency). 1994. *Health Assessment Document for 2,3,7,8-Tetrachlorodibenzo-p-Dioxin and Related Compounds*. Volume III of III. EPA/600/BP-92001c. August 1994.

99-0123 EPA (U.S. Environmental Protection Agengy). 1998. *Risk Assessment Guidance for Superfund.* Volume 1. *Human Health Evaluation Manual. Supplemental Guidance. Dermal Risk Assessment Interim Guidance.* 6 November 1998. Peer Consultation Workshop Draft. OERR.

99-0124 EPA (U.S. Environmental Protection Agency). 1994. "New England Risk Updates," Number 2. August 1994.

99-0125 EPA (U.S. Environmental Protection Agency). 1995. "New England Risk Updates," Number 3. August 1995.

99-0126 NTP (National Toxicology Program). 1994. *Seventh Annual Report on Carcinogens: 1994.* Volume 2. PB95109781. U.S. Department of Health and Human Services, Washington, DC.

99-0127 EPA (U.S. Environmental Protection Agency). 1998. *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities.* Volumes 1, 2 and 3. OSWER. Peer Review Draft. EPA 530-D-98-001A. July 1998

99-0128 EPA (U.S. Environmental Protection Agency). 1986. *Guidelines for Carcinogen Risk Assessment. Federal Register* 51(185): 33992-34003.

99-0129 Ecobichon, D.J. 1996. "Toxic Effect of Pesticides." In: *Casarett and Doull's Toxicology: The Basic Science of Poisons*. Edited by C.D. Klaassen. McGraw-Hill, Health Professions Division, NY.

99-0130 ATSDR (Agency for Toxic Substances and Disease Registry). 1992. *Toxicological Profile for Thallium*. PB93-110856. U.S. Department of Health and Human Services, Atlanta, GA.

99-0131 ATSDR (Agency for Toxic Substances and Disease Registry). 1993. *Toxicological Profile for Arsenic*. PB93-182376. U.S. Department of Health and Human Services, Atlanta, GA.

99-0132 ATSDR (Agency for Toxic Substances and Disease Registry). 1995. *Polycyclic Aromatic Hydrocarbons*. Prepared by Research Triangle Institute. August 1995. ATSDR's Toxicological Profiles on CD-ROM. CRC-Lewis, Boca Raton, FL. 1997.

APPENDIX A

DOCUMENTATION OF HISTORICAL ANALYTICAL SOILS DATA FOR THE ALLENDALE SCHOOL

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DOCUMENTATION OF HISTORICAL ANALYTICAL SOILS DATA FOR THE ALLENDALE SCHOOL

The following tables show in detail how the soil sample locations were selected for evaluation in the risk assessment.

Note that the following sample locations were not evaluated due to difficulty in locating the analytical sample sheets:

- B-20-96 to B-32-96.
- SS-01 to SS-26.
- SD-01 to SD-03.
- B4, B5.
- B9 to B-12.
- K22 to K30.

APPENDIX A
Table A-1

Soil Sample Locations Within the 1991 Capped Area
With Respect to Use in the Current and Future Scenarios
Allendale School
Pittsfield, MA

Sample ID	Depth	Date Collected	Selected for Use: Current Scenario	Selected for Use: Future Scenario
AS1	0"-3"	Apr-90		X
	3"-6"			X
AS2	0"-3"	Apr-90		X
	3"-6"			X
AS3	0"-3"	Apr-90		X
	3"-6"			X
AS4	0"-3"	Apr-90		X
	3"-6"			X
AS5	0"-3"	Apr-90		X
	3"-6"			X
AS6	0"-3"	Apr-90		X
	3"-6"			X
AS7	0"-3"	Apr-90		X
	3"-6"			X
AS8	0"-3"	Apr-90		X
	3"-6"			X
AS-96-37	0"-6"	Oct-96	X	X
	6"-12"		X	X
AS-96-93	0"-6"	Oct-96	X	X
	6"-12"		X	X
AS-96-97	0"-6"	Oct-96	X	X
	6"-12"		X	X
AS-97-115	0'-0.5'	Jun-97	X	X
	0.5'-1.5'		X	X
	1.5'-2'			X
AS-97-116	0'-0.5'	Jun-97	X	X
	0.5'-1.5'		X	X
	1.5'-2'			X
AS-97-117	0'-0.5'	Jun-97	X	X
	0.5'-1.5'		X	X
	1.5'-2'			X
AS-97-118	0'-0.5'	Jun-97	X	X
	0.5'-1.5'		X	X
	1.5'-2'			X
AS-97-127	0'-0.5'	Jun-97	X	X
	0.5'-1.5'		X	X
	1.5'-2'			X
ASB-13	0'-0.5'	Jun-97	X	X
	0.5'-2'		X	X
	2'-4'			X
	4'-6'			X
ASB-16	0'-0.5'	Jun-97	X	X
	0.5'-2'		X	X

APPENDIX A
Table A-1

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Allendale School
Pittsfield, MA

Sample ID	Depth	Date Collected	Selected for Use: Current Scenario	Selected for Use: Future Scenario
ASB-16 (cont'd)	2'-4'	Jun-97		X
	4'-6'			X
ASB-17	0'-0.5'	Jun-97	X	X
	0.5'-2'		X	X
	2'-4'			X
	4'-6'			X
ASB-18	0'-0.5'	Jun-97	X	X
	0.5'-2'		X	X
	2'-4'			X
	4'-6'			X
ASB-19	0'-0.5'	Jun-97	X	X
	0.5'-2'		X	X
	2'-4'			X
	4'-6'			X
ASB-22	0'-0.5'	Jun-97	X	X
	0.5'-2'		X	X
	2'-4'			X
	4'-6'			X
ASB-26	2'-4'	Feb-98		X
	4'-6'			X
	6'-8'			X
	8'-10'			X
ASB-27	2'-4'	Feb-98		X
	4'-6'			X
	6'-8'			X
	8'-10'			X
ASB-28	2'-4'	Feb-98		X
	4'-6'			X
	6'-8'			X
	8'-10'			X
ASB-29	2'-4'	Feb-98		X
	4'-6'			X
	6'-8'			X
	8'-10'			X
ASB-30	2'-4'	Feb-98		X
	4'-6'			X
	6'-8'			X
	8'-10'			X
ASB-31	2'-4'	Feb-98		X
	4'-6'			X
	6'-8'			X
	8'-10'			X

APPENDIX A
Table A-1

Soil Sample Locations Within the 1991 Capped Area
With Respect to Use in the Current and Future Scenarios
Allendale School
Pittsfield, MA

Sample ID	Depth	Date Collected	Selected for Use	
			Current Scenario	Future Scenario
ASB-32	2'-4'	Feb-98		X
	4'-6'			X
	6'-8'			X
	8-10'			X
ASB-33	2'-4'	Feb-98		X
	4'-6'			X
	6'-8'			X
	8-10'			X
ASB-34	2'-4'	Feb-98		X
	4'-6'			X
	6'-8'			X
	8-10'			X
B1	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X
	24"-30"			X
	30"-36"			X
	36"-42"			X
	42"-48"			X
	48"-54"			X
	54"-60"			X
	60"-66"			X
	66"-72"			X
B10	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X
	24"-30"			X
	30"-36"			X
	36"-42"			X
	42"-48"			X
B11	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X
	24"-30"			X
	30"-36"			X
B12	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X

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APPENDIX A
Table A-1

Soil Sample Locations Within the 1991 Capped Area
With Respect to Use in the Current and Future Scenarios
Allendale School
Pittsfield, MA

Sample ID	Depth	Date Collected	Selected for Use: Current Scenario	Selected for Use: Future Scenario
B12 (cont'd)	24"-30"	Aug-90		X
	30"-36"			X
B13	0"-6"	Aug-90		X
B14	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X
	24"-30"			X
	30"-36"			X
	36"-42"			X
	42"-48"			X
B15	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X
B16	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X
	24"-30"			X
	30"-36"			X
	36"-42"			X
	42"-48"			X
	48"-54"			X
	54"-60"			X
B17	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X
	24"-30"			X
	30"-36"			X
	36"-42"			X
	42"-48"			X
B18	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X
	24"-30"			X
	30"-36"			X
	36"-42"			X
	42"-48"			X
B2	0"-6"	Aug-90		X

APPENDIX A
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Soil Sample Locations Within the 1991 Capped Area
With Respect to Use in the Current and Future Scenarios
Allendale School
Pittsfield, MA

Sample ID	Depth	Date Collected	Selected for Use: Current Scenario	Selected for Use: Future Scenario
B2 (cont'd)	6"-12"	Aug-90		X
	12"-18"			X
	18"-24"			X
	24"-30"			X
	30"-36"			X
	36"-42"			X
	42"-48"			X
B20	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X
	24"-30"			X
	30"-36"			X
	36"-42"			X
	42"-48"			X
	48"-54"			X
B28	0"-6"	Aug-90		X
	6"-12"			X
B29	0"-6"	Aug-90		X
	6"-12"			X
B3	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X
	24"-30"			X
	30"-36"			X
	36"-42"			X
	42"-48"			X
B39	0"-6"	Aug-90		X
	6"-12"			X
B4	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X
	24"-30"			X
	30"-36"			X
	36"-42"			X
	42"-48"			X
	48"-54"			X
B43	0"-6"	Aug-90		X
	6"-12"			X
B48	0"-6"	Aug-90		X

APPENDIX A
Table A-1

Soil Sample Locations Within the 1991 Capped Area
With Respect to Use in the Current and Future Scenarios
Allendale School
Pittsfield, MA

Sample ID	Depth	Date Collected	Selected for Use: Current Scenario	Selected for Use: Future Scenario
B48 (cont'd)	6"-12"	Aug-90		X
B5	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X
	24"-30"			X
	30"-36"			X
B52	0"-6"	Aug-90		X
	6"-12"			X
B57	0"-6"	Aug-90		X
	6"-12"			X
B59	0"-6"	Aug-90		X
	6"-12"			X
B60	0"-6"	Aug-90		X
	6"-12"			X
B64	0"-6"	Aug-90		X
	6"-12"			X
B7	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X
	24"-30"			X
	30"-36"			X
	36"-42"			X
	42"-48"			X
B8	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X
	24"-30"			X
	30"-36"			X
	36"-42"			X
	42"-48"			X
B9	0"-6"	Aug-90		X
	6"-12"			X
	12"-18"			X
	18"-24"			X
	24"-30"			X
	30"-36"			X
	36"-42"			X
	42"-48"			X
K1	0"-3"	Jul-90		X

APPENDIX A
Table A-1

Soil Sample Locations Within the 1991 Capped Area
With Respect to Use in the Current and Future Scenarios
Allendale School
Pittsfield, MA

Sample ID	Depth	Date Collected	Selected for Use	
			Current Scenario	Future Scenario
K1 (cont'd)	3"-6"	Jul-90		X
	6"-12"			X
	12"-18"			X
K10	0"-3"	Jul-90		X
	3"-6"			X
	6"-12"			X
	12"-18"			X
K11	0"-3"	Jul-90		X
	3"-6"			X
	6"-12"			X
	12"-18"			X
K12	0"-3"	Jul-90		X
	3"-6"			X
	6"-12"			X
	12"-18"			X
K13	0"-3"	Jul-90		X
	3"-6"			X
	6"-12"			X
	12"-18"			X
K14	0"-3"	Jul-90		X
	3"-6"			X
	6"-12"			X
	12"-18"			X
K16	0"-18"	Jul-90		X
K17	0"-18"	Jul-90		X
K18	0"-18"	Jul-90		X
K19	0"-18"	Jul-90		X
K2	0"-3"	Jul-90		X
	3"-6"			X
	6"-12"			X
	12"-18"			X
K20	0"-18"	Jul-90		X
K21	0"-3"	Jul-90		X
	3"-6"			X
	6"-12"			X
	12"-18"			X
K22	0"-6"	Aug-90		X
	6"-12"			X
K23	0"-6"	Aug-90		X
	6"-12"			X
K24	0"-6"	Aug-90		X
	6"-12"			X

APPENDIX A
Table A-1

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With Respect to Use in the Current and Future Scenarios
Allendale School
Pittsfield, MA

Sample ID	Depth	Date Collected	Selected for Use: Current Scenario	Selected for Use: Future Scenario
K26	0"-6"	Aug-90		X
	6"-12"			X
K27	0"-6"	Aug-90		X
	6"-12"			X
K28	0"-6"	Aug-90		X
	6"-12"			X
K29	0"-6"	Aug-90		X
	6"-12"			X
K3	0"-3"	Jul-90		X
	3"-6"			X
	6"-12"			X
	12"-18"			X
K30	0"-6"	Aug-90		X
	6"-12"			X
K4	0"-3"	Jul-90		X
	3"-6"			X
	6"-12"			X
	12"-18"			X
K5	0"-3"	Jul-90		X
	3"-6"			X
	6"-12"			X
	12"-18"			X
K6	0"-3"	Jul-90		X
	3"-6"			X
	6"-12"			X
	12"-18"			X
K7	0"-3"	Jul-90		X
	3"-6"			X
	6"-12"			X
	12"-18"			X
K8	0"-3"	Jul-90		X
	3"-6"			X
	6"-12"			X
	12"-18"			X
K9	0"-3"	Jul-90		X
	3"-6"			X
	6"-12"			X
	12"-18"			X

X = Sample location and depth were used in the designated scenario.

APPENDIX A
Table A-2

Depths of Soil Removed During Interim Remediation Activities[a]
Allendale School
Pittsfield, MA

Sample ID	Depth of Soil Removed (feet)
AS-96-100	0.5
AS-96-102	0.5
AS-96-103	0.5
AS-97-121	3
AS-97-122	1
AS-97-123	3
AS-97-124	1
AS-97-126	3
AS-96-64	1
AS-96-65	1
AS-96-66	3
AS-96-67	3
AS-96-70	3
AS-96-71	1
AS-96-72	3
AS-96-74	1
AS-96-75	1
AS-96-76	3
AS-96-79	3
AS-96-80	3
AS-96-81	1
AS-96-85	3
AS-96-98	0.5
AS-97-120	3
AS-98-128	3
AS-98-131	0.5
AS-98-134	3
ASB-10	3
ASB-11	0.5
ASB-20	3
ASB-21	3
ASB-35	3
ASB-36	3
ASB-37	3
ASB-38	3
ASB-39	3
ASB-4	3
ASB-40	3
ASB-41	3
ASB-42	3
ASB-43	3

APPENDIX A
Table A-2

Depths of Soil Removed During Interim Remediation Activities[a]
Allendale School
Pittsfield, MA

Sample ID	Depth of Soil Removed (feet)
ASB-44	1
ASB-45	1
ASB-46	3
ASB-47	1
ASB-48	3
ASB-49	3
ASB-50	3
ASB-51	3
ASB-52	3
ASB-53	3
ASB-54	1
ASB-55	3
ASB-56	3
ASB-57	1
ASB-58	1
ASB-61	1
AS-UST-1	0.5
AS-UST-2	0.5
B67	3
K15	0.5
PRE-21	6
PRE-22	6
PRE-23	6
PRE-24	6
PRE-25	6

[a] These samples were not evaluated in either current use or future use scenarios. See Figure 2-2.

APPENDIX A
Table A-3

Preexcavation Soil Boring Locations Under Paved or Inaccessible Areas[a]
Allendale School
Pittsfield, MA

Soil Boring ID	Status	Soil Boring ID	Status
AS-96-18	Not removed	PRE-2	Not removed
AS-96-24	Not removed	PRE-3	Not removed
AS-96-38	Not removed	PRE-4	Not removed
AS-96-41	Not removed	PRE-5	Not removed
AS-96-45	Not removed	PRE-6	Not removed
AS-96-52	Not removed	PRE-7	Not removed
AS-96-53	Not removed	PRE-8	Not removed
B-96-21	Not removed	PRE-9	Not removed
B-96-22	Not removed	PRE-10	Not removed
B-96-23	Not removed	PRE-11	Not removed
B-96-24	Not removed	PRE-12	Not removed
SS-18	Not removed	PRE-13	Not removed
SS-19	Not removed	PRE-14	Not removed
SS-20	Not removed	PRE-15	Not removed
SS-21	Not removed	PRE-16	Not removed
ASB-3	Not removed	PRE-17	Not removed
ASB-6	Not removed	PRE-18	Not removed
ASB-7	Not removed	PRE-19	Not removed
ASB-8	Not removed	PRE-20	Not removed
ASB-14	Not removed	PRE-21	Removed from 0-6'
ASB-15	Not removed	PRE-22	Removed from 0-6'
ASB-23	Not removed	PRE-23	Removed from 0-6'
ASB-24	Not removed	PRE-24	Removed from 0-6'
ASB-25	Not removed	PRE-25	Removed from 0-6'
PRE-1	Not removed	PRE-26	Not removed

[a] See Figure 2-3.

REVISED DRAFT - CONFIDENTIAL

APPENDIX A

Table A-4

Sample Locations and Depths
Selected for Evaluation by Sampling Dates
Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
Soil Sampling Program / April 25, 1990								
AS1	SP	IC	0"-3"	1.22	N	1	Y	3
	SP	IC	3"-6"	0.6	N	1	Y	3
AS2	SP	IC	0"-3"	1.37	N	1	Y	3
	SP	IC	3"-6"	4.24	N	1	Y	3
AS3	SP	IC	0"-3"	2.95	N	1	Y	3
	SP	IC	3"-6"	1.33	N	1	Y	3
AS4	SP	IC	0"-3"	0.07	N	1	Y	3
	SP	IC	0"-3"	0.13*	N	1	Y	3
	SP	IC	3"-6"	0.22	N	1	Y	3
	SP	IC	3"-6"	0.35*	N	1	Y	3
AS5	SP	IC	0"-3"	0.15	N	1	Y	3
	SP	IC	3"-6"	0.9	N	1	Y	3
AS6	SP	IC	0"-3"	0.12	N	1	Y	3
	SP	IC	3"-6"	0.11	N	1	Y	3
AS7	SP	IC	0"-3"	1.11	N	1	Y	3
	SP	IC	3"-6"	1.14	N	1	Y	3
AS8	SP	IC	0"-3"	1.42	N	1	Y	3
	SP	IC	3"-6"	1.54	N	1	Y	3
AS9	SP	OC	0"-3"	0.23	Y	2	Y	3
	SP	OC	3"-6"	0.39	Y	2	Y	3
AS10	SP	OC	0"-3"	0.29	Y	2	Y	3
	SP	OC	3"-6"	0.29	Y	2	Y	3
VA-3/1	SP	OC	0"-3"	<0.05	Y	2	Y	3
VA-3/2	SP	OC	0"-3"	<0.05	Y	2	Y	3
VA-7/1	SP	OC	0"-3"	<0.05	Y	2	Y	3
VA-7/2	SP	OC	0"-3"	0.06	Y	2	Y	3
VA-11/1	SP	OC	0"-3"	0.05	Y	2	Y	3
VA-11/2	SP	OC	0"-3"	0.11	Y	2	Y	3
VA-15/1	SP	OC	0"-3"	0.1	Y	2	Y	3
VA-15/2	SP	OC	0"-3"	0.08	Y	2	Y	3
VA-19/1	SP	OC	0"-3"	0.1	Y	2	Y	3
VA-19/2	SP	OC	0"-3"	0.12	Y	2	Y	3
VA-23/1	SP	OC	0"-3"	0.19	Y	2	Y	3
VA-23/2	SP	OC	0"-3"	0.2	Y	2	Y	3
VA-31/1	SP	OC	0"-3"	0.05	Y	2	Y	3
VA-31/2	SP	OC	0"-3"	0.09	Y	2	Y	3
Soil Sampling Program / July 1990								
K1	SP	IC	0"-3"	1.2	N	1	Y	3
	SP	IC	3"-6"	0.78	N	1	Y	3
	SP	IC	6"-12"	1.1	N	1	Y	3
	SP	IC	12"-18"	0.6	N	1	Y	3
K2	SP	IC	0"-3"	25	N	1	Y	3
	SP	IC	3"-6"	250	N	1	Y	3
	SP	IC	6"-12"	45	N	1	Y	3
	SP	IC	12"-18"	50	N	1	Y	3
K3	SP	IC	0"-3"	1.8	N	1	Y	3
	SP	IC	3"-6"	1.5	N	1	Y	3
	SP	IC	6"-12"	1.4	N	1	Y	3
	SP	IC	12"-18"	3.8	N	1	Y	3
K4	SP	IC	0"-3"	2.1	N	1	Y	3

* Duplicate Sample

REVISED DRAFT - CONFIDENTIAL

APPENDIX A

Table A-4

Sample Locations and Depths
Selected for Evaluation by Sampling Dates
Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
K4 (cont'd)	SP	IC	3"-6"	0.55	N	1	Y	3
	SP	IC	6"-12"	7.3	N	1	Y	3
	SP	IC	12"-18"	15	N	1	Y	3
K5	SP	IC	0"-3"	2.2	N	1	Y	3
	SP	IC	3"-6"	0.8	N	1	Y	3
	SP	IC	6"-12"	2.9	N	1	Y	3
	SP	IC	12"-18"	13	N	1	Y	3
K6	SP	IC	0"-3"	12	N	1	Y	3
	SP	IC	3"-6"	23	N	1	Y	3
	SP	IC	6"-12"	1.3	N	1	Y	3
	SP	IC	12"-18"	8.9	N	1	Y	3
K7	SP	IC	0"-3"	1.3	N	1	Y	3
	SP	IC	0"-3"	1.4*	N	1	Y	3
	SP	IC	3"-6"	0.78	N	1	Y	3
	SP	IC	6"-12"	0.56	N	1	Y	3
	SP	IC	12"-18"	2.5	N	1	Y	3
K8	SP	IC	0"-3"	8.8	N	1	Y	3
	SP	IC	3"-6"	13	N	1	Y	3
	SP	IC	6"-12"	10	N	1	Y	3
	SP	IC	12"-18"	18	N	1	Y	3
K9	SP	IC	0"-3"	4.8	N	1	Y	3
	SP	IC	3"-6"	3.2	N	1	Y	3
	SP	IC	6"-12"	2.8	N	1	Y	3
	SP	IC	12"-18"	1.3	N	1	Y	3
K10	SP	IC	0"-3"	1.1	N	1	Y	3
	SP	IC	3"-6"	0.99	N	1	Y	3
	SP	IC	6"-12"	1.3	N	1	Y	3
	SP	IC	12"-18"	2.3	N	1	Y	3
K11	SP	IC	0"-3"	0.4	N	1	Y	3
	SP	IC	3"-6"	0.72	N	1	Y	3
	SP	IC	6"-12"	0.51	N	1	Y	3
	SP	IC	12"-18"	0.56	N	1	Y	3
K12	SP	IC	0"-3"	0.26	N	1	Y	3
	SP	IC	3"-6"	0.07	N	1	Y	3
	SP	IC	6"-12"	0.65	N	1	Y	3
	SP	IC	12"-18"	0.69	N	1	Y	3
K13	SP	IC	0"-3"	0.4	N	1	Y	3
	SP	IC	3"-6"	0.15	N	1	Y	3
	SP	IC	6"-12"	0.17	N	1	Y	3
	SP	IC	12"-18"	0.12	N	1	Y	3
K14	SP	IC	0"-3"	0.35	N	1	Y	3
	SP	IC	3"-6"	0.29	N	1	Y	3
	SP	IC	6"-12"	0.53	N	1	Y	3
	SP	IC	12"-18"	0.78	N	1	Y	3
K15	SP	OC	6"-12"	0.25	Y	2	Y	3
	SP	OC	12"-18"	0.26	N	1	Y	3
K16	SP	IC	0"-18"	<0.8	N	1	Y	3
K17	SP	IC	0"-18"	3.6	N	1	Y	3
	SP	IC	0"-18"	4.4*	N	1	Y	3
K18	SP	IC	0"-18"	0.98	N	1	Y	3
K19	SP	IC	0"-18"	4.5	N	1	Y	3

* Duplicate Sample

APPENDIX A

Table A-4

Sample Locations and Depths
Selected for Evaluation by Sampling Dates
Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
K20	SP	IC	0"-18"	1.7	N	1	Y	3
K21	SP	IC	0"-3"	6.8	N	1	Y	3
	SP	IC	3"-6"	6.2	N	1	Y	3
	SP	IC	3"-6"	5.8*	N	1	Y	3
	SP	IC	6"-12"	30	N	1	Y	3
	SP	IC	12"-18"	42	N	1	Y	3
Soil Sampling Program / August 1990								
B1	SP	IC	0"-6"	5.7	N	1	Y	3
	SP	IC	6"-12"	26	N	1	Y	3
	SP	IC	12"-18"	7.9	N	1	Y	3
	SP	IC	18"-24"	3.9	N	1	Y	3
	SP	IC	24"-30"	10	N	1	Y	3
	SP	IC	30"-36"	45	N	1	Y	3
	SP	IC	36"-42"	103	N	1	Y	3
	SP	IC	42"-48"	54	N	1	Y	3
	SP	IC	48"-54"	37	N	1	Y	3
	SP	IC	54"-60"	76	N	1	Y	3
	SP	IC	60"-66"	98	N	1	Y	3
	SP	IC	66"-72"	<1.0	N	1	Y	3
B2	SP	IC	0"-6"	2.8	N	1	Y	3
	SP	IC	6"-12"	1.9	N	1	Y	3
	SP	IC	12"-18"	4.6	N	1	Y	3
	SP	IC	18"-24"	35	N	1	Y	3
	SP	IC	24"-30"	310	N	1	Y	3
	SP	IC	30"-36"	330	N	1	Y	3
	SP	IC	36"-42"	69	N	1	Y	3
	SP	IC	42"-48"	24	N	1	Y	3
B3	SP	IC	0"-6"	6.8	N	1	Y	3
	SP	IC	6"-12"	8.9	N	1	Y	3
	SP	IC	12"-18"	4.3	N	1	Y	3
	SP	IC	18"-24"	2.8	N	1	Y	3
	SP	IC	24"-30"	<0.6	N	1	Y	3
	SP	IC	36"-42"	<0.6	N	1	Y	3
	SP	IC	42"-48"	<0.9	N	1	Y	3
B6	SP	OC	0"-6"	<0.7	Y	2	Y	3
	SP	OC	6"-12"	<0.6	Y	2	Y	3
	SP	OC	12"-18"	<0.6	N	1	Y	3
	SP	OC	18"-24"	<0.6	N	1	Y	3
	SP	OC	24"-30"	<0.6	N	1	Y	3
	SP	OC	30"-36"	<0.6	N	1	Y	3
	SP	OC	36"-42"	<0.6	N	1	Y	3
	SP	OC	42"-48"	<0.6	N	1	Y	3
	SP	OC	48"-54"	<0.6	N	1	Y	3
B7	SP	IC	0"-6"	1.9	N	1	Y	3
	SP	IC	6"-12"	0.6	N	1	Y	3
	SP	IC	12"-18"	10	N	1	Y	3
	SP	IC	18"-24"	21	N	1	Y	3
	SP	IC	24"-30"	27	N	1	Y	3
	SP	IC	30"-36"	62	N	1	Y	3
	SP	IC	36"-42"	17	N	1	Y	3
	SP	IC	42"-48"	98	N	1	Y	3

* Duplicate Sample

APPENDIX A

Table A-4

Sample Locations and Depths
Selected for Evaluation by Sampling Dates
Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
B8	SP	IC	0"-6"	1.4	N	1	Y	3
	SP	IC	6"-12"	1.4	N	1	Y	3
	SP	IC	12"-18"	1.3	N	1	Y	3
	SP	IC	18"-24"	80	N	1	Y	3
	SP	IC	36"-42"	21	N	1	Y	3
	SP	IC	42"-48"	2.9	N	1	Y	3
B13	SP	IC	0"-6"	<0.7	N	1	Y	3
B14	SP	IC	0"-6"	5.8	N	1	Y	3
	SP	IC	6"-12"	18	N	1	Y	3
	SP	IC	12"-18"	9.2	N	1	Y	3
	SP	IC	18"-24"	19	N	1	Y	3
	SP	IC	24"-30"	6.5	N	1	Y	3
	SP	IC	30"-36"	4.4	N	1	Y	3
	SP	IC	36"-42"	4.1	N	1	Y	3
	SP	IC	42"-48"	0.76	N	1	Y	3
B15	SP	IC	0"-6"	<0.7	N	1	Y	3
	SP	IC	6"-12"	4.1	N	1	Y	3
	SP	IC	12"-18"	19	N	1	Y	3
	SP	IC	18"-24"	20	N	1	Y	3
B16	SP	IC	0"-6"	3.6	N	1	Y	3
	SP	IC	6"-12"	0.8	N	1	Y	3
	SP	IC	12"-18"	33	N	1	Y	3
	SP	IC	18"-24"	105	N	1	Y	3
	SP	IC	24"-30"	39	N	1	Y	3
	SP	IC	30"-36"	49	N	1	Y	3
	SP	IC	36"-42"	106	N	1	Y	3
	SP	IC	42"-48"	93	N	1	Y	3
	SP	IC	48"-54"	43	N	1	Y	3
	SP	IC	54"-60"	3.6	N	1	Y	3
B17	SP	IC	0"-6"	2.3	N	1	Y	3
	SP	IC	6"-12"	1	N	1	Y	3
	SP	IC	12"-18"	70	N	1	Y	3
	SP	IC	18"-24"	62	N	1	Y	3
	SP	IC	24"-30"	35	N	1	Y	3
	SP	IC	30"-36"	47	N	1	Y	3
	SP	IC	36"-42"	30	N	1	Y	3
	SP	IC	42"-48"	28	N	1	Y	3
B18	SP	IC	0"-6"	3.6	N	1	Y	3
	SP	IC	6"-12"	9	N	1	Y	3
	SP	IC	12"-18"	97	N	1	Y	3
	SP	IC	18"-24"	1100	N	1	Y	3
	SP	IC	24"-30"	34	N	1	Y	3
	SP	IC	30"-36"	68	N	1	Y	3
	SP	IC	36"-42"	3.7	N	1	Y	3
	SP	IC	42"-48"	<0.8	N	1	Y	3
B20	SP	IC	0"-6"	<0.7	N	1	Y	3
	SP	IC	6"-12"	0.98	N	1	Y	3
	SP	IC	12"-18"	8.6	N	1	Y	3
	SP	IC	18"-24"	18	N	1	Y	3
	SP	IC	24"-30"	36	N	1	Y	3
	SP	IC	30"-36"	8.7	N	1	Y	3

* Duplicate Sample

REVISED DRAFT - CONFIDENTIAL

APPENDIX A

Table A-4

Sample Locations and Depths
Selected for Evaluation by Sampling Dates
Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
B20 (cont'd)	SP	IC	36"-42"	14	N	1	Y	3
	SP	IC	42"-48"	12	N	1	Y	3
	SP	IC	48"-54"	2.6	N	1	Y	3
B28	SP	IC	0"-6"	<0.6	N	1	Y	3
	SP	IC	6"-12"	6.8	N	1	Y	3
B29	SP	IC	0"-6"	<0.7	N	1	Y	3
	SP	IC	6"-12"	<0.7	N	1	Y	3
B39	SP	IC	0"-6"	<0.6	N	1	Y	3
	SP	IC	6"-12"	<0.6	N	1	Y	3
B43	SP	IC	0"-6"	<0.7	N	1	Y	3
	SP	IC	6"-12"	0.67	N	1	Y	3
B44	SP	OC	0"-6"	<0.7	Y	2	Y	3
	SP	OC	6"-12"	<0.6	Y	2	Y	3
B48	SP	IC	0"-6"	<0.6	N	1	Y	3
	SP	IC	6"-12"	4.1	N	1	Y	3
B50	SP	OC	0"-6"	<0.8	Y	2	Y	3
	SP	OC	6"-12"	<0.6	Y	2	Y	3
	SP	OC	12"-18"	<0.6	N	1	Y	3
	SP	OC	18"-24"	1.9	N	1	Y	3
	SP	OC	24"-30"	<0.6	N	1	Y	3
	SP	OC	30"-36"	<0.6	N	1	Y	3
	SP	OC	36"-42"	<0.6	N	1	Y	3
	SP	OC	42"-48"	<0.6	N	1	Y	3
	SP	OC	48"-54"	<0.6	N	1	Y	3
	SP	OC	54"-60"	<0.6	N	1	Y	3
	SP	OC	60"-66"	<0.6	N	1	Y	3
	SP	OC	66"-67"	<0.6	N	1	Y	3
B52	SP	IC	0"-6"	<0.7	N	1	Y	3
	SP	IC	6"-12"	1.2	N	1	Y	3
B54	SP	OC	0"-6"	<0.8	Y	2	Y	3
	SP	OC	6"-12"	<0.6	Y	2	Y	3
B55	SP	OC	0"-6"	<0.8	Y	2	Y	3
	SP	OC	6"-12"	<0.7	Y	2	Y	3
	SP	OC	12"-18"	<0.7	N	1	Y	3
	SP	OC	18"-24"	<0.6	N	1	Y	3
	SP	OC	24"-30"	<0.6	N	1	Y	3
	SP	OC	30"-36"	<0.6	N	1	Y	3
	SP	OC	36"-42"	<0.6	N	1	Y	3
	SP	OC	42"-48"	<0.6	N	1	Y	3
B56	SP	OC	0"-6"	<0.6	Y	2	Y	3
	SP	OC	6"-12"	<0.6	Y	2	Y	3
	SP	OC	12"-18"	<0.6	N	1	Y	3
	SP	OC	18"-24"	<0.6	N	1	Y	3
	SP	OC	24"-30"	<0.6	N	1	Y	3
	SP	OC	30"-36"	<0.6	N	1	Y	3
	SP	OC	36"-42"	<0.6	N	1	Y	3
	SP	OC	42"-48"	<0.6	N	1	Y	3
B57	SP	IC	0"-6"	1.8	N	1	Y	3
	SP	IC	6"-12"	11	N	1	Y	3
B58	SP	OC	0"-6"	<0.7	Y	2	Y	3
	SP	OC	6"-12"	<0.6	Y	2	Y	3

* Duplicate Sample

REVISED DRAFT - CONFIDENTIAL

APPENDIX A

Table A-4

Sample Locations and Depths
Selected for Evaluation by Sampling Dates
Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
B59	SP	IC	0"-6"	<0.8	N	1	Y	3
	SP	IC	6"-12"	<0.7	N	1	Y	3
B60	SP	IC	0"-6"	<0.9	N	1	Y	3
	SP	IC	6"-12"	<0.7	N	1	Y	3
B61	SP	OC	0"-6"	<0.8	Y	2	Y	3
	SP	OC	6"-12"	<0.7	Y	2	Y	3
	SP	OC	12"-18"	<0.7	N	1	Y	3
	SP	OC	18"-24"	<0.7	N	1	Y	3
	SP	OC	24"-30"	<0.7	N	1	Y	3
	SP	OC	30"-36"	<0.6	N	1	Y	3
	SP	OC	36"-42"	<0.6	N	1	Y	3
	SP	OC	42"-48"	<0.6	N	1	Y	3
B62	SP	OC	0"-6"	<0.7	Y	2	Y	3
	SP	OC	6"-12"	<0.6	Y	2	Y	3
	SP	OC	12"-18"	<0.6	N	1	Y	3
	SP	OC	18"-24"	<0.6	N	1	Y	3
	SP	OC	24"-30"	<0.6	N	1	Y	3
	SP	OC	30"-36"	<0.6	N	1	Y	3
	SP	OC	36"-42"	<0.6	N	1	Y	3
	SP	OC	42"-48"	<0.6	N	1	Y	3
B63	SP	OC	0"-6"	<0.7	Y	2	Y	3
	SP	OC	6"-12"	<0.6	Y	2	Y	3
	SP	OC	12"-18"	<0.6	N	1	Y	3
	SP	OC	18"-24"	<0.6	N	1	Y	3
	SP	OC	24"-30"	<0.6	N	1	Y	3
	SP	OC	30"-36"	<0.6	N	1	Y	3
	SP	OC	36"-42"	<0.6	N	1	Y	3
	SP	OC	42"-48"	<0.6	N	1	Y	3
B64	SP	IC	0"-6"	<0.7	N	1	Y	3
	SP	IC	6"-12"	<0.6	N	1	Y	3
B65	SP	OC	0"-6"	<0.6	Y	2	Y	3
	SP	OC	6"-12"	<0.6	Y	2	Y	3
	SP	OC	12"-18"	<0.6	N	1	Y	3
	SP	OC	18"-24"	<0.6	N	1	Y	3
	SP	OC	24"-30"	<0.5	N	1	Y	3
	SP	OC	30"-36"	<0.6	N	1	Y	3
	SP	OC	36"-42"	<0.6	N	1	Y	3
	SP	OC	42"-48"	<0.6	N	1	Y	3
	SP	OC	48"-54"	<0.6	N	1	Y	3
	SP	OC	54"-60"	<0.6	N	1	Y	3
	SP	OC	60"-66"	<0.6	N	1	Y	3
	SP	OC	66"-72"	<0.7	N	1	Y	3
B66	SP	OC	0"-6"	<0.6	Y	2	Y	3
	SP	OC	6"-12"	<0.6	Y	2	Y	3
	SP	OC	12"-18"	<0.6	N	1	Y	3
	SP	OC	18"-24"	<0.6	N	1	Y	3
	SP	OC	24"-30"	<0.6	N	1	Y	3
	SP	OC	30"-36"	<0.6	N	1	Y	3
	SP	OC	36"-42"	<0.6	N	1	Y	3
	SP	OC	42"-48"	<0.6	N	1	Y	3
	SP	OC	48"-54"	<0.6	N	1	Y	3

* Duplicate Sample

REVISED DRAFT - CONFIDENTIAL

APPENDIX A

Table A-4

Sample Locations and Depths
Selected for Evaluation by Sampling Dates
Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
B66 (cont'd)	SP	OC	54"-60"	<0.6	N	1	Y	3
	SP	OC	60"-66"	<0.6	N	1	Y	3
	SP	OC	66"-72"	<0.6	N	1	Y	3
	SP	OC	72"-78"	1.3	N	1	Y	3
	SP	OC	78"-84"	<0.6	N	1	Y	3
	SP	OC	84"-90"	1.2	N	1	Y	3
	SP	OC	90"-96"	1.1	N	1	Y	3
	SP	OC	96"-102"	<0.6	N	1	Y	3
	SP	OC	102"-108"	<0.6	N	1	Y	3
	SP	OC	108"-114"	1	N	1	Y	3
	SP	OC	114"-120"	0.8	N	1	Y	3
B68	SP	OC	0"-6"	<0.6	Y	2	Y	3
	SP	OC	6"-12"	<0.6	Y	2	Y	3
	SP	OC	12"-18"	<0.6	N	1	Y	3
	SP	OC	18"-24"	<0.6	N	1	Y	3
	SP	OC	24"-30"	<0.6	N	1	Y	3
	SP	OC	30"-36"	<0.6	N	1	Y	3
	SP	OC	36"-42"	<0.6	N	1	Y	3
	SP	OC	42"-48"	<0.6	N	1	Y	3
	SP	OC	48"-54"	<0.6	N	1	Y	3
	SP	OC	54"-60"	<0.6	N	1	Y	3
	SP	OC	60"-66"	<0.6	N	1	Y	3
	SP	OC	66"-72"	<0.7	N	1	Y	3
Soil Sampling Program / February 1991								
T-1	SP	OC	0"12"	0.019	Y	2	Y	3
	SP	OC	12"-24"	0.019	N	1	Y	3
	SP	OC	24"-36"	<0.011	N	1	Y	3
	SP	OC	24"-36"	<0.011*	N	1	Y	3
	SP	OC	36"-48"	<0.011	N	1	Y	3
T-2	SP	OC	0"-12"	0.05	Y	2	Y	3
	SP	OC	12"-24"	<0.013	N	1	Y	3
	SP	OC	24"36"	<0.011	N	1	Y	3
	SP	OC	36"-48"	<0.011	N	1	Y	3
T-3	SP	OC	0"-12"	<0.014	Y	2	Y	3
	SP	OC	12"-24"	<0.012	N	1	Y	3
	SP	OC	24"36"	<0.012	N	1	Y	3
	SP	OC	36"-48"	<0.013	N	1	Y	3
T-4	SP	OC	0"-12"	0.037	Y	2	Y	3
	SP	OC	12"-24"	<0.11	N	1	Y	3
	SP	OC	24"36"	<0.012	N	1	Y	3
	SP	OC	24"36"	<0.011*	N	1	Y	3
	SP	OC	36"-48"	<0.010	N	1	Y	3
T-5	SP	OC	0"-12"	0.015	Y	2	Y	3
	SP	OC	12"-24"	<0.010	N	1	Y	3
	SP	OC	24"36"	<0.011	N	1	Y	3
	SP	OC	36"-48"	<0.010	N	1	Y	3
T-6	SP	OC	0"-12"	0.018	Y	2	Y	3
	SP	OC	12"-24"	<0.013	N	1	Y	3
	SP	OC	24"36"	0.02	N	1	Y	3
	SP	OC	36"-48"	<0.010	N	1	Y	3
	SP	OC	36"-48"	<0.010*	N	1	Y	3

* Duplicate Sample

APPENDIX A

Table A-4

Sample Locations and Depths
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Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
T-7	SP	OC	0"-12"	<0.154	Y	2	Y	3
	SP	OC	12"-24"	0.021	N	1	Y	3
	SP	OC	24"36"	<0.012	N	1	Y	3
	SP	OC	36"-48"	<0.015	N	1	Y	3
T-8	SP	OC	0"-12"	0.022	Y	2	Y	3
	SP	OC	0"-12"	0.054*	Y	2	Y	3
	SP	OC	12"-24"	<0.012	N	1	Y	3
	SP	OC	24"36"	<0.011	N	1	Y	3
	SP	OC	36"-48"	<0.011	N	1	Y	3
T-9	SP	OC	0"-12"	0.095	Y	2	Y	3
	SP	OC	12"-24"	0.027	N	1	Y	3
	SP	OC	24"36"	<0.010	N	1	Y	3
	SP	OC	36"-48"	<0.010	N	1	Y	3
T-10	SP	OC	0"-12"	0.104	Y	2	Y	3
	SP	OC	12"-24"	0.012	N	1	Y	3
	SP	OC	24"36"	<0.010	N	1	Y	3
	SP	OC	24"36"	<0.010*	N	1	Y	3
	SP	OC	36"-48"	<0.010	N	1	Y	3
T-11	SP	OC	0"-12"	<0.012	Y	2	Y	3
	SP	OC	12"-24"	0.097	N	1	Y	3
	SP	OC	24"36"	<0.010	N	1	Y	3
	SP	OC	24"36"	<0.010*	N	1	Y	3
	SP	OC	36"-48"	<0.011	N	1	Y	3
T-12	SP	OC	0"-12"	0.022	Y	2	Y	3
	SP	OC	12"-24"	<0.010	N	1	Y	3
	SP	OC	24"36"	<0.010	N	1	Y	3
	SP	OC	36"-48"	<0.009	N	1	Y	3
T-13	SP	OC	0"-12"	0.027	Y	2	Y	3
	SP	OC	12"-24"	<0.010	N	1	Y	3
	SP	OC	24"36"	<0.009	N	1	Y	3
	SP	OC	36"-48"	<0.010	N	1	Y	3
T-14	SP	OC	0"-12"	0.016	Y	2	Y	3
	SP	OC	12"-24"	<0.011	N	1	Y	3
	SP	OC	24"36"	<0.009	N	1	Y	3
	SP	OC	36"-48"	<0.009	N	1	Y	3
T-15	SP	OC	0"-12"	<0.012	Y	2	Y	3
	SP	OC	12"-24"	<0.010	N	1	Y	3
	SP	OC	24"36"	<0.008	N	1	Y	3
	SP	OC	24"36"	0.077*	N	1	Y	3
	SP	OC	36"-48"	<0.010	N	1	Y	3
T-16	SP	OC	0"-12"	0.018	Y	2	Y	3
	SP	OC	12"-24"	0.009	N	1	Y	3
	SP	OC	24"36"	0.086	N	1	Y	3
	SP	OC	36"-48"	<0.011	N	1	Y	3
T-17	SP	OC	0"-12"	<0.011	Y	2	Y	3
	SP	OC	12"-24"	0.015	N	1	Y	3
	SP	OC	24"36"	<0.011	N	1	Y	3
	SP	OC	36"-48"	<0.010	N	1	Y	3
T-18	SP	OC	0"-12"	0.025	Y	2	Y	3
	SP	OC	12"-24"	<0.010	N	1	Y	3
	SP	OC	24"36"	<0.010	N	1	Y	3

* Duplicate Sample

REVISED DRAFT - CONFIDENTIAL

APPENDIX A

Table A-4

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Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
T-18 (cont'd)	SP	OC	36"-48"	<0.010	N	1	Y	3
T-19	SP	OC	0"-12"	<0.010	Y	2	Y	3
	SP	OC	0"-12"	0.052*	Y	2	Y	3
	SP	OC	12"-24"	<0.010	N	1	Y	3
	SP	OC	24"36"	<0.010	N	1	Y	3
	SP	OC	36"-48"	<0.010	N	1	Y	3
T-20	SP	OC	0"-12"	0.014	Y	2	Y	3
	SP	OC	12"-24"	<0.010	N	1	Y	3
	SP	OC	24"36"	<0.010	N	1	Y	3
	SP	OC	36"-48"	<0.010	N	1	Y	3
T-21	SP	OC	0"-12"	0.025	Y	2	Y	3
	SP	OC	12"-24"	<0.010	N	1	Y	3
	SP	OC	24"36"	<0.010	N	1	Y	3
	SP	OC	36"-48"	<0.009	N	1	Y	3
T-22	SP	OC	0"-12"	0.085	Y	2	Y	3
	SP	OC	12"-24"	0.018	N	1	Y	3
	SP	OC	24"36"	0.014	N	1	Y	3
	SP	OC	36"-48"	<0.010	N	1	Y	3
T-23	SP	OC	0"-12"	0.017	Y	2	Y	3
	SP	OC	12"-24"	0.01	N	1	Y	3
	SP	OC	24"36"	<0.012	N	1	Y	3
	SP	OC	36"-48"	<0.009	N	1	Y	3
T-24	SP	OC	0"-12"	0.015	Y	2	Y	3
	SP	OC	12"-24"	<0.009	N	1	Y	3
	SP	OC	24"36"	<0.009	N	1	Y	3
	SP	OC	36"-48"	<0.009	N	1	Y	3
	SP	OC	36"-48"	<0.009*	N	1	Y	3
T-25	SP	OC	0"-12"	0.042	Y	2	Y	3
	SP	OC	12"-24"	0.05	N	1	Y	3
	SP	OC	24"36"	<0.010	N	1	Y	3
	SP	OC	24"36"	<0.010*	N	1	Y	3
	SP	OC	36"-48"	<0.010	N	1	Y	3
T-26	SP	OC	0"-12"	0.37	Y	2	Y	3
	SP	OC	12"-24"	0.78	N	1	Y	3
	SP	OC	24"36"	0.024	N	1	Y	3
	SP	OC	36"-48"	<0.096	N	1	Y	3
T-27	SP	OC	0"-12"	0.42	Y	2	Y	3
	SP	OC	12"-24"	0.13	N	1	Y	3
	SP	OC	24"36"	0.14	N	1	Y	3
	SP	OC	24"36"	0.019*	N	1	Y	3
	SP	OC	36"-48"	0.016	N	1	Y	3
T-28	SP	OC	0"-12"	0.42	Y	2	Y	3
	SP	OC	12"-24"	<0.116	N	1	Y	3
	SP	OC	24"36"	<0.12	N	1	Y	3
	SP	OC	36"-48"	<0.12	N	1	Y	3
	SP	OC	36"-48"	0.042*	N	1	Y	3
T-29	SP	OC	0"-12"	1.2	Y	2	Y	3
	SP	OC	12"-24"	0.104	N	1	Y	3
	SP	OC	12"-24"	<0.011*	N	1	Y	3
	SP	OC	24"36"	<0.11	N	1	Y	3
	SP	OC	36"-48"	<0.12	N	1	Y	3

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REVISED DRAFT - CONFIDENTIAL

APPENDIX A

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Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
T-30	SP	OC	0"-12"	0.29	Y	2	Y	3
	SP	OC	12"-24"	1.59	N	1	Y	3
	SP	OC	24"36"	<0.011	N	1	Y	3
	SP	OC	36"-48"	<0.013	N	1	Y	3
Soil Sampling Program / October 1996								
AS-96-1	SA	OC	0-6"	0.056	Y	2	Y	3
	SA	OC	6"-12"	0.14	Y	2	Y	3
AS-96-10	SA	OC	0-6"	0.17	Y	2	Y	3
	SA	OC	6"-12"	0.056	Y	2	Y	3
AS-96-100	SA	OC	6"-12"	0.61	Y	2	Y	3
	SA	OC	6"-12"	0.43*	Y	2	Y	3
AS-96-101	SA	OC	0-6"	0.18	Y	2	Y	3
	SA	OC	6"-12"	0.14	Y	2	Y	3
AS-96-102	SA	OC	6"-12"	0.54	Y	2	Y	3
AS-96-103	SA	OC	6"-12"	0.13	Y	2	Y	3
AS-96-104	SA	OC	0-6"	0.12	Y	2	Y	3
	SA	OC	6"-12"	0.96	Y	2	Y	3
AS-96-105	SA	OC	0-6"	0.23	Y	2	Y	3
	SA	OC	6"-12"	0.45	Y	2	Y	3
AS-96-106	SA	OC	0-6"	< 0.041	Y	2	Y	3
	SA	OC	6"-12"	< 0.041	Y	2	Y	3
AS-96-107	SA	OC	0-6"	0.061	Y	2	Y	3
	SA	OC	6"-12"	< 0.040	Y	2	Y	3
AS-96-108	SA	OC	0-6"	0.37	Y	2	Y	3
	SA	OC	6"-12"	0.074	Y	2	Y	3
AS-96-109	SA	OC	0-6"	0.14	Y	2	Y	3
	SA	OC	6"-12"	0.092	Y	2	Y	3
AS-96-11	SA	OC	0-6"	0.052	Y	2	Y	3
	SA	OC	6"-12"	< 0.041	Y	2	Y	3
AS-96-110	SA	OC	0-6"	0.98	Y	2	Y	3
	SA	OC	6"-12"	0.24	Y	2	Y	3
AS-96-111	SA	OC	0-6"	0.098	Y	2	Y	3
	SA	OC	6"-12"	< 0.036	Y	2	Y	3
	SA	OC	6"-12"	< 0.036	Y	2	Y	3
AS-96-112	SA	OC	0-6"	0.096	Y	2	Y	3
	SA	OC	6"-12"	0.068	Y	2	Y	3
AS-96-113	SA	OC	0-6"	0.085	Y	2	Y	3
	SA	OC	6"-12"	0.058	Y	2	Y	3
AS-96-114	SA	OC	0-6"	< 0.037	Y	2	Y	3
	SA	OC	6"-12"	0.12	Y	2	Y	3
	SA	OC	6"-12"	0.11*	Y	2	Y	3
AS-96-12	SA	OC	0-6"	< 0.039	Y	2	Y	3
	SA	OC	6"-12"	< 0.038	Y	2	Y	3
AS-96-13	SA	OC	0-6"	0.08	Y	2	Y	3
	SA	OC	0-6"	0.074*	Y	2	Y	3
	SA	OC	6"-12"	< 0.041	Y	2	Y	3
AS-96-14	SA	OC	0-6"	0.27	Y	2	Y	3
	SA	OC	6"-12"	0.13	Y	2	Y	3
AS-96-15	SA	OC	0-6"	0.094	Y	2	Y	3
	SA	OC	6"-12"	0.073	Y	2	Y	3
AS-96-16	SA	OC	0-6"	0.071	Y	2	Y	3

* Duplicate Sample

REVISED DRAFT - CONFIDENTIAL

APPENDIX A

Table A-4

Sample Locations and Depths Selected for Evaluation by Sampling Dates Allendale School Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
AS-96-16 (cont'd)	SA	OC	6"-12"	0.075	Y	2	Y	3
AS-96-17	SA	OC	0-6"	0.33	Y	2	Y	3
	SA	OC	6"-12"	0.1	Y	2	Y	3
AS-96-18	SA	OC	0-6"	0.18	N	P	Y	3
	SA	OC	6"-12"	0.073	N	P	Y	3
AS-96-19	SA	OC	0-6"	0.088	Y	2	Y	3
	SA	OC	6"-12"	0.075	Y	2	Y	3
AS-96-2	SA	OC	0-6"	0.077	Y	2	Y	3
	SA	OC	6"-12"	< 0.039	Y	2	Y	3
AS-96-20	SA	OC	0-6"	0.044	Y	2	Y	3
	SA	OC	6"-12"	< 0.037	Y	2	Y	3
AS-96-21	SA	OC	0-6"	0.058	Y	2	Y	3
	SA	OC	0-6"	0.063*	Y	2	Y	3
	SA	OC	6"-12"	< 0.037	Y	2	Y	3
AS-96-22	SA	OC	0-6"	0.071	Y	2	Y	3
	SA	OC	6"-12"	< 0.036	Y	2	Y	3
AS-96-23	SA	OC	0-6"	0.07	Y	2	Y	3
	SA	OC	6"-12"	< 0.036	Y	2	Y	3
AS-96-24	SA	OC	0-6"	0.051	N	P	Y	3
	SA	OC	6"-12"	< 0.036	N	P	Y	3
AS-96-25	SA	OC	0-6"	0.11	Y	2	Y	3
	SA	OC	6"-12"	< 0.035	Y	2	Y	3
AS-96-26	SA	OC	0-6"	0.11	Y	2	Y	3
	SA	OC	6"-12"	0.051	Y	2	Y	3
AS-96-27	SA	OC	0-6"	0.13	Y	2	Y	3
	SA	OC	6"-12"	< 0.036	Y	2	Y	3
AS-96-28	SA	OC	0-6"	0.072	Y	2	Y	3
	SA	OC	6"-12"	< 0.036	Y	2	Y	3
AS-96-29	SA	OC	0-6"	0.11	Y	2	Y	3
	SA	OC	6"-12"	0.045	Y	2	Y	3
AS-96-3	SA	OC	0-6"	0.093	Y	2	Y	3
	SA	OC	6"-12"	0.088	Y	2	Y	3
AS-96-30	SA	OC	0-6"	0.06	Y	2	Y	3
	SA	OC	0-6"	0.064*	Y	2	Y	3
	SA	OC	6"-12"	< 0.039	Y	2	Y	3
AS-96-31	SA	OC	0-6"	< 0.036	Y	2	Y	3
	SA	OC	6"-12"	< 0.040	Y	2	Y	3
AS-96-32	SA	OC	0-6"	0.049	Y	2	Y	3
	SA	OC	6"-12"	< 0.038	Y	2	Y	3
AS-96-33	SA	OC	0-6"	0.057	Y	2	Y	3
	SA	OC	6"-12"	< 0.033	Y	2	Y	3
AS-96-34	SA	OC	0-6"	0.096	Y	2	Y	3
	SA	OC	6"-12"	0.17	Y	2	Y	3
AS-96-35	SA	OC	0-6"	0.066	Y	2	Y	3
	SA	OC	6"-12"	< 0.038	Y	2	Y	3
AS-96-36	SA	OC	0-6"	0.1	Y	2	Y	3
	SA	OC	6"-12"	< 0.043	Y	2	Y	3
AS-96-37	SA	IC	0-6"	0.075	Y	2	Y	3
	SA	IC	6"-12"	0.069	Y	2	Y	3
AS-96-38	SA	OC	0-6"	0.19	N	P	Y	3
	SA	OC	6"-12"	0.065	N	P	Y	3

* Duplicate Sample

REVISED DRAFT - CONFIDENTIAL

APPENDIX A

Table A-4

Sample Locations and Depths
Selected for Evaluation by Sampling Dates
Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
AS-96-39	SA	OC	0-6"	0.063	Y	2	Y	3
	SA	OC	6"-12"	< 0.038	Y	2	Y	3
AS-96-4	SA	OC	0-6"	0.053	Y	2	Y	3
	SA	OC	6"-12"	0.097	Y	2	Y	3
AS-96-40	SA	OC	0-6"	0.054	Y	2	Y	3
	SA	OC	6"-12"	< 0.039	Y	2	Y	3
	SA	OC	6"-12"	< 0.038	Y	2	Y	3
AS-96-41	SA	OC	0-6"	0.13	N	P	Y	3
	SA	OC	6"-12"	0.12	N	P	Y	3
AS-96-42	SA	OC	0-6"	0.057	Y	2	Y	3
	SA	OC	6"-12"	0.071	Y	2	Y	3
AS-96-43	SA	OC	0-6"	0.08	Y	2	Y	3
	SA	OC	6"-12"	0.061	Y	2	Y	3
AS-96-44	SA	OC	0-6"	0.046	Y	2	Y	3
	SA	OC	6"-12"	< 0.036	Y	2	Y	3
AS-96-45	SA	OC	0-6"	0.16	N	P	Y	3
	SA	OC	6"-12"	0.083	N	P	Y	3
AS-96-46	SA	OC	0-6"	0.084	Y	2	Y	3
	SA	OC	6"-12"	0.063	Y	2	Y	3
AS-96-47	SA	OC	0-6"	0.084	Y	2	Y	3
	SA	OC	6"-12"	0.055	Y	2	Y	3
AS-96-48	SA	OC	0-6"	0.07	Y	2	Y	3
	SA	OC	6"-12"	< 0.039	Y	2	Y	3
AS-96-49	SA	OC	0-6"	0.085	Y	2	Y	3
	SA	OC	6"-12"	0.046	Y	2	Y	3
AS-96-5	SA	OC	0-6"	0.052	Y	2	Y	3
	SA	OC	6"-12"	< 0.039	Y	2	Y	3
AS-96-50	SA	OC	0-6"	0.13	Y	2	Y	3
	SA	OC	6"-12"	0.091	Y	2	Y	3
	SA	OC	6"-12"	0.080*	Y	2	Y	3
AS-96-51	SA	OC	0-6"	0.12	Y	2	Y	3
	SA	OC	6"-12"	0.089	Y	2	Y	3
AS-96-52	SA	OC	0-6"	0.051	N	P	Y	3
	SA	OC	6"-12"	< 0.036	N	P	Y	3
AS-96-53	SA	OC	0-6"	0.1	N	P	Y	3
	SA	OC	6"-12"	0.042	N	P	Y	3
AS-96-54	SA	OC	0-6"	0.074	Y	2	Y	3
	SA	OC	6"-12"	0.056	Y	2	Y	3
AS-96-55	SA	OC	0-6"	0.05	Y	2	Y	3
	SA	OC	6"-12"	0.051	Y	2	Y	3
AS-96-56	SA	OC	0-6"	0.066	Y	2	Y	3
	SA	OC	6"-12"	0.071	Y	2	Y	3
AS-96-57	SA	OC	0-6"	0.092	Y	2	Y	3
	SA	OC	6"-12"	0.065	Y	2	Y	3
AS-96-58	SA	OC	0-6"	0.11	Y	2	Y	3
	SA	OC	6"-12"	0.044	Y	2	Y	3
AS-96-59	SA	OC	0-6"	0.094	Y	2	Y	3
	SA	OC	6"-12"	0.11	Y	2	Y	3
AS-96-6	SA	OC	0-6"	0.067	Y	2	Y	3
	SA	OC	6"-12"	< 0.039	Y	2	Y	3
AS-96-60	SA	OC	0-6"	0.086	Y	2	Y	3

* Duplicate Sample

REVISED DRAFT - CONFIDENTIAL

APPENDIX A

Table A-4

Sample Locations and Depths
Selected for Evaluation by Sampling Dates
Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
AS-96-60 (cont'd)	SA	OC	6"-12"	0.11	Y	2	Y	3
	SA	OC	6"-12"	0.080*	Y	2	Y	3
AS-96-61	SA	OC	0-6"	0.059	Y	2	Y	3
	SA	OC	6"-12"	0.046	Y	2	Y	3
AS-96-62	SA	OC	0-6"	0.14	Y	2	Y	3
	SA	OC	6"-12"	0.066	Y	2	Y	3
AS-96-63	SA	OC	0-6"	0.41	Y	2	Y	3
	SA	OC	6"-12"	0.62	Y	2	Y	3
AS-96-68	SA	OC	0-6"	< 0.040	Y	2	Y	3
	SA	OC	6"-12"	< 0.038	Y	2	Y	3
AS-96-69	SA	OC	0-6"	0.14	Y	2	Y	3
	SA	OC	6"-12"	0.052	Y	2	Y	3
AS-96-7	SA	OC	0-6"	0.069	Y	2	Y	3
	SA	OC	6"-12"	< 0.040	Y	2	Y	3
AS-96-73	SA	OC	0-6"	0.077	Y	2	Y	3
	SA	OC	6"-12"	< 0.041	Y	2	Y	3
AS-96-77	SA	OC	0-6"	0.11	Y	2	Y	3
	SA	OC	6"-12"	0.06	Y	2	Y	3
AS-96-78	SA	OC	0-6"	0.085	Y	2	Y	3
	SA	OC	6"-12"	0.04	Y	2	Y	3
AS-96-8	SA	OC	0-6"	0.06	Y	2	Y	3
	SA	OC	6"-12"	0.065	Y	2	Y	3
AS-96-82	SA	OC	0-6"	0.067	Y	2	Y	3
	SA	OC	6"-12"	0.11	Y	2	Y	3
AS-96-83	SA	OC	0-6"	0.094	Y	2	Y	3
	SA	OC	6"-12"	0.043	Y	2	Y	3
AS-96-84	SA	OC	0-6"	0.2	Y	2	Y	3
	SA	OC	6"-12"	0.21	Y	2	Y	3
AS-96-86	SA	OC	0-6"	0.18	Y	2	Y	3
	SA	OC	6"-12"	0.12	Y	2	Y	3
AS-96-87	SA	OC	0-6"	0.4	Y	2	Y	3
	SA	OC	6"-12"	0.047	Y	2	Y	3
AS-96-88	SA	OC	0-6"	0.22	Y	2	Y	3
	SA	OC	6"-12"	0.93	Y	2	Y	3
AS-96-89	SA	OC	0-6"	0.41	Y	2	Y	3
	SA	OC	6"-12"	0.29	Y	2	Y	3
AS-96-9	SA	OC	0-6"	0.06	Y	2	Y	3
	SA	OC	6"-12"	0.22	Y	2	Y	3
AS-96-90	SA	OC	0-6"	0.25	Y	2	Y	3
	SA	OC	6"-12"	0.27	Y	2	Y	3
	SA	OC	6"-12"	0.31*	Y	2	Y	3
AS-96-91	SA	OC	0-6"	0.22	Y	2	Y	3
	SA	OC	6"-12"	0.16	Y	2	Y	3
AS-96-92	SA	OC	0-6"	0.34	Y	2	Y	3
	SA	OC	6"-12"	0.47	Y	2	Y	3
AS-96-93	SA	IC	0-6"	< 0.041	Y	2	Y	3
	SA	IC	6"-12"	< 0.039	Y	2	Y	3
AS-96-94	SA	OC	0-6"	0.37	Y	2	Y	3
	SA	OC	6"-12"	0.13	Y	2	Y	3
AS-96-95	SA	OC	0-6"	0.23	Y	2	Y	3
	SA	OC	6"-12"	0.12	Y	2	Y	3

* Duplicate Sample

REVISED DRAFT - CONFIDENTIAL

APPENDIX A

Table A-4

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Selected for Evaluation by Sampling Dates
Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
AS-96-96	SA	OC	0-6"	0.27	Y	2	Y	3
	SA	OC	6"-12"	0.61	Y	2	Y	3
AS-96-97	SA	IC	0-6"	< 0.040	Y	2	Y	3
	SA	IC	6"-12"	< 0.039	Y	2	Y	3
AS-96-98	SA	OC	6"-12"	0.22	Y	2	Y	3
AS-96-99	SA	OC	0-6"	0.13	Y	2	Y	3
	SA	OC	6"-12"	0.053	Y	2	Y	3
Soil Sampling Program / April 1997								
PRE-1	SA	OC	0"-24"	<0.037	N	P	Y	3
	SA	OC	0"-24"	<0.075*	N	P	Y	3
	SA	OC	24"-48"	0.072	N	P	Y	3
PRE-2	SA	OC	0"-24"	0.093	N	P	Y	3
	SA	OC	24"-48"	0.11	N	P	Y	3
PRE-3	SA	OC	0"-24"	0.049	N	P	Y	3
	SA	OC	24"-48"	0.041	N	P	Y	3
PRE-4	SA	OC	0"-24"	< 0.037	N	P	Y	3
	SA	OC	24"-48"	< 0.038	N	P	Y	3
PRE-5	SA	OC	0"-24"	< 0.038	N	P	Y	3
	SA	OC	24"-48"	< 0.038	N	P	Y	3
	SA	OC	48"-72"	< 0.038	N	P	Y	3
PRE-6	SA	OC	0"-24"	< 0.039	N	P	Y	3
	SA	OC	24"-48"	< 0.038	N	P	Y	3
PRE-7	SA	OC	0"-24"	< 0.039	N	P	Y	3
	SA	OC	24"-48"	< 0.038	N	P	Y	3
PRE-8	SA	OC	0"-24"	< 0.037	N	P	Y	3
	SA	OC	24"-48"	<0.04	N	P	Y	3
	SA	OC	48"-72"	< 0.039	N	P	Y	3
	SA	OC	48"-72"	< 0.039	N	P	Y	3
	SA	OC	72"-96"	< 0.038	N	P	Y	3
PRE-9	SA	OC	0"-24"	<0.044	N	P	Y	3
	SA	OC	24"-48"	< 0.04	N	P	Y	3
	SA	OC	48"-72"	< 0.04	N	P	Y	3
PRE-10	SA	OC	0"-24"	0.047	N	P	Y	3
	SA	OC	24"-48"	< 0.037	N	P	Y	3
	SA	OC	48"-72"	< 0.038	N	P	Y	3
PRE-11	SA	OC	0"-24"	< 0.037	N	P	Y	3
	SA	OC	24"-48"	< 0.036	N	P	Y	3
	SA	OC	48"-72"	< 0.038	N	P	Y	3
PRE-12	SA	OC	0"-24"	0.047	N	P	Y	3
	SA	OC	24"-48"	<0.036	N	P	Y	3
	SA	OC	48"-72"	< 0.039	N	P	Y	3
	SA	OC	72"-96"	<0.038	N	P	Y	3
PRE-13	SA	OC	0"-24"	<0.036	N	P	Y	3
	SA	OC	24"-48"	<0.036	N	P	Y	3
	SA	OC	48"-72"	<0.038	N	P	Y	3
	SA	OC	72"-96"	<0.038	N	P	Y	3
	SA	OC	72"-96"	<0.038*	N	P	Y	3
	SA	OC	96"-120"	<0.039	N	P	Y	3
PRE-14	SA	OC	0"-24"	0.042	N	P	Y	3
	SA	OC	24"-48"	<0.038	N	P	Y	3
	SA	OC	48"-72"	<0.039	N	P	Y	3

* Duplicate Sample

REVISED DRAFT - CONFIDENTIAL

APPENDIX A

Table A-4

Sample Locations and Depths
Selected for Evaluation by Sampling Dates
Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
PRE-15	SA	OC	0"-24"	0.038	N	P	Y	3
	SA	OC	24"-48"	<0.037	N	P	Y	3
	SA	OC	48"-72"	<0.039	N	P	Y	3
PRE-16	SA	OC	0"-24"	<0.035	N	P	Y	3
	SA	OC	24"-48"	<0.036	N	P	Y	3
	SA	OC	48"-72"	<0.037	N	P	Y	3
	SA	OC	72"-96"	<0.04	N	P	Y	3
	SA	OC	96"-120"	<0.039	N	P	Y	3
PRE-17	SA	OC	0"-24"	<0.036	N	P	Y	3
	SA	OC	24"-48"	<0.036	N	P	Y	3
	SA	OC	48"-72"	<0.038	N	P	Y	3
	SA	OC	72"-96"	<0.043	N	P	Y	3
	SA	OC	96"-120"	<0.039	N	P	Y	3
	SA	OC	96"-120"	<0.04*	N	P	Y	3
PRE-18	SA	OC	0"-24"	0.047	N	P	Y	3
	SA	OC	24"-48"	<0.037	N	P	Y	3
	SA	OC	48"-72"	0.09	N	P	Y	3
	SA	OC	72"-96"	<0.037	N	P	Y	3
PRE-19	SA	OC	0"-24"	<0.035	N	P	Y	3
	SA	OC	24"-48"	<0.036	N	P	Y	3
	SA	OC	48"-72"	0.052	N	P	Y	3
	SA	OC	72"-96"	<0.043	N	P	Y	3
	SA	OC	96"-120"	<0.044	N	P	Y	3
PRE-20	SA	OC	0"-24"	<0.079	N	P	Y	3
	SA	OC	24"-48"	<0.037	N	P	Y	3
	SA	OC	48"-72"	<0.044	N	P	Y	3
	SA	OC	72"-96"	<0.042	N	P	Y	3
PRE-21	SA	OC	72"-96"	<0.04	N	P	Y	3
	SA	OC	96"-120"	<0.039	N	P	Y	3
PRE-22	SA	OC	72"-96"	<0.041	N	P	Y	3
PRE-23	SA	OC	72"-96"	<0.043	N	P	Y	3
	SA	OC	96"-120"	<0.042	N	P	Y	3
PRE-24	SA	OC	72"-96"	<0.044	N	P	Y	3
	SA	OC	72"-96"	<0.041*	N	P	Y	3
PRE-25	SA	OC	72"-96"	0.45	N	P	Y	3
	SA	OC	96"-120"	0.065	N	P	Y	3
PRE-26	SA	OC	0"-24"	0.13	N	P	Y	3
	SA	OC	24"-48"	0.5	N	P	Y	3
Soil Sampling Program / June 1997								
AS-97-115	SA	IC	0"-6"	<0.040	Y	2	Y	3
	SA	IC	6"-18"	<0.039	Y	2	Y	3
	SA	IC	18"-24"	<0.038	N	1	Y	3
AS-97-116	SA	IC	0"-6"	<0.041	Y	2	Y	3
	SA	IC	6"-18"	<0.038	Y	2	Y	3
	SA	IC	18"-24"	<0.040	N	1	Y	3
AS-97-117	SA	IC	0"-6"	0.072	Y	2	Y	3
	SA	IC	6"-18"	<0.038	Y	2	Y	3
	SA	IC	18"-24"	<0.037	N	1	Y	3
AS-97-118	SA	IC	0"-6"	0.11	Y	2	Y	3
	SA	IC	6"-18"	<0.039	Y	2	Y	3
	SA	IC	18"-24"	<0.039	N	1	Y	3

* Duplicate Sample

REVISED DRAFT - CONFIDENTIAL

APPENDIX A

Table A-4

Sample Locations and Depths
Selected for Evaluation by Sampling Dates
Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
AS-97-119	SA	OC	0"-6"	0.096	Y	2	Y	3
	SA	OC	6"-18"	<0.040	Y	2	Y	3
	SA	OC	18"-24"	<0.038	N	1	Y	3
AS-97-125	SA	OC	0"-6"	0.65	Y	2	Y	3
	SA	OC	6"-18"	8	Y	2	Y	3
AS-97-127	SA	IC	0"-6"	<0.043	Y	2	Y	3
	SA	IC	6"-18"	0.1	Y	2	Y	3
	SA	IC	18"-24"	0.7	N	1	Y	3
ASB-1	SA	OC	0"-6"	<0.042	Y	2	Y	3
	SA	OC	6"-18"	<0.039	Y	2	Y	3
	SA	OC	12"-36"	<0.037	N	1	Y	3
	SA	OC	12"-36"	<0.037*	N	1	Y	3
	SA	OC	36"-60"	<0.039	N	1	Y	3
	SA	OC	60"-84"	<0.041	N	1	Y	3
	SA	OC	84"-108"	<0.039	N	1	Y	3
	SA	OC	108-132"	<0.040	N	1	Y	3
ASB-2	SA	OC	0"-6"	0.059	Y	2	Y	3
	SA	OC	6"-18"	<0.041	Y	2	Y	3
	SA	OC	12"-36"	<0.036	N	1	Y	3
	SA	OC	36"-60"	<0.038	N	1	Y	3
	SA	OC	60"-84"	<0.037	N	1	Y	3
	SA	OC	84"-108"	<0.038	N	1	Y	3
	SA	OC	108-132"	<0.036	N	1	Y	3
ASB-3	SA	OC	0"-6"	0.064	N	P	Y	3
	SA	OC	6"-18"	<0.036	N	P	Y	3
	SA	OC	12"-36"	0.46	N	P	Y	3
	SA	OC	36"-60"	23	N	P	Y	3
	SA	OC	60"-84"	<0.039	N	P	Y	3
ASB-4	SA	OC	36"-60"	0.19	N	1	Y	3
	SA	OC	60"-84"	<0.040	N	1	Y	3
	SA	OC	60"-84"	<0.41*	N	1	Y	3
ASB-5	SA	OC	0"-6"	<0.042	Y	2	Y	3
	SA	OC	6"-12"	0.054	Y	2	Y	3
	SA	OC	12"-36"	<0.038	N	1	Y	3
	SA	OC	36"-60"	<0.038	N	1	Y	3
ASB-6	SA	OC	0"-6"	<0.035	N	P	Y	3
	SA	OC	6"-12"	<0.035	N	P	Y	3
	SA	OC	12"-36"	<0.036	N	P	Y	3
	SA	OC	36"-60"	0.02	N	P	Y	3
	SA	OC	60"-84"	<0.035	N	P	Y	3
	SA	OC	60"-84"	<0.035*	N	P	Y	3
	SA	OC	84"-108"	<0.038	N	P	Y	3
	SA	OC	108"-132"	<0.038	N	P	Y	3
ASB-7	SA	OC	0"-6"	0.041	N	P	Y	3
	SA	OC	6"-12"	<0.035	N	P	Y	3
	SA	OC	12"-36"	<0.035	N	P	Y	3
	SA	OC	36"-60"	0.13	N	P	Y	3
	SA	OC	60"-84"	0.45	N	P	Y	3
ASB-8	SA	OC	0"-6"	<0.036	N	P	Y	3
	SA	OC	6"-12"	<0.035	N	P	Y	3
	SA	OC	12"-36"	<0.037	N	P	Y	3

* Duplicate Sample

REVISED DRAFT - CONFIDENTIAL

APPENDIX A

Table A-4

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Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
ASB-8 (cont'd)	SA	OC	36"-60"	0.084	N	P	Y	3
	SA	OC	60"-84"	0.91	N	P	Y	3
ASB-9	SA	OC	0"-6"	0.106	Y	2	Y	3
	SA	OC	6"-12"	<0.037	Y	2	Y	3
	SA	OC	12"-36"	<0.037	N	1	Y	3
	SA	OC	36"-60"	<0.035	N	1	Y	3
	SA	OC	60"-84"	3	N	1	Y	3
	SA	OC	60"-84"	<0.036*	N	1	Y	3
ASB-10	SA	OC	36"-60"	1.4	N	1	Y	3
	SA	OC	60"-84"	1.1	N	1	Y	3
ASB-11	SA	OC	6"-12"	0.65	Y	1	Y	3
	SA	OC	12"-36"	1.81	N	1	Y	3
	SA	OC	36"-60"	0.72	N	1	Y	3
	SA	OC	60"-84"	<0.041	N	1	Y	3
	SA	OC	60"-84"	<0.040*	N	1	Y	3
ASB-12	SA	OC	0"-6"	0.21	Y	2	Y	3
	SA	OC	6"-12"	0.044	Y	2	Y	3
	SA	OC	12"-36"	<0.036	N	1	Y	3
	SA	OC	36"-60"	93	N	1	Y	3
	SA	OC	36"-60"	160	N	1	Y	3
ASB-13	SA	IC	0"-6"	<0.041	Y	2	Y	3
	SA	IC	6"-24"	<0.039	Y	2	Y	3
	SA	IC	24"-48"	7.7	N	1	Y	3
	SA	IC	48"-72"	0.18	N	1	Y	3
ASB-14	SA	OC	0"-6"	0.061	N	P	Y	3
	SA	OC	6"-24"	<0.035	N	P	Y	3
	SA	OC	24"-48"	<0.036	N	P	Y	3
	SA	OC	48"-72"	0.4	N	P	Y	3
	SA	OC	72"-96"	<0.035	N	P	Y	3
	SA	OC	96"-120"	<0.038	N	P	Y	3
ASB-15	SA	OC	0"-24"	0.161	N	P	Y	3
	SA	OC	24"-48"	<0.040	N	P	Y	3
	SA	OC	48"-72"	<0.039	N	P	Y	3
ASB-16	SA	IC	0"-6"	<0.042	Y	2	Y	3
	SA	IC	6"-24"	<0.038	Y	2	Y	3
	SA	IC	24"-48"	49	N	1	Y	3
	SA	IC	48"-72"	0.46	N	1	Y	3
ASB-17	SA	IC	0"-6"	0.057	Y	2	Y	3
	SA	IC	6"-24"	<0.038	Y	2	Y	3
	SA	IC	24"-48"	5.9	N	1	Y	3
	SA	IC	24"-48"	6.1*	N	1	Y	3
	SA	IC	48"-72"	29	N	1	Y	3
ASB-18	SA	IC	0"-6"	0.058	Y	2	Y	3
	SA	IC	6"-24"	<0.039	Y	2	Y	3
	SA	IC	24"-48"	9.6	N	1	Y	3
	SA	IC	48"-72"	210	N	1	Y	3
ASB-19	SA	IC	0"-6"	0.24	Y	2	Y	3
	SA	IC	6"-24"	0.29	Y	2	Y	3
	SA	IC	24"-48"	460	N	1	Y	3
	SA	IC	48"-72"	810	N	1	Y	3
	SA	IC	48"-72"	800*	N	1	Y	3

* Duplicate Sample

REVISED DRAFT - CONFIDENTIAL

APPENDIX A

Table A-4

Sample Locations and Depths
Selected for Evaluation by Sampling Dates
Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
ASB-20	SA	OC	26"-60"	0.39	N	1	Y	3
	SA	OC	60"-84"	3.5	N	1	Y	3
	SA	OC	84"-108"	0.88	N	1	Y	3
ASB-21	SA	OC	26"-60"	0.99	N	1	Y	3
	SA	OC	60"-84"	0.14	N	1	Y	3
	SA	OC	84"-108"	0.079	N	1	Y	3
ASB-22	SA	IC	0"-6"	<0.041	Y	2	Y	3
	SA	IC	6"-24"	0.053	Y	2	Y	3
	SA	IC	24"-48"	22	N	1	Y	3
	SA	IC	48"-72"	1.4	N	1	Y	3
SCH-1	SA	OC	0"-6"	0.16	Y	2	Y	3
	SA	OC	0"-12"	<0.038	Y	2	Y	3
	SA	OC	6"-24"	<0.039	Y	2	Y	3
	SA	OC	24"-48"	<0.036	N	1	Y	3
	SA	OC	48"-72"	<0.038	N	1	Y	3
	SA	OC	72"-96"	<0.038	N	1	Y	3
	SA	OC	96"-120"	<0.038	N	1	Y	3
SCH-2	SA	OC	0"-6"	0.43	Y	2	Y	3
	SA	OC	6"-12"	0.47	Y	2	Y	3
	SA	OC	24"-48"	0.099	N	1	Y	3
	SA	OC	48"-72"	<0.04	N	1	Y	3
	SA	OC	72"-96"	<0.037	N	1	Y	3
	SA	OC	96"-120"	<0.038	N	1	Y	3
SCH-3	SA	OC	0"-6"	0.12	Y	2	Y	3
	SA	OC	6"-12"	0.094	Y	2	Y	3
	SA	OC	12"-24"	<0.037	N	1	Y	3
	SA	OC	24"-48"	<0.0410	N	1	Y	3
	SA	OC	48"-72"	<0.037	N	1	Y	3
	SA	OC	72"-96"	<0.037	N	1	Y	3
SCH-4	SA	OC	0"-6"	0.061	Y	2	Y	3
	SA	OC	6"-12"	<0.036	Y	2	Y	3
	SA	OC	12"-24"	<0.037	N	1	Y	3
	SA	OC	24"-48"	0.086	N	1	Y	3
	SA	OC	48"-72"	<0.040	N	1	Y	3
	SA	OC	72"-96"	0.32	N	1	Y	3
	SA	OC	96"-120"	<0.038	N	1	Y	3
Soil Sampling Program / February 1998								
K11-7-28-SS-1	SA	OC	0"-6"	0.15	Y	2	Y	3
	SA	OC	6"-12"	0.13	Y	2	Y	3
K11-7-28-SS-2	SA	OC	0"-6"	0.41	Y	2	Y	3
	SA	OC	6"-12"	0.29	Y	2	Y	3
AS-98-129	SA	OC	0"-6"	0.24	Y	2	Y	3
AS-98-130	SA	OC	0"-6"	0.078	Y	2	Y	3
AS-98-132	SA	OC	0"-6"	0.09	Y	2	Y	3
AS-98-133	SA	OC	0"-6"	0.086	Y	2	Y	3
ASB-23	SA	OC	12"-36"	0.32	N	P	Y	3
	SA	OC	26"-60"	0.043	N	P	Y	3
	SA	OC	60"-84"	<0.037	N	P	Y	3
ASB-24	SA	OC	0"-6"	<0.036	N	P	Y	3
	SA	OC	6"-12"	<0.035	N	P	Y	3
	SA	OC	12"-36"	<0.035	N	P	Y	3

* Duplicate Sample

APPENDIX A

Table A-4

Sample Locations and Depths
Selected for Evaluation by Sampling Dates
Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
ASB-24 (cont'd)	SA	OC	26"-60"	<0.037	N	P	Y	3
	SA	OC	60"-84"	<0.036	N	P	Y	3
ASB-25	SA	OC	0"-6"	0.11	N	P	Y	3
	SA	OC	6"-12"	<0.035	N	P	Y	3
	SA	OC	12"-36"	<0.038	N	P	Y	3
	SA	OC	36"-60"	0.096	N	P	Y	3
	SA	OC	36"-60"	0.15*	N	P	Y	3
	SA	OC	60"-84"	0.045	N	P	Y	3
	SA	OC	60"-84"	0.088*	N	P	Y	3
ASB-26	SA	IC	24"-48"	5.6	N	1	Y	3
	SA	IC	48"-72"	1.8	N	1	Y	3
	SA	IC	72"-96"	6.7	N	1	Y	3
	SA	IC	96"-120"	0.22	N	1	Y	3
ASB-27	SA	IC	24"-48"	25	N	1	Y	3
	SA	IC	48"-72"	2.6	N	1	Y	3
	SA	IC	72"-96"	0.12	N	1	Y	3
	SA	IC	96"-120"	7	N	1	Y	3
	SA	IC	96"-120"	0.21*	N	1	Y	3
ASB-28	SA	IC	24"-48"	87	N	1	Y	3
	SA	IC	48"-72"	440	N	1	Y	3
	SA	IC	72"-96"	0.64	N	1	Y	3
	SA	IC	96"-120"	0.27	N	1	Y	3
ASB-29	SA	IC	24"-48"	2.5	N	1	Y	3
	SA	IC	48"-72"	1.4	N	1	Y	3
	SA	IC	72"-96"	1.6	N	1	Y	3
	SA	IC	96"-120"	0.058	N	1	Y	3
ASB-30	SA	IC	24"-48"	12	N	1	Y	3
	SA	IC	48"-72"	27	N	1	Y	3
	SA	IC	72"-96"	20	N	1	Y	3
	SA	IC	96"-120"	0.11	N	1	Y	3
ASB-31	SA	IC	24"-48"	1	N	1	Y	3
	SA	IC	48"-72"	67	N	1	Y	3
	SA	IC	72"-96"	23	N	1	Y	3
	SA	IC	96"-120"	0.59	N	1	Y	3
ASB-32	SA	IC	24"-48"	12	N	1	Y	3
	SA	IC	48"-72"	33	N	1	Y	3
	SA	IC	72"-96"	4.4	N	1	Y	3
	SA	IC	96"-120"	0.15	N	1	Y	3
ASB-33	SA	IC	24"-48"	2.5	N	1	Y	3
	SA	IC	48"-72"	43	N	1	Y	3
	SA	IC	72"-96"	18	N	1	Y	3
	SA	IC	96"-120"	<0.040	N	1	Y	3
ASB-34	SA	IC	24"-48"	95	N	1	Y	3
	SA	IC	48"-72"	109	N	1	Y	3
	SA	IC	72"-96"	2	N	1	Y	3
	SA	IC	96"-120"	0.13	N	1	Y	3
ASB-44	SA	OC	12"-36"	0.8	N	1	Y	3
ASB-45	SA	OC	12"-36"	1.3	N	1	Y	3
ABS-47	SA	OC	12"-36"	1.8	N	1	Y	3
ASB-52	SA	OC	26"-60"	0.044	N	1	Y	3
	SA	OC	60"-84"	<0.041	N	1	Y	3

* Duplicate Sample

APPENDIX A

Table A-4

Sample Locations and Depths
Selected for Evaluation by Sampling Dates
Allendale School
Pittsfield, MA

Sample ID	Pre or Post-Cap Sample	Location Relative to Horizontal Extent of Cap	Sample Depth (inches)	PCB Level[a] (mg/kg)	Scenario Selection			
					Current Scenario	Rationale for Selection or Elimination	Future Scenario	Rationale for Selection
ASB-52 (cont'd)	SA	OC	84"-108"	<0.039	N	1	Y	3
	SA	OC	108"-132"	<0.037	N	1	Y	3
ASB-54	SA	OC	12"-36"	0.92	N	1	Y	3
ASB-57	SA	OC	12"-36"	0.32	N	1	Y	3
	SA	OC	12"-36"	0.37*	N	1	Y	3
ASB-59	SA	OC	12"-36"	0.25	N	1	Y	3
ASB-60	SA	OC	12"-36"	<0.040	N	1	Y	3
ASB-61	SA	OC	12"-36"	0.43	N	1	Y	3

[a] Data obtained from sample maps in respective report .
SP = Sampled prior to original cap construction.
SA = Sampled after original cap construction.
OC = Sample is located outside the perimeter of the originally constructed cap.
IC = Sample is located within perimeter of the originally constructed cap.
Y = Sample was selected for evaluation.
N = Sample was eliminated for evaluation.
P = Sample was located under paved area.
1 = Sample depth was below 0-1 foot range of the current surface.
2 = Sample depth was estimated to be in the 0-1 foot range of the current surface.
3 = Sample depth was estimated to be in the 0-10 foot range of the current (1998) surface.

* Duplicate Sample

REVISED DRAFT - CONFIDENTIAL

APPENDIX A
Table A-5

Chemicals of Potential Concern Screening Evaluation
Allendale School
Pittsfield, MA

Chemical	Frequency of Detection[a]	Range of Detected Concentrations	Range of Detection Limits[b]	Location of Maximum Detected Concentration	Sample Depth (feet)	EPA Region IX PRG	Ratio of Maximum Detected Concentration to Region IX PRG	COPC
Volatile Organic Compounds (µg/kg)								
Acetone	3 / 46	9.00E+00 - 4.70E+01	1.00E+01 - 1.90E+01	ASB-27	6.0-8.0	1.40E+05 NC	3.4E-04	No
2-Butanone	1 / 46	1.50E+01 - 1.50E+01	1.00E+01 - 1.90E+01	ASB-27	6.0-8.0	6.90E+05 NC	2.2E-05	No
Chlorobenzene	1 / 46	9.00E+00 - 9.00E+00	5.00E+00 - 9.30E+00	ASB-19	2.0-4.0	5.40E+03 NC	1.7E-03	No
Dibenzofuran	1 / 28	8.40E+02 - 8.40E+02	3.60E+02 - 6.20E+02	ASB-3	2.0-4.0	2.10E+04 NC	4.0E-02	No
Di-n-butylphthalate	2 / 28	5.20E+01 - 6.10E+01	3.60E+02 - 3.60E+03	ASB-19	2.0-4.0	5.50E+05 NC	1.1E-04	No
1,4-Dichlorobenzene	2 / 28	1.20E+02 - 1.50E+02	3.60E+02 - 3.60E+03	ASB-31	4.0-6.0	3.00E+03 C	5.0E-02	No
bis(2-Ethylhexyl)phthalate	9 / 28	1.00E+02 - 3.00E+02	3.60E+02 - 3.60E+03	K20	0.0-1.5	3.20E+04 C	9.4E-03	No
Methylene chloride	5 / 46	4.00E+00 - 9.00E+00	5.00E+00 - 9.30E+00	K16	0.0-1.5	8.50E+03 C	1.1E-03	No
2-Methylnaphthalene	1 / 28	9.60E+02 - 9.60E+02	3.60E+02 - 6.20E+02	ASB-3	2.0-4.0	NPA	NPA	No
n-Nitrosopiperidine	1 / 28	1.30E+02 - 1.30E+02	3.60E+02 - 3.60E+03	SCH-4	8.0-10.0	NPA	NPA	No
Polynuclear Aromatic Hydrocarbons								
Acenaphthene	3 / 28	5.00E+01 - 1.00E+03	3.60E+02 - 5.60E+02	ASB-3	2.0-4.0	2.60E+05 NC	3.8E-03	No
Acenaphthylene	6 / 28	7.10E+01 - 2.80E+03	3.60E+02 - 5.60E+02	ASB-3	2.0-4.0	5.50E+03 NC	5.1E-01	No
Anthracene	8 / 28	5.60E+01 - 3.80E+03	3.60E+02 - 5.60E+02	ASB-3	2.0-4.0	1.40E+06 NC	2.7E-03	No
Benz(a)anthracene	11 / 28	3.80E+01 - 1.50E+04	3.60E+02 - 5.60E+02	ASB-3	2.0-4.0	5.60E+02 C	2.7E+01	Yes
Benzo(a)pyrene	13 / 28	4.60E+01 - 1.60E+04	3.60E+02 - 5.60E+02	ASB-3	2.0-4.0	5.60E+01 C	2.9E+02	Yes
Benzo(b)fluoranthene	14 / 28	4.60E+01 - 1.40E+04	3.60E+02 - 5.60E+02	ASB-3	2.0-4.0	5.60E+01 C	2.5E+02	Yes
Benzo(g,h,i)perylene	6 / 28	4.10E+01 - 3.70E+03	3.60E+02 - 5.60E+02	ASB-3	2.0-4.0	5.50E+03 NC	6.7E-01	No
Benzo(k)fluoranthene	14 / 28	4.40E+01 - 1.20E+04	3.60E+02 - 5.60E+02	ASB-3	2.0-4.0	5.60E+03 C	2.1E+00	Yes
Chrysene	13 / 28	5.70E+01 - 1.60E+04	3.60E+02 - 5.60E+02	ASB-3	2.0-4.0	5.60E+04 C	2.9E-01	No
Dibenz(a,h)anthracene	4 / 28	7.80E+01 - 2.50E+03	3.60E+02 - 5.60E+02	ASB-3	2.0-4.0	5.60E+01 C	4.5E+01	Yes
Fluoranthene	18 / 28	4.60E+01 - 2.20E+04	3.60E+02 - 4.10E+02	ASB-3	2.0-4.0	2.00E+05 NC	1.1E-01	No
Fluorene	4 / 28	6.20E+01 - 1.10E+03	3.60E+02 - 5.60E+02	ASB-3	2.0-4.0	1.80E+05 NC	6.1E-03	No
Indeno(1,2,3-cd)pyrene	8 / 28	4.40E+01 - 3.80E+03	3.60E+02 - 5.60E+02	ASB-3	2.0-4.0	5.60E+02 C	6.8E+00	Yes
Naphthalene	1 / 28	1.90E+03 - 1.90E+03	3.60E+02 - 6.20E+02	ASB-3	2.0-4.0	5.50E+03 NC	3.5E-01	No
Phenanthrene	15 / 28	4.70E+01 - 1.20E+04	3.60E+02 - 5.60E+02	ASB-3	2.0-4.0	5.50E+03 NC	2.2E+00	Yes
Pyrene	17 / 28	6.60E+01 - 2.00E+04	3.60E+02 - 4.20E+02	ASB-3	2.0-4.0	1.50E+05 C	1.3E-01	No
1,2,4,5-Tetrachlorobenzene	2 / 28	1.80E+01 - 6.30E+02	3.60E+02 - 3.60E+03	ASB-19	2.0-4.0	1.60E+03 NC	3.9E-01	No
1,2,4-Trichlorobenzene	1 / 28	2.90E+02 - 2.90E+02	3.60E+02 - 3.60E+03	ASB-19	2.0-4.0	4.80E+04 NC	6.0E-03	No
Pesticides/Herbicides (µg/kg)								
4,4'-DDE	1 / 29	4.50E+00 - 4.50E+00	1.80E+00 - 2.10E+03	AS-98-130	0.0-0.5	1.70E+03 C	2.6E-03	No
4,4'-DDT	1 / 29	2.30E+00 - 2.30E+00	1.80E+00 - 2.10E+03	SCH-3	2.0-4.0	1.70E+03 C	1.4E-03	No
Dieldrin	3 / 29	9.30E+00 - 6.40E+03	1.80E+00 - 4.00E+02	ASB-19	2.0-4.0	2.80E+01 C	2.3E+02	Yes
2,4,5-Trichlorophenoxyacetic acid	2 / 29	2.00E+01 - 2.00E+01	1.10E+01 - 1.10E+02	K17	0.0-1.5	5.50E+04 NC	3.6E-04	No
2,4,5-Trichlorophenoxypropionic acid	1 / 29	2.00E+01 - 2.00E+01	1.10E+01 - 1.10E+02	K18	0.0-1.5	4.40E+04 NC	4.5E-04	No

APPENDIX A
Table A-5

Chemicals of Potential Concern Screening Evaluation
Allendale School
Pittsfield, MA

Chemical	Frequency of Detection[a]	Range of Detected Concentrations	Range of Detection Limits[b]	Location of Maximum Detected Concentration	Sample Depth (feet)	EPA Region IX PRG	Ratio of Maximum Detected Concentration to Region IX PRG	COPC
Dioxins/Furans (µg/kg)								
2,3,7,8-TCDD Equivalent[c]	19 / 28	6.30E-06 - 4.60E-01	9.20E-05 - 6.10E-01	ASB-31	4.0-6.0	3.80E-03 C	1.2E+02	Yes
2,3,7,8-TCDD Equivalent[d]	19 / 28	3.25E-04 - 4.61E-01	9.20E-05 - 6.10E-01	ASB-32	4.0-6.0	3.80E-03 C	1.2E+02	
Polychlorinated Biphenyls (µg/kg)								
PCBs[e]	519 / 895	1.00E+01 - 1.10E+06	8.40E+00 - 1.00E+03	B18	1.5-2.0	2.00E+02 C	5.5E+03	Yes
Inorganics (mg/kg)								
Antimony	1 / 29	2.90E+00 - 2.90E+00	2.20E+00 - 1.12E+01	SCH-2	6.0-8.0	3.00E+00 NC	9.7E-01	No
Arsenic	29 / 29	2.70E+00 - 1.70E+01	-	K18	0.0-1.5	3.80E-01 C	4.5E+01	Yes
Barium	29 / 29	1.02E+01 - 1.01E+02	-	ASB-34	6.0-8.0	5.20E+02 NC	1.9E-01	No
Beryllium	29 / 29	1.70E-01 - 6.50E-01	-	ASB-34	6.0-8.0	1.50E+01 NC	4.3E-02	No
Cadmium	7 / 29	3.00E-02 - 7.00E-01	5.00E-01 - 9.30E-01	K17	0.0-1.5	3.70E+00 NC	1.9E-01	No
Chromium	29 / 29	5.30E+00 - 2.49E+01	-	ASB-34	6.0-8.0	2.10E+02 C	1.2E-01	No
Cobalt	29 / 29	6.00E+00 - 1.76E+01	-	ASB-34	6.0-8.0	3.30E+02 NC	5.3E-02	No
Copper	29 / 29	1.00E+01 - 3.43E+01	-	ASB-34	6.0-8.0	2.80E+02 NC	1.2E-01	No
Lead	29 / 29	5.10E+00 - 6.01E+01	-	ASB-3	3.0-5.0	4.00E+02 NC	1.5E-01	No
Mercury	12 / 29	5.10E-03 - 1.70E-01	2.70E-02 - 1.00E-01	AS-98-129	0.0-0.5	2.20E+00 NC	7.7E-02	No
Nickel	29 / 29	9.00E+00 - 2.91E+01	-	ASB-34	6.0-8.0	1.50E+02 NC	1.9E-01	No
Selenium	16 / 29	3.20E-01 - 1.60E+00	2.90E-01 - 6.00E+00	AS-98-129	0.0-0.5	3.70E+01 NC	4.3E-02	No
Silver	5 / 29	4.10E-01 - 6.90E-01	3.60E-01 - 1.90E+00	SCH-4	8.0-10.0	3.70E+01 NC	1.9E-02	No
Thallium	3 / 29	1.00E+00 - 1.70E+01	4.00E-01 - 3.00E+00	K18	0.0-1.5	5.20E-01 NC	3.3E+01	Yes
Tin	3 / 29	1.00E+00 - 5.00E+00	1.90E+00 - 1.86E+01	K18	0.0-1.5	4.50E+03 NC	1.1E-03	No
Vanadium	29 / 29	4.90E+00 - 2.79E+01	-	ASB-34	6.0-8.0	5.20E+01 NC	5.4E-01	No
Zinc	29 / 29	3.91E+01 - 1.01E+02	-	AS-98-129	0.0-0.5	2.20E+03 NC	4.6E-02	No

C = PRG is based on cancer effects.

NC = PRG is based on noncancer effects.

NPA = No PRG available.

[a] Number of sampling locations at which chemical was detected compared with total number of sampling location; duplicates at a location were averaged and considered one sample.

[b] Based on non-detected samples.

[c] 2,3,7,8-TCDD equivalents were calculated using detected congeners only.

[d] 2,3,7,8-TCDD equivalents were calculated using detected congeners and nondetected congeners at 1/2 the detection limit.

[e] Represents sum of Aroclors-1254 and -1260.

APPENDIX A
Table A-6

Summary of Chemicals Detected in Soil (0-1')
Allendale School
Pittsfield, MA

Chemical	Frequency of Detection[a]	Range of Detected Concentrations	Location of Maximum Detected Concentration	Sample Depth (feet)	Range of Sample Quantitation Limits[b]
Semivolatiles (ug/kg)					
Di-n-butylphthalate	1 / 4	5.20E+01 - 5.20E+01	AS-98-133	0.0-0.5	3.90E+02 - 6.20E+02
Polynuclear Aromatic Hydrocarbons (µg/kg)					
Acenaphthene	1 / 4	9.20E+01 - 9.20E+01	AS-98-130	0.0-0.5	3.90E+02 - 4.70E+02
Acenaphthylene	2 / 4	7.10E+01 - 4.80E+02	AS-98-130	0.0-0.5	4.40E+02 - 4.70E+02
Anthracene	3 / 4	5.60E+01 - 3.90E+02	AS-98-130	0.0-0.5	4.70E+02 - 4.70E+02
Benz(a)anthracene	4 / 4	9.00E+01 - 2.10E+03	AS-98-130	0.0-0.5	-
Benzo(b)fluoranthene	4 / 4	1.00E+02 - 2.50E+03	AS-98-130	0.0-0.5	-
Benzo(k)fluoranthene	4 / 4	9.00E+01 - 1.80E+03	AS-98-130	0.0-0.5	-
Benzo(g,h,i)perylene	1 / 4	1.20E+03 - 1.20E+03	AS-98-130	0.0-0.5	3.90E+02 - 4.70E+02
Benzo(a)pyrene	4 / 4	1.10E+02 - 2.40E+03	AS-98-130	0.0-0.5	-
Chrysene	4 / 4	1.30E+02 - 2.90E+03	AS-98-130	0.0-0.5	-
Dibenz(a,h)anthracene	1 / 4	5.00E+02 - 5.00E+02	AS-98-130	0.0-0.5	3.90E+02 - 4.70E+02
Fluoranthene	4 / 4	1.90E+02 - 4.60E+03	AS-98-129	0.0-0.5	-
Fluorene	1 / 4	2.70E+02 - 2.70E+02	AS-98-129	0.0-0.5	3.90E+02 - 4.70E+02
Indeno(1,2,3-cd)pyrene	3 / 4	1.30E+02 - 1.30E+03	AS-98-129	0.0-0.5	4.70E+02 - 4.70E+02
Phenanthrene	4 / 4	9.00E+01 - 2.60E+03	AS-98-129	0.0-0.5	-
Pyrene	4 / 4	1.40E+02 - 4.00E+03	AS-98-129	0.0-0.5	-
Pesticides(µg/kg)					
4,4'-DDE	1 / 4	4.50E+00 - 4.50E+00	AS-98-130	0.0-0.5	2.00E+00 - 3.20E+00
PCBs (µg/kg)					
Total PCBs	214 / 307	1.40E+01 - 8.00E+03	AS-97-125	0.0-0.5	1.00E+01 - 8.00E+02
Dioxin/Furans (pg/g)					
1234678-HpCDD	4 / 4	3.10E+00 - 2.70E+01	AS-98-129	0.0-0.5	-
1234678-HpCDF	1 / 4	1.60E+01 - 1.60E+01	AS-98-129	0.0-0.5	1.80E+00 - 4.50E+00
123478-HxCDF	1 / 4	6.80E+00 - 6.80E+00	AS-98-129	0.0-0.5	7.00E-01 - 3.20E+00
23478-PeCDF	1 / 4	6.20E+00 - 6.20E+00	AS-98-129	0.0-0.5	4.90E-01 - 1.50E+00
2378-TCDF	4 / 4	2.40E+00 - 2.40E+01	AS-98-129	0.0-0.5	-
OCDD	4 / 4	2.00E+01 - 1.70E+02	AS-98-129	0.0-0.5	-
OCDF	2 / 4	1.00E+01 - 1.60E+01	AS-98-129	0.0-0.5	1.90E+00 - 8.50E+00
Total HpCDD	4 / 4	3.10E+00 - 4.50E+01	AS-98-129	0.0-0.5	-
Total HpCDF	3 / 4	4.10E+00 - 3.00E+01	AS-98-129	0.0-0.5	1.80E+00 - 1.80E+00
Total HxCDD	1 / 4	2.00E+01 - 2.00E+01	AS-98-129	0.0-0.5	1.60E+00 - 2.10E+00
Total HxCDF	4 / 4	3.40E+00 - 7.60E+01	AS-98-129	0.0-0.5	-
Total PeCDF	4 / 4	6.10E+00 - 1.10E+02	AS-98-129	0.0-0.5	-

APPENDIX A
Table A-6

Summary of Chemicals Detected in Soil (0-1')
Allendale School
Pittsfield, MA

Chemical	Frequency of Detection[a]	Range of Detected Concentrations	Location of Maximum Detected Concentration	Sample Depth (feet)	Range of Sample Quantitation Limits[b]
Total TCDD	1 / 4	2.90E+00 - 2.90E+00	AS-98-129	0.0-0.5	3.70E-01 - 4.80E-01
Total TCDF	4 / 4	7.40E+00 - 1.40E+02	AS-98-129	0.0-0.5	-
Inorganics (mg/kg)					
Arsenic	4 / 4	5.60E+00 - 9.70E+00	AS-98-129	0.0-0.5	-
Barium	4 / 4	2.89E+01 - 5.90E+01	AS-98-129	0.0-0.5	-
Beryllium	4 / 4	2.80E-01 - 4.60E-01	AS-98-129	0.0-0.5	-
Chromium	4 / 4	7.00E+00 - 1.27E+01	AS-98-129	0.0-0.5	-
Cobalt	4 / 4	8.50E+00 - 1.21E+01	AS-98-129	0.0-0.5	-
Copper	4 / 4	1.62E+01 - 2.51E+01	AS-98-129	0.0-0.5	-
Lead	4 / 4	1.43E+01 - 5.58E+01	AS-98-129	0.0-0.5	-
Mercury	4 / 4	2.20E-02 - 1.70E-01	AS-98-129	0.0-0.5	-
Nickel	4 / 4	1.39E+01 - 1.85E+01	AS-98-129	0.0-0.5	-
Selenium	3 / 4	8.20E-01 - 1.60E+00	AS-98-129	0.0-0.5	5.90E-01 - 5.90E-01
Vanadium	4 / 4	1.11E+01 - 1.85E+01	AS-98-129	0.0-0.5	-
Zinc	4 / 4	5.17E+01 - 1.01E+02	AS-98-129	0.0-0.5	-

NA = Not applicable.

[a] Number of sampling locations at which chemical was detected compared with total number of sampling locations; duplicates at a location were averaged and considered one sample.

[b] Based on non-detected samples.

APPENDIX A
Table A-7

Summary of Chemicals Detected in Soil (0-10')
Allendale School
Pittsfield, MA

Chemical	Frequency of Detection[a]	Range of Detected Concentrations	Location of Maximum Detected Concentration	Sample Depth (feet)	Range of Sample Quantitation Limits[b]
Volatiles (µg/kg)					
Acetone	3 / 46	9.00E+00 - 4.70E+01	ASB-27	6.0-8.0	1.00E+01 - 1.90E+01
2-Butanone	1 / 46	1.50E+01 - 1.50E−01	ASB-27	6.0-8.0	1.00E+01 - 1.90E+01
Chlorobenzene	1 / 46	9.00E+00 - 9.00E−00	ASB-19	2.0-4.0	5.00E+00 - 9.30E+00
Methylene Chloride	5 / 46	4.00E+00 - 9.00E−00	K16	0.0-1.5	5.00E+00 - 9.30E+00
Semivolatiles (ug/kg)					
bis(2-Ethylhexyl)phthalate	9 / 28	1.00E+02 - 3.00E+02	K20	0.0-1.5	3.60E+02 - 3.60E+03
Dibenzofuran	1 / 28	8.40E+02 - 8.40E+02	ASB-3	2.0-4.0	3.60E+02 - 6.20E+02
Di-n-butylphthalate	2 / 28	5.20E+01 - 6.10E+01	ASB-19	2.0-4.0	3.60E+02 - 3.60E+03
1,4-Dichlorobenzene	2 / 28	1.20E+02 - 1.50E+02	ASB-31	4.0-6.0	3.60E+02 - 3.60E+03
2-Methylnaphthalene	1 / 28	9.60E+02 - 9.60E+02	ASB-3	2.0-4.0	3.60E+02 - 6.20E+02
N-Nitrosopiperidine	1 / 28	1.30E+02 - 1.30E+02	SCH-4	8.0-10.0	3.60E+02 - 3.60E+03
Polynuclear Aromatic Hydrocarbons (µg/kg)					
Acenaphthene	3 / 28	5.00E+01 - 1.00E+03	ASB-3	2.0-4.0	3.60E+02 - 5.60E+02
Acenaphthylene	6 / 28	7.10E+01 - 2.80E+03	ASB-3	2.0-4.0	3.60E+02 - 5.60E+02
Anthracene	8 / 28	5.60E+01 - 3.80E+03	ASB-3	2.0-4.0	3.60E+02 - 5.60E+02
Benz(a)anthracene	11 / 28	3.80E+01 - 1.50E+04	ASB-3	2.0-4.0	3.60E+02 - 5.60E+02
Benzo(b)fluoranthene	14 / 28	4.60E+01 - 1.40E+04	ASB-3	2.0-4.0	3.60E+02 - 5.60E+02
Benzo(k)fluoranthene	14 / 28	4.40E+01 - 1.20E+04	ASB-3	2.0-4.0	3.60E+02 - 5.60E+02
Benzo(g,h,i)perylene	6 / 28	4.10E+01 - 3.70E+03	ASB-3	2.0-4.0	3.60E+02 - 5.60E+02
Benzo(a)pyrene	13 / 28	4.60E+01 - 1.60E+04	ASB-3	2.0-4.0	3.60E+02 - 5.60E+02
Chrysene	13 / 28	5.70E+01 - 1.60E+04	ASB-3	2.0-4.0	3.60E+02 - 5.60E+02
Dibenz(a,h)anthracene	4 / 28	7.80E+01 - 2.50E+03	ASB-3	2.0-4.0	3.60E+02 - 5.60E+02
Fluoranthene	18 / 28	4.60E+01 - 2.20E+04	ASB-3	2.0-4.0	3.60E+02 - 4.10E+02
Fluorene	4 / 28	6.20E+01 - 1.10E+03	ASB-3	2.0-4.0	3.60E+02 - 5.60E+02
Indeno(1,2,3-cd)pyrene	8 / 28	4.40E+01 - 3.80E+03	ASB-3	2.0-4.0	3.60E+02 - 5.60E+02
Naphthalene	1 / 28	1.90E+03 - 1.90E+03	ASB-3	2.0-4.0	3.60E+02 - 6.20E+02
Phenanthrene	15 / 28	4.70E+01 - 1.20E+04	ASB-3	2.0-4.0	3.60E+02 - 5.60E+02
Pyrene	17 / 28	6.60E+01 - 2.00E+04	ASB-3	2.0-4.0	3.60E+02 - 4.20E+02
1,2,4,5-Tetrachlorobenzene	2 / 28	1.80E+01 - 6.30E+02	ASB-19	2.0-4.0	3.60E+02 - 3.60E+03
1,2,4-Trichlorobenzene	1 / 28	2.90E+02 - 2.90E+02	ASB-19	2.0-4.0	3.60E+02 - 3.60E+03
Pesticides(µg/kg)					
4,4'-DDE	1 / 29	4.50E+00 - 4.50E+00	AS-98-130	0.0-0.5	1.80E+00 - 2.10E+03
4,4'-DDT	1 / 29	2.30E+00 - 2.30E+00	SCH-3	2.0-4.0	1.80E+00 - 2.10E+03

APPENDIX A
Table A-7

Summary of Chemicals Detected in Soil (0-10')
Allendale School
Pittsfield, MA

Chemical	Frequency of Detection[a]	Range of Detected Concentrations	Location of Maximum Detected Concentration	Sample Depth (feet)	Range of Sample Quantitation Limits[b]
Dieldrin	3 / 29	9.30E+00 - 6.40E+03	ASB-19	2.0-4.0	1.80E+00 - 4.00E+02
2,4,5-T	2 / 29	2.00E+01 - 2.00E+01	K17	0.0-1.5	1.10E+01 - 1.10E+02
2,4,5-TP (Silvex)	1 / 29	2.00E+01 - 2.00E+01	K18	0.0-1.5	1.10E+01 - 1.10E+02
PCBs (µg/kg)					
Total PCBs	519 / 895	1.00E+01 - 1.10E+06	B18	1.5-2.0	8.40E+00 - 1.00E+03
Dioxin/Furans (pg/g)					
1234678-HpCDD	10 / 24	3.10E+00 - 2.60E+02	ASB-31	4.0-6.0	3.10E-01 - 2.10E+00
1234678-HpCDF	9 / 24	4.20E+00 - 8.40E+03	ASB-31	4.0-6.0	1.40E-01 - 4.50E+00
123478-HxCDD	3 / 24	9.70E+00 - 7.00E+01	ASB-31	4.0-6.0	2.40E-01 - 2.50E+00
123478-HxCDF	9 / 24	3.70E+00 - 6.40E+02	ASB-31	4.0-6.0	1.30E-01 - 3.20E+00
1234789-HpCDF	6 / 24	1.90E+00 - 4.20E+02	ASB-19	2.0-4.0	9.20E-02 - 1.60E+00
123678-HxCDD	3 / 24	3.40E+00 - 8.30E+01	ASB-31	4.0-6.0	2.40E-01 - 9.30E+00
123678-HxCDF	5 / 24	3.10E+00 - 9.20E+02	ASB-31	4.0-6.0	1.30E-01 - 7.40E+01
12378-PeCDD	2 / 24	2.00E+01 - 6.70E+01	ASB-31	4.0-6.0	2.90E-01 - 3.60E+00
12378-PeCDF	3 / 24	1.60E+01 - 2.80E+01	ASB-3	3.0-5.0	2.20E-01 - 4.60E+00
123789-HxCDD	2 / 24	2.00E+01 - 1.10E+02	ASB-31	4.0-6.0	2.30E-01 - 2.70E+00
123789-HxCDF	2 / 24	4.90E+00 - 5.40E+00	ASB-19	2.0-4.0	1.20E-01 - 2.60E+00
234678-HxCDF	4 / 24	3.50E+00 - 1.20E+03	ASB-31	4.0-6.0	2.90E-01 - 4.20E+00
23478-PeCDF	5 / 24	5.90E+00 - 5.30E+01	ASB-31	4.0-6.0	2.30E-01 - 2.90E+00
2378-TCDD	2 / 28	1.60E+00 - 3.30E+00	ASB-31	4.0-6.0	1.50E-01 - 1.10E+02
2378-TCDF	14 / 24	5.70E-01 - 5.50E+01	ASB-3	3.0-5.0	1.20E-01 - 1.70E+01
OCDD	14 / 24	7.70E+00 - 4.70E+02	ASB-31	4.0-6.0	6.90E-01 - 4.30E+00
OCDF	11 / 24	3.80E+00 - 2.40E+03	ASB-31	4.0-6.0	4.10E-01 - 8.50E+00
Total HpCDD	10 / 24	3.10E+00 - 7.60E+02	ASB-31	4.0-6.0	3.10E-01 - 2.50E+00
Total HpCDF	11 / 24	4.10E+00 - 1.90E+04	ASB-31	4.0-6.0	1.60E-01 - 3.00E+00
Total HxCDD	7 / 28	6.40E+00 - 1.60E+03	ASB-31	4.0-6.0	2.40E-01 - 6.10E+02
Total HxCDF	16 / 28	3.40E+00 - 3.40E+04	ASB-31	4.0-6.0	2.90E-01 - 1.90E+01
Total PeCDD	3 / 28	5.20E+01 - 3.70E+02	ASB-31	4.0-6.0	3.10E-01 - 3.40E+02
Total PeCDF	19 / 28	1.00E+00 - 1.96E+04	K19	0.0-1.5	2.70E-01 - 2.20E+00
Total TCDD	6 / 28	9.30E-01 - 1.40E+02	ASB-31	4.0-6.0	1.50E-01 - 3.30E+02
Total TCDF	22 / 28	6.30E-01 - 8.80E+03	K19	0.0-1.5	2.20E-01 - 1.10E+00
Inorganics (mg/kg)					
Antimony	1 / 29	2.90E+00 - 2.90E+00	SCH-2	6.0-8.0	2.20E+00 - 1.12E+01
Arsenic	29 / 29	2.70E+00 - 1.70E+01	K18	0.0-1.5	-

APPENDIX A
Table A-7

Summary of Chemicals Detected in Soil (0-10')
Allendale School
Pittsfield, MA

Chemical	Frequency of Detection[a]	Range of Detected Concentrations	Location of Maximum Detected Concentration	Sample Depth (feet)	Range of Sample Quantitation Limits[b]
Barium	29 / 29	1.02E+01 - 1.01E+02	ASB-34	6.0-8.0	-
Beryllium	29 / 29	1.70E-01 - 6.50E-01	ASB-34	6.0-8.0	-
Cadmium	7 / 29	3.00E-02 - 7.00E-01	K17	0.0-1.5	5.00E-01 - 9.30E-01
Chromium	29 / 29	5.30E+00 - 2.49E+01	ASB-34	6.0-8.0	-
Cobalt	29 / 29	6.00E+00 - 1.76E+01	ASB-34	6.0-8.0	-
Copper	29 / 29	1.00E+01 - 3.43E+01	ASB-34	6.0-8.0	-
Lead	29 / 29	5.10E+00 - 6.01E+01	ASB-3	3.0-5.0	-
Mercury	12 / 29	5.10E-03 - 1.70E-01	AS-98-129	0.0-0.5	2.70E-02 - 1.00E-01
Nickel	29 / 29	9.00E+00 - 2.91E+01	ASB-34	6.0-8.0	-
Selenium	16 / 29	3.20E-01 - 1.60E+00	AS-98-129	0.0-0.5	2.90E-01 - 6.00E+00
Silver	5 / 29	4.10E-01 - 6.90E-01	SCH-4	8.0-10.0	3.60E-01 - 1.90E+00
Thallium	3 / 29	1.00E+00 - 1.70E+01	K18	0.0-1.5	4.00E-01 - 3.00E+00
Tin	3 / 29	1.00E+00 - 5.00E+00	K18	0.0-1.5	1.90E+00 - 1.86E+01
Vanadium	29 / 29	4.90E+00 - 2.79E+01	ASB-34	6.0-8.0	-
Zinc	29 / 29	3.91E+01 - 1.01E+02	AS-98-129	0.0-0.5	-

NA = Not applicable.

[a] Number of sampling locations at which chemical was detected compared with total number of sampling locations; duplicates at a location were averaged and considered one sample.

[b] Based on non-detected samples.

APPENDIX B

STATISTICAL CHARACTERIZATION OF CHEMICAL DISTRIBUTION IN SOILS

APPENDIX B

STATISTICAL CHARACTERIZATION OF CHEMICAL DISTRIBUTION IN SOILS

B.1 INTRODUCTION

This appendix contains the documentation for assessing the type of distribution associated with the historical soils sample data at the Allendale School property.

B.2 DETERMINING DISTRIBUTION

The null hypothesis for this test was that the data are normally distributed. The following are the criteria for accepting the null hypothesis:

- W: Normal is > 0.90.
- Pr < W is > 0.5.
- CV < 100 or as low as possible.
- There is a bell-shaped curve.
- The normal probability plot shows a straight line.

The statistics for both the "raw" data set and the log-transformed data set were examined. When examining the normal data set, if the above criteria are met, the hypothesis that the data are normally distributed is not rejected. Therefore, for the purposes of the risk assessment, it is assumed that the data are normally distributed. If the above criteria are not met, the hypothesis that the data are normally distributed is rejected (i.e., it does not equate to the data being log-normally distributed).

If the criteria are met when examining the log-transformed data set, the hypothesis that the log-transformed data are normally distributed is not rejected. Therefore, for the purposes of the risk assessment, it is assumed that the data are log-normally distributed. If the criteria are not met, the hypothesis that the log-transformed data are normally distributed is rejected (i.e., this does not equate to the data being normally distributed).

If the hypothesis of normality is rejected for both the normal and the log-transformed data set, it is assumed that they are neither normally nor log-normally distributed. For the purposes of risk assessment, one defaults to a log-normal distribution.

Notes:

1. These criteria are guidelines. It is highly unlikely that the data set in question will fit each criterion. The purpose of the evaluation is to obtain an overall picture of the data.

2. The statistics from the raw data and log-transformed data sets are examined at the same time. Both may look as though the null hypothesis should not be rejected. It is determined, based on the criteria, which data set has a better fit to accept the null hypothesis. If both sets look equally acceptable, it is assumed that the data are normally distributed.

3. Determining distribution is a professional call, and therefore, is somewhat subjective.

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1
PITTSFIELD, MASSACHUSETTS

16:27 Monday, June 29, 1998 1

SAMP	1234678-HpCDD	1234678-HpCDF	123478-HxCDF	23478-PeCDF	2378-TCDF
SS101 -	27.0	16.00	6.80	6.200	24.0
SS102 -	6.8	1.50	0.35	0.600	2.4
SS103 -	13.0	2.25	1.60	0.750	4.0
SS104 -	3.1	0.90	0.70	0.245	2.8

Univariate Procedure

Variable=A 1234678-HpCDD

```
              Moments                                    Quantiles(Def=5)                                 Extremes

 N               4  Sum Wgts         4       100% Max        27      99%        27          Lowest    ID        Highest    ID
 Mean       12.475  Sum           49.9        75% Q3         20      95%        27        3.1(SS104 - )          .(         )
 Std Dev  10.50948  Variance  110.4492        50% Med       9.9      90%        27        6.8(SS102 - )        3.1(SS104 - )
 Skewness  1.18188  Kurtosis  1.056569        25% Q1       4.95      10%       3.1         13(SS103 - )        6.8(SS102 - )
 USS        953.85  CSS       331.3475         0% Min       3.1       5%       3.1         27(SS101 - )         13(SS103 - )
 CV       84.24433  Std Mean   5.25474                                1%       3.1          .(         )         27(SS101 - )
 T:Mean=0 2.374047  Pr>|T|      0.0981       Range         23.9
 Num ^= 0        4  Num > 0          4       Q3-Q1        15.05
 M(Sign)         2  Pr>=|M|     0.1250       Mode           3.1
 Sgn Rank        5  Pr>=|S|     0.1250
 W:Normal 0.920439  Pr<W        0.5250


                   Stem Leaf                    #             Boxplot                              Normal Probability Plot
                      2 7                       1                |                  27.5+                           * +++++
                      2                                       +-----+                   |                        ++++
                      1                                       |     |                   |                   +++++
                      1 3                       1             *--+--*                   |              +++++*
                      0 7                       1             +-----+                   |         ++++*
                      0 3                       1                |                   2.5+     +*++
                        ----+----+----+----+                                             +----+----+----+----+----+----+----+----+----+----+
                    Multiply Stem.Leaf by 10**+1                                              -2        -1         0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 3
PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=B 1234678-HpCDF

Moments

N	4	Sum Wgts	4
Mean	5.1625	Sum	20.65
Std Dev	7.246077	Variance	52.50562
Skewness	1.965342	Kurtosis	3.88322
USS	264.1225	CSS	157.5169
CV	140.3598	Std Mean	3.623038
T:Mean=0	1.424909	Pr>|T|	0.2494
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.700258	Pr<W	0.0126

Quantiles(Def=5)

100% Max	16	99%	16
75% Q3	9.125	95%	16
50% Med	1.875	90%	16
25% Q1	1.2	10%	0.9
0% Min	0.9	5%	0.9
		1%	0.9
Range	15.1		
Q3-Q1	7.925		
Mode	0.9		

Extremes

Lowest	ID	Highest	ID
0.9(SS104 -)		.( )	
1.5(SS102 -)		0.9(SS104 -)	
2.25(SS103 -)		1.5(SS102 -)	
16(SS101 -)		2.25(SS103 -)	
.( )		16(SS101 -)	

```
Stem Leaf                 #        Boxplot                  Normal Probability Plot
  16 0                    1           |            17+                           *   +++
  14                                  |              |                             ++
  12                                  |              |                           +++
  10                                  |              |                         +++
   8                               +-----+          9+                       +++
   6                               |     |           |                     ++
   4                               |  +  |           |                   +++
   2 2                    1        |     |           |                 +++    *
   0 95                   2        *-----*          1+             *  +++ *
     ----+----+----+----+                            +----+----+----+----+----+----+----+----+----+----+
                                                         -2        -1        0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 4
PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=C 123478-HxCDF

Moments

N	4	Sum Wgts	4
Mean	2.3625	Sum	9.45
Std Dev	3.004823	Variance	9.028958
Skewness	1.823079	Kurtosis	3.351566
USS	49.4125	CSS	27.08688
CV	127.1883	Std Mean	1.502411
T:Mean=0	1.572472	Pr>|T|	0.2139
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.775552	Pr<W	0.0638

Quantiles(Def=5)

100% Max	6.8	99%	6.8
75% Q3	4.2	95%	6.8
50% Med	1.15	90%	6.8
25% Q1	0.525	10%	0.35
0% Min	0.35	5%	0.35
		1%	0.35
Range	6.45		
Q3-Q1	3.675		
Mode	0.35		

Extremes

Lowest	ID	Highest	ID
0.35	(SS102 -)	.	( )
0.7	(SS104 -)	0.35	(SS102 -)
1.6	(SS103 -)	0.7	(SS104 -)
6.8	(SS101 -)	1.6	(SS103 -)
.	( )	6.8	(SS101 -)

```
Stem Leaf                  #           Boxplot
   6 8                     1              |
   5                                      |
   4                                   +-----+
   3                                   |     |
   2                                   |  +  |
   1 6                     1           *-----*
   0 47                    2           +-----+
     ----+----+----+----+

                        Normal Probability Plot
    6.5+                                       *  +++
       |                                     ++++
       |                                  +++
    3.5+                               +++
       |                           ++++
       |                        +++    *
    0.5+                  *  +++ *
       +----+----+----+----+----+----+----+----+----+----+
           -2        -1         0        +1        +2
```

Univariate Procedure

Variable=D 23478-PeCDF

Moments

N	4	Sum Wgts	4
Mean	1.94875	Sum	7.795
Std Dev	2.842066	Variance	8.07734
Skewness	1.96639	Kurtosis	3.893231
USS	39.42253	CSS	24.23202
CV	145.8405	Std Mean	1.421033
T:Mean=0	1.371362	Pr>|T|	0.2638
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.699621	Pr<W	0.0124

Quantiles(Def=5)

100% Max	6.2	99%	6.2
75% Q3	3.475	95%	6.2
50% Med	0.675	90%	6.2
25% Q1	0.4225	10%	0.245
0% Min	0.245	5%	0.245
		1%	0.245
Range	5.955		
Q3-Q1	3.0525		
Mode	0.245		

Extremes

Lowest	ID	Highest	ID
0.245	(SS104 -)	.	( )
0.6	(SS102 -)	0.245	(SS104 -)
0.75	(SS103 -)	0.6	(SS102 -)
6.2	(SS101 -)	0.75	(SS103 -)
.	( )	6.2	(SS101 -)

```
Stem Leaf                  #        Boxplot
   6 2                     1           |
   5                                   |
   4                                   |
   3                                +-----+
   2                                |     |
   1                                |  +  |
   0 268                   3        *-----*
     ----+----+----+----+
```

```
                    Normal Probability Plot
6.5+                                         *   +++
   |                                              ++++
   |                                          +++
3.5+                                     ++++
   |                                 +++
   |                             ++++
0.5+                   *   +++*     *
    +----+----+----+----+----+----+----+----+----+----+
        -2        -1         0        +1        +2
```

PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=E 2378-TCDF

Moments

N	4	Sum Wgts	4
Mean	8.3	Sum	33.2
Std Dev	10.48872	Variance	110.0133
Skewness	1.975118	Kurtosis	3.913409
USS	605.6	CSS	330.04
CV	126.3702	Std Mean	5.244362
T:Mean=0	1.582652	Pr>|T|	0.2117
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.68581	Pr<W	0.0083

Quantiles(Def=5)

100% Max	24	99%	24
75% Q3	14	95%	24
50% Med	3.4	90%	24
25% Q1	2.6	10%	2.4
0% Min	2.4	5%	2.4
		1%	2.4
Range	21.6		
Q3-Q1	11.4		
Mode	2.4		

Extremes

Lowest	ID	Highest	ID
2.4	(SS102 -)	.	( )
2.8	(SS104 -)	2.4	(SS102 -)
4	(SS103 -)	2.8	(SS104 -)
24	(SS101 -)	4	(SS103 -)
.	( )	24	(SS101 -)

```
Stem Leaf                     #         Boxplot                          Normal Probability Plot
   2 4                        1            |               22.5+                                 * ++++
   1                                       |                   |                              +++++
   1                                    +-----+            12.5+                         +++++
   0                                    |  +  |                |                    +++++
   0 234                      3         *-----*             2.5+          *  ++++*     *
     ----+----+----+----+                                      +----+----+----+----+----+----+----+----+----+----+
 Multiply Stem.Leaf by 10**+1                                      -2        -1         0        +1        +2
```

Univariate Procedure

Variable=LA Log of 1234678-HpCDD

Moments

N	4	Sum Wgts	4
Mean	2.227278	Sum	8.909111
Std Dev	0.922515	Variance	0.851035
Skewness	-0.0742	Kurtosis	-0.75921
USS	22.39617	CSS	2.553104
CV	41.41897	Std Mean	0.461258
T:Mean=0	4.828705	Pr>|T|	0.0169
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.997786	Pr<W	0.9871

Quantiles(Def=5)

100% Max	3.295837	99%	3.295837
75% Q3	2.930393	95%	3.295837
50% Med	2.240936	90%	3.295837
25% Q1	1.524162	10%	1.131402
0% Min	1.131402	5%	1.131402
		1%	1.131402
Range	2.164435		
Q3-Q1	1.406231		
Mode	1.131402		

Extremes

Lowest	ID	Highest	ID
1.131402	(SS104 -)	.	( )
1.916923	(SS102 -)	1.131402	(SS104 -)
2.564949	(SS103 -)	1.916923	(SS102 -)
3.295837	(SS101 -)	2.564949	(SS103 -)
.	( )	3.295837	(SS101 -)

```
Stem Leaf                       #           Boxplot
   3 3                          1              |
   2 6                          1           +-----+
   2                                        *--+--*
   1 9                          1           +-----+
   1 1                          1              |
     ----+----+----+----+
```

```
                    Normal Probability Plot
      3.25+                                  +*+++
          |                             *+++++
      2.25+                        +++++
          |                   ++++*
      1.25+             +++*++
           +----+----+----+----+----+----+----+----+----+----+
               -2        -1         0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 8
PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=LB Log of 1234678-HpCDF

Moments

N	4	Sum Wgts	4
Mean	0.970906	Sum	3.883624
Std Dev	1.258269	Variance	1.583242
Skewness	1.478072	Kurtosis	2.433004
USS	8.520359	CSS	4.749726
CV	129.5975	Std Mean	0.629135
T:Mean=0	1.54324	Pr>|T|	0.2205
Num ^= 0	4	Num > 0	3
M(Sign)	1	Pr>=|M|	0.6250
Sgn Rank	4	Pr>=|S|	0.2500
W:Normal	0.8811	Pr<W	0.3387

Quantiles(Def=5)

100% Max	2.772589	99%	2.772589
75% Q3	1.791759	95%	2.772589
50% Med	0.608198	90%	2.772589
25% Q1	0.150052	10%	-0.10536
0% Min	-0.10536	5%	-0.10536
		1%	-0.10536
Range	2.877949		
Q3-Q1	1.641707		
Mode	-0.10536		

Extremes

Lowest	ID	Highest	ID
-0.10536(	SS104 -)	.(	)
0.405465(	SS102 -)	-0.10536(	SS104 -)
0.81093(	SS103 -)	0.405465(	SS102 -)
2.772589(	SS101 -)	0.81093(	SS103 -)
.(	)	2.772589(	SS101 -)

```
Stem Leaf                  #        Boxplot
   2 8                     1           |
   2                                   |
   1                                +-----+
   1                                |  +  |
   0 8                     1        *-----*
   0 4                     1        +-----+
  -0 1                     1           |
     ----+----+----+----+
```

```
                      Normal Probability Plot
 2.75+                                      *  ++++
     |                                     ++++
     |                                 ++++
 1.25+                             ++++
     |                         ++++  *
     |                     +++++*
-0.25+                 +*++
      +----+----+----+----+----+----+----+----+----+----+
          -2        -1         0        +1        +2
```

```
                    UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1              16:27 Monday, June 29, 1998   9
                                          PITTSFIELD, MASSACHUSETTS

                                            Univariate Procedure

Variable=LC          Log of 123478-HxCDF

              Moments                                     Quantiles(Def=5)                                    Extremes

 N                4  Sum Wgts          4          100% Max  1.916923       99%  1.916923            Lowest    ID       Highest    ID
 Mean      0.245107  Sum        0.980429           75% Q3   1.193463       95%  1.916923          -1.04982(SS102 - )        .(        )
 Std Dev      1.276  Variance   1.628176           50% Med  0.056664       90%  1.916923          -0.35667(SS104 - ) -1.04982(SS102 - )
 Skewness  0.736353  Kurtosis   0.026358           25% Q1   -0.70325       10%  -1.04982          0.470004(SS103 - ) -0.35667(SS104 - )
 USS       5.124839  CSS        4.884529            0% Min  -1.04982        5%  -1.04982          1.916923(SS101 - ) 0.470004(SS103 - )
 CV        520.5884  Std Mean      0.638                                    1%  -1.04982                .(        ) 1.916923(SS101 - )
 T:Mean=0  0.384181  Pr>|T|       0.7265          Range     2.966745
 Num ^= 0         4  Num > 0           2          Q3-Q1     1.896712
 M(Sign)          0  Pr>=|M|      1.0000          Mode      -1.04982
 Sgn Rank         1  Pr>=|S|      0.8750
 W:Normal  0.970613  Pr<W         0.8133

                   Stem Leaf                    #             Boxplot                        Normal Probability Plot
                      1 9                       1                |              1.75+                                    *+++
                      1                                       +-----+                |                               ++++
                      0 5                       1             |     |                |                           ++++
                      0                                       *--+--*           0.25+                        +++ *
                     -0 4                       1             |     |                |                    ++*+
                     -0                                       +-----+                |                ++++
                     -1 0                       1                |             -1.25+            +++*
                        ----+----+----+----+                                         +----+----+----+----+----+----+----+----+----+----+
                                                                                          -2        -1         0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 10
PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=LD Log of 23478-PeCDF

Moments

N	4	Sum Wgts	4
Mean	-0.09511	Sum	-0.38046
Std Dev	1.368056	Variance	1.871577
Skewness	1.234161	Kurtosis	2.267105
USS	5.650918	CSS	5.614731
CV	-1438.33	Std Mean	0.684028
T:Mean=0	-0.13905	Pr>|T|	0.8982
Num ^= 0	4	Num > 0	1
M(Sign)	-1	Pr>=|M|	0.6250
Sgn Rank	-1	Pr>=|S|	0.8750
W:Normal	0.907905	Pr<W	0.4631

Quantiles(Def=5)

100% Max	1.824549	99%	1.824549
75% Q3	0.768434	95%	1.824549
50% Med	-0.39925	90%	1.824549
25% Q1	-0.95866	10%	-1.4065
0% Min	-1.4065	5%	-1.4065
		1%	-1.4065
Range	3.231046		
Q3-Q1	1.727095		
Mode	-1.4065		

Extremes

Lowest	ID	Highest	ID
-1.4065	(SS104 -)	.	( )
-0.51083	(SS102 -)	-1.4065	(SS104 -)
-0.28768	(SS103 -)	-0.51083	(SS102 -)
1.824549	(SS101 -)	-0.28768	(SS103 -)
.	( )	1.824549	(SS101 -)

```
Stem Leaf                   #        Boxplot                      Normal Probability Plot
   1 8                      1           |             1.75+                                  * ++++
   1                                    |                 |                                 +++
   0                                 +-----+              |                             ++++
   0                                 |     |          0.25+                         ++++
  -0 3                      1        *--+--*              |                      +++  *
  -0 5                      1        |     |              |                  ++++*
  -1 4                      1        +-----+         -1.25+              *+++
     ----+----+----+----+                                  +----+----+----+----+----+----+----+----+----+----+
                                                               -2        -1         0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 11
PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=LE Log of 2378-TCDF

Moments

N	4	Sum Wgts	4
Mean	1.617359	Sum	6.469436
Std Dev	1.06223	Variance	1.128333
Skewness	1.767576	Kurtosis	3.146799
USS	13.8484	CSS	3.384998
CV	65.67682	Std Mean	0.531115
T:Mean=0	3.045214	Pr>|T|	0.0556
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.79665	Pr<W	0.0931

Quantiles(Def=5)

100% Max	3.178054	99%	3.178054
75% Q3	2.282174	95%	3.178054
50% Med	1.207957	90%	3.178054
25% Q1	0.952544	10%	0.875469
0% Min	0.875469	5%	0.875469
		1%	0.875469
Range	2.302585		
Q3-Q1	1.32963		
Mode	0.875469		

Extremes

Lowest	ID	Highest	ID
0.875469	(SS102 -)	.	( )
1.029619	(SS104 -)	0.875469	(SS102 -)
1.386294	(SS103 -)	1.029619	(SS104 -)
3.178054	(SS101 -)	1.386294	(SS103 -)
.	( )	3.178054	(SS101 -)

```
Stem Leaf                    #          Boxplot
   3 2                       1             |
   2                                       |
   2                                    +-----+
   1                                    |  +  |
   1 04                      2          *-----*
   0 9                       1             |
     ----+----+----+----+
```

```
                      Normal Probability Plot
3.25+                                           *   ++++
    |                                         +++++
    |                                    +++++
    |                               +++++
    |                           ++*+    *
0.75+                       *++++
     +----+----+----+----+----+----+----+----+----+----+
         -2        -1         0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1
PITTSFIELD, MASSACHUSETTS

16:27 Monday, June 29, 1998 1

SAMP	OCDD	OCDF
SS101 -	170	16.00
SS102 -	79	10.00
SS103 -	96	4.25
SS104 -	20	0.95

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 2
PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=A OCDD

Moments

N	4	Sum Wgts	4
Mean	91.25	Sum	365
Std Dev	61.7812	Variance	3816.917
Skewness	0.353208	Kurtosis	1.201201
USS	44757	CSS	11450.75
CV	67.70542	Std Mean	30.8906
T:Mean=0	2.953973	Pr>|T|	0.0598
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.979967	Pr<W	0.8739

Quantiles(Def=5)

100% Max	170	99%	170
75% Q3	133	95%	170
50% Med	87.5	90%	170
25% Q1	49.5	10%	20
0% Min	20	5%	20
		1%	20
Range	150		
Q3-Q1	83.5		
Mode	20		

Extremes

Lowest	ID	Highest	ID
20(SS104 -)		.( )	
79(SS102 -)		20(SS104 -)	
96(SS103 -)		79(SS102 -)	
170(SS101 -)		96(SS103 -)	
.( )		170(SS101 -)	

```
Stem Leaf                    #     Boxplot                     Normal Probability Plot
  16 0                       1        |           170+                                * +++
  14                                  |              |                              ++++
  12                               +-----+           |                           +++
  10                               |     |           |                        +++
   8 6                       1     *--+--*           |                     +++ *
   6 9                       1     |     |           |                  ++*+
   4                               +-----+           |               +++
   2 0                       1        |            30+            +*+
     ----+----+----+----+                              +----+----+----+----+----+----+----+----+----+----+
 Multiply Stem.Leaf by 10**+1                               -2        -1         0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 3
PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=B OCDF

Moments

N	4	Sum Wgts	4
Mean	7.8	Sum	31.2
Std Dev	6.623317	Variance	43.86833
Skewness	0.44939	Kurtosis	-1.53943
USS	374.965	CSS	131.605
CV	84.91433	Std Mean	3.311659
T:Mean=0	2.355315	Pr>|T|	0.0998
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.971392	Pr<W	0.8183

Quantiles(Def=5)

100% Max	16	99%	16
75% Q3	13	95%	16
50% Med	7.125	90%	16
25% Q1	2.6	10%	0.95
0% Min	0.95	5%	0.95
		1%	0.95
Range	15.05		
Q3-Q1	10.4		
Mode	0.95		

Extremes

Lowest	ID	Highest	ID
0.95	(SS104 -)	.	( )
4.25	(SS103 -)	0.95	(SS104 -)
10	(SS102 -)	4.25	(SS103 -)
16	(SS101 -)	10	(SS102 -)
.	( )	16	(SS101 -)

```
  Stem Leaf                  #             Boxplot                         Normal Probability Plot
    16 0                     1                |               17+                              *  +++
    14                                        |                 |                             +++
    12                                     +-----+              |                         +++
    10 0                     1             |     |              |                    *+++
     8                                     |     |             9+                 +++
     6                                     *--+--*              |             +++
     4 2                     1             |     |              |          ++*
     2                                     +-----+              |       +++
     0 0                     1                |                1+    +*+
       ----+----+----+----+                                      +----+----+----+----+----+----+----+----+----+----+
                                                                     -2        -1        0        +1        +2
```

```
                    UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1              16:27 Monday, June 29, 1998   4
                                              PITTSFIELD, MASSACHUSETTS

                                                 Univariate Procedure

Variable=LA           Log of OCDD

                Moments                                  Quantiles(Def=5)                                   Extremes

 N               4  Sum Wgts          4         100% Max  5.135798       99%  5.135798            Lowest    ID       Highest    ID
 Mean     4.266332  Sum        17.06533          75% Q3   4.850073       95%  5.135798        2.995732(SS104 - )        .(        )
 Std Dev  0.907348  Variance   0.823281          50% Med  4.466898       90%  5.135798        4.369448(SS102 - ) 2.995732(SS104 - )
 Skewness -1.21948  Kurtosis   2.167839          25% Q1    3.68259       10%  2.995732        4.564348(SS103 - ) 4.369448(SS102 - )
 USS      75.27619  CSS        2.469842           0% Min  2.995732        5%  2.995732        5.135798(SS101 - ) 4.564348(SS103 - )
 CV       21.26764  Std Mean   0.453674                                   1%  2.995732               .(        ) 5.135798(SS101 - )
 T:Mean=0 9.403957  Pr>|T|       0.0025         Range     2.140066
 Num ^= 0        4  Num > 0           4         Q3-Q1     1.167483
 M(Sign)         2  Pr>=|M|      0.1250         Mode      2.995732
 Sgn Rank        5  Pr>=|S|      0.1250
 W:Normal 0.915049  Pr<W         0.4983


                               Stem Leaf                   #             Boxplot                      Normal Probability Plot
                                  5 1                      1                |             5.25+                           +*+++
                                  4 6                      1             +-----+               |                      *+++++
                                  4 4                      1             |  +  |               |                *+++++
                                  3                                      +-----+               |           ++++++
                                  3 0                      1                |                  |       +++++
                                  2                                                       2.75+  ++++++   *
                                    ----+----+----+----+                                       +----+----+----+----+----+----+----+----+----+----+
                                                                                                    -2        -1         0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1   16:27 Monday, June 29, 1998   5
PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=LB   Log of OCDF

Moments

N	4	Sum Wgts	4
Mean	1.6177	Sum	6.4708
Std Dev	1.240637	Variance	1.53918
Skewness	-0.97489	Kurtosis	0.231146
USS	15.08535	CSS	4.61754
CV	76.69142	Std Mean	0.620318
T:Mean=0	2.607854	Pr>|T|	0.0798
Num ^= 0	4	Num > 0	3
M(Sign)	1	Pr>=|M|	0.6250
Sgn Rank	4	Pr>=|S|	0.2500
W:Normal	0.940617	Pr<W	0.6328

Quantiles(Def=5)

100% Max	2.772589	99%	2.772589
75% Q3	2.537587	95%	2.772589
50% Med	1.874752	90%	2.772589
25% Q1	0.697813	10%	-0.05129
0% Min	-0.05129	5%	-0.05129
		1%	-0.05129
Range	2.823882		
Q3-Q1	1.839774		
Mode	-0.05129		

Extremes

Lowest	ID	Highest	ID
-0.05129(	SS104 -)	.(	)
1.446919(	SS103 -)	-0.05129(	SS104 -)
2.302585(	SS102 -)	1.446919(	SS103 -)
2.772589(	SS101 -)	2.302585(	SS102 -)
.(	)	2.772589(	SS101 -)

```
   Stem Leaf                  #         Boxplot                       Normal Probability Plot
      2 8                     1         +-----+          2.75+                                  ++*+
      2 3                     1         |     |              |                             *++++
      1                                 *--+--*              |                          ++++
      1 4                     1         |     |          1.25+                      +*++
      0                                 +-----+              |                 +++++
      0                                    |                 |             ++++
     -0 1                     1            |            -0.25+         ++++    *
        ----+----+----+----+                                  +----+----+----+----+----+----+----+----+----+----+
                                                                   -2        -1         0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1
PITTSFIELD, MASSACHUSETTS

16:27 Monday, June 29, 1998 1

SAMP	Total PCBs
SS1-S001	290.0
SS2-S001	310.0
SS3-S001	98.0
SS4-S001	113.0
SS5-S001	520.0
SS6-S001	160.0
SS7-S001	540.0
SS8-S001	130.0
SS9-S001	540.0
SS10-S00	340.0
SS11-S00	20.5
SS12-S00	40.5
SS13-S00	222.0
SS14-S00	116.0
SS15-S00	36.3
SS16-S00	610.0
SS17-S00	58.0
SS18-S00	82.0
SS19-S00	71.5
SS20-S00	66.8
SS21-S00	19.3
SS22-S00	48.8
SS23-S00	200.0
SS24-S00	83.5
SS25-S00	73.0
SS26-S00	215.0
SS27-S00	81.5
SS28-S00	48.3
SS29-S00	31.3
SS30-S00	39.5
SS31-S00	44.5
SS32-S00	44.0
SS33-S00	63.8
SS34-S00	80.5
SS35-S00	74.0
SS36-S00	45.0
SS37-S00	77.5
SS38-S00	90.5
SS39-S00	40.8
SS40-S00	19.0
SS41-S00	34.0
SS42-S00	36.8
SS43-S00	133.0
SS44-S00	42.5
SS45-S00	60.8
SS46-S00	72.0
SS47-S00	41.0
SS48-S00	75.0
SS49-S00	36.6
SS50-S00	64.0
SS51-S00	70.5
SS52-S00	32.0
SS53-S00	73.5
SS54-S00	69.5

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1
PITTSFIELD, MASSACHUSETTS

SAMP	Total PCBs
SS55-S00	44.8
SS56-S00	35.8
SS57-S00	108.0
SS58-S00	105.0
SS59-S00	65.0
SS60-S00	50.5
SS61-S00	68.5
SS62-S00	78.5
SS63-S00	77.0
SS64-S00	102.0
SS65-S00	43.3
SS66-S00	90.5
SS67-S00	52.5
SS68-S00	103.0
SS69-S00	515.0
SS70-S00	19.5
SS71-S00	96.0
SS72-S00	44.5
SS73-S00	48.8
SS74-S00	85.0
SS75-S00	62.5
SS76-S00	62.5
SS77-S00	88.5
SS78-S00	68.5
SS79-S00	205.0
SS80-S00	150.0
SS81-S00	224.0
SS82-S00	575.0
SS83-S00	350.0
SS84-S00	140.0
SS85-S00	270.0
SS86-S00	190.0
SS87-S00	405.0
SS88-S00	20.0
SS89-S00	250.0
SS90-S00	175.0
SS91-S00	440.0
SS92-S00	19.8
SS93-S00	220.0
SS94-S00	91.5
SS95-S00	19.8
SS96-S00	19.8
SS97-S00	45.5
SS98-S00	64.8
SS99-S00	58.0
SS100-S0	60.8
SS101-S0	240.0
SS102-S0	78.0
SS103-S0	90.0
SS104-S0	86.0
SS105-S0	20.3
SS106-S0	650.0
SS107-S0	127.0
SS108-S0	20.0

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 3
PITTSFIELD, MASSACHUSETTS

SAMP	Total PCBs
SS109-S0	20.0
SS110-S0	38.0
SS111-S0	38.8
SS112-S0	265.0
SS113-S0	36.8
SS114-S0	37.5
SS116-S0	62.3
SS117-S0	325.0
SS118-S0	350.0
SS119-S0	350.0
SS120-S0	375.0
SS121-S0	300.0
SS122-S0	325.0
SS123-S0	325.0
SS124-S0	375.0
SS125-S0	325.0
SS126-S0	325.0
SS127-S0	300.0
SS128-S0	300.0
SS129-S0	300.0
SS130-S0	250.0
SS132-S0	140.0
SS133-S0	350.0
SS134-S0	66.2
SS135-S0	450.0
SS136-S0	107.0
SS137-S0	39.5
SS138-S0	19.0
SS139-S0	104.0
SS140-S0	6.0
SS141-S0	22.0
SS142-S0	27.0
SS143-S0	16.0
SS144-S0	6.0
SS145-S0	18.0
SS146-S0	5.5
SS147-S0	25.0
SS148-S0	52.0
SS149-S0	50.0
SS150-S0	14.0
SS151-S0	25.0
SS152-S0	85.0
SS153-S0	17.0
SS154-S0	15.0
SS155-S0	42.0
SS156-S0	370.0
SS157-S0	420.0
SS158-S0	420.0
SS159-S0	1200.0
SS160-S0	7.0
SS161-S0	290.0
SS162-S0	37.0
SS163-S0	15.0
SS164-S0	18.0

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 4
PITTSFIELD, MASSACHUSETTS

SAMP	Total PCBs
SS165-S0	77.0
SS166-S0	54.0
SS167-S0	95.0
SS168-S0	50.0
SS169-S0	110.0
SS170-S0	100.0
SS171-S0	80.0
SS172-S0	100.0
SS173-S0	120.0
SS174-S0	190.0
SS175-S0	200.0
SS176-S0	25.0
SS177-S0	25.0
SS178-S0	50.0
SS179-S0	90.0
SS180-S0	25.0
SS181-S0	60.0
SS182-S0	65.5
SS183-S0	4330.0
SS184-S0	39.8
	.
	.
	.
	.
	.
	.
	.
	.
	.

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Univariate Procedure

Variable=A Total PCBs

Moments

N	182	Sum Wgts	182
Mean	161.7253	Sum	29434
Std Dev	349.7012	Variance	122290.9
Skewness	9.670305	Kurtosis	112.7756
USS	26894879	CSS	22134657
CV	216.2316	Std Mean	25.92158
T:Mean=0	6.239021	Pr>|T|	0.0001
Num ^= 0	182	Num > 0	182
M(Sign)	91	Pr>=|M|	0.0001
Sgn Rank	8326.5	Pr>=|S|	0.0001
W:Normal	0.365161	Pr<W	0.0001

Quantiles(Def=5)

100% Max	4330	99%	1200
75% Q3	200	95%	450
50% Med	74.5	90%	350
25% Q1	40.5	10%	20
0% Min	5.5	5%	18
		1%	6
Range	4324.5		
Q3-Q1	159.5		
Mode	25		

Extremes

Lowest	ID	Highest	ID
5.5	(SS146-S0)	575	(SS82-S00)
6	(SS144-S0)	610	(SS16-S00)
6	(SS140-S0)	650	(SS106-S0)
7	(SS160-S0)	1200	(SS159-S0)
14	(SS150-S0)	4330	(SS183-S0)

Missing Value	.
Count	9
% Count/Nobs	4.71

```
            Histogram                              #        Boxplot
  4300+*                                           1           *
      .
      .
      .
      .
      .
      .
  2900+
      .
      .
      .
      .
      .
      .
  1500+
      .*                                           1           *
      .
      .
      .*                                           2           0
      .****                                       10           0
      .***********                                32        +-----+
   100+*************************************************  136        *--+--*
       ----+----+----+----+----+----+----+----+----+-
       * may represent up to 3 counts

                    Normal Probability Plot
  4300+                                                         *
      |
      |
      |
      |
      |
      |
  2900+
      |
      |
      |
      |
      |
      |
  1500+
      |                                                        *
      |                                                       ++
      |                                                   +++++
      |                                              ++++++  **
      |                                         ++++++ ***** *
      |                                     +++++*********
   100+**  *** ************************
       +----+----+----+----+----+----+----+----+----+----+
           -2        -1         0        +1        +2
```

```
UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1        16:27 Monday, June 29, 1998   6
                    PITTSFIELD, MASSACHUSETTS

                       Univariate Procedure

Variable=LA              Log of Total PCBs

                 Moments

 N              182  Sum Wgts        182
 Mean      4.413998  Sum        803.3477
 Std Dev   1.095935  Variance   1.201073
 Skewness  0.251895  Kurtosis   0.237016
 USS        3763.37  CSS        217.3942
 CV        24.82862  Std Mean   0.081236
 T:Mean=0  54.33543  Pr>|T|       0.0001
 Num ^= 0       182  Num > 0         182
 M(Sign)         91  Pr>=|M|      0.0001
 Sgn Rank    8326.5  Pr>=|S|      0.0001
 W:Normal  0.977136  Pr<W         0.1971

              Quantiles(Def=5)

 100% Max  8.373323       99%  7.090077
  75% Q3   5.298317       95%  6.109248
  50% Med  4.310777       90%  5.857933
  25% Q1   3.701302       10%  2.995732
   0% Min  1.704748        5%  2.890372
                           1%  1.791759

 Range     6.668575
 Q3-Q1     1.597015
 Mode      3.218876

                     Extremes

    Lowest      ID        Highest     ID
  1.704748(SS146-S0)   6.35437(SS82-S00)
  1.791759(SS144-S0)  6.413459(SS16-S00)
  1.791759(SS140-S0)  6.476972(SS106-S0)
   1.94591(SS160-S0)  7.090077(SS159-S0)
  2.639057(SS150-S0)  8.373323(SS183-S0)

                 Missing Value          .
                 Count                  9
                 % Count/Nobs        4.71

Stem Leaf                                      #             Boxplot
   8 4                                         1                0
   7
   7 1                                         1                |
   6 5                                         1                |
   6 00011233344                              11                |
   5 5556677777778888889999999                25                |
   5 012223334444                             12             +-----+
   4 555555566666666777778889999              27             |     |
   4 0001111111122222222223333333334444444444 40             *--+--*
   3 556666666667777777778888888999999        33             +-----+
   3 000000000012222234                       18                |
   2 677889999                                 9                |
   2                                                            |
   1 7889                                      4                |
     ----+----+----+----+----+----+----+----+

                     Normal Probability Plot
 8.25+                                                  *
     |
     |                                                 *+
     |                                             ++++
     |                                       *****+***
     |                                 *******
     |                               ***+
     |                          +******
     |                      ******
     |                ******* 
     |             ****
     |     ** ******
     |   +++++
 1.75+***+ *
      +----+----+----+----+----+----+----+----+----+----+
          -2        -1        0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 1
PITTSFIELD, MASSACHUSETTS

SAMP	BENZO(A)ANTHRACENE	BENZO(A)PYRENE	BENZO(B)FLUORANTHENE	BENZO(K)FLUORANTHENE	DIBENZ(A,H)ANTHRACENE
SS101 -	2100	2400	2500	1800	500
SS102 -	300	290	260	260	220
SS103 -	90	110	100	90	235
SS104 -	290	330	360	300	195
SS40 - A	N	N	N	N	N
SS42 - A	N	N	N	N	N
SS90 - A	N	N	N	N	N

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1   16:27 Monday, June 29, 1998   2
PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=A   BENZO(A)ANTHRACENE

Moments

N	4	Sum Wgts	4
Mean	695	Sum	2780
Std Dev	941.6475	Variance	886700
Skewness	1.935425	Kurtosis	3.806052
USS	4592200	CSS	2660100
CV	135.4888	Std Mean	470.8237
T:Mean=0	1.476136	Pr>|T|	0.2364
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.718976	Pr<W	0.0200

Quantiles(Def=5)

100% Max	2100	99%	2100
75% Q3	1200	95%	2100
50% Med	295	90%	2100
25% Q1	190	10%	90
0% Min	90	5%	90
		1%	90
Range	2010		
Q3-Q1	1010		
Mode	90		

Extremes

Lowest	ID	Highest	ID
90	(SS103 -)	.	( )
290	(SS104 -)	90	(SS103 -)
300	(SS102 -)	290	(SS104 -)
2100	(SS101 -)	300	(SS102 -)
.	( )	2100	(SS101 -)

Missing Value	N
Count	3
% Count/Nobs	42.86

```
Stem Leaf                  #         Boxplot              Normal Probability Plot
   2 1                     1            |          2250+                          *   ++++++
   1                                    |              |                       +++++
   1                                 +-----+       1250+                  +++++
   0                                 |  +  |           |             ++++++
   0 133                   3         *-----*        250+         *  ++++*     *
     ----+----+----+----+                               +----+----+----+----+----+----+----+----+----+----+
   Multiply Stem.Leaf by 10**+3                              -2        -1         0        +1        +2
```

PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=B BENZO(A)PYRENE

Moments

N	4	Sum Wgts	4
Mean	782.5	Sum	3130
Std Dev	1082.57	Variance	1171958
Skewness	1.952414	Kurtosis	3.853292
USS	5965100	CSS	3515875
CV	138.3476	Std Mean	541.2851
T:Mean=0	1.445634	Pr>|T|	0.2440
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.710393	Pr<W	0.0163

Quantiles(Def=5)

100% Max	2400	99%	2400
75% Q3	1365	95%	2400
50% Med	310	90%	2400
25% Q1	200	10%	110
0% Min	110	5%	110
		1%	110
Range	2290		
Q3-Q1	1165		
Mode	110		

Extremes

Lowest	ID	Highest	ID
110	(SS103 -)	.	( )
290	(SS102 -)	110	(SS103 -)
330	(SS104 -)	290	(SS102 -)
2400	(SS101 -)	330	(SS104 -)
.	( )	2400	(SS101 -)

Missing Value	N
Count	3
% Count/Nobs	42.86

```
 Stem Leaf                     #          Boxplot                          Normal Probability Plot
    2 4                        1             |                2250+                          * ++++
    1                                        |                    |                       +++++
    1                                     +-----+             1250+                   ++++
    0                                     |  +  |                 |               +++++
    0 133                      3          *-----*              250+          *  +++++*     *
      ----+----+----+----+                                         +----+----+----+----+----+----+----+----+----+----+
   Multiply Stem.Leaf by 10**+3                                         -2        -1         0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 4
PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=C BENZO(B)FLUORANTHENE

Moments

N	4	Sum Wgts	4
Mean	805	Sum	3220
Std Dev	1135.062	Variance	1288367
Skewness	1.946318	Kurtosis	3.827958
USS	6457200	CSS	3865100
CV	141.0015	Std Mean	567.5312
T:Mean=0	1.418424	Pr>|T|	0.2511
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.71815	Pr<W	0.0197

Quantiles(Def=5)

100% Max	2500	99%	2500
75% Q3	1430	95%	2500
50% Med	310	90%	2500
25% Q1	180	10%	100
0% Min	100	5%	100
		1%	100
Range	2400		
Q3-Q1	1250		
Mode	100		

Extremes

Lowest	ID	Highest	ID
100	(SS103 -)	.	( )
260	(SS102 -)	100	(SS103 -)
360	(SS104 -)	260	(SS102 -)
2500	(SS101 -)	360	(SS104 -)
.	( )	2500	(SS101 -)

Missing Value	N
Count	3
% Count/Nobs	42.86

```
Stem Leaf                 #        Boxplot                      Normal Probability Plot
   2 5                    1           |            2750+                             *    +++++
   2                                  |                |                                 ++++
   1                                  |                |                             ++++
   1                               +-----+             |                        +++++
   0                               |  +  |             |                    ++++
   0 134                  3        *-----*          250+            *  +++++*     *
     ----+----+----+----+                               +----+----+----+----+----+----+----+----+----+----+
   Multiply Stem.Leaf by 10**+3                           -2        -1         0        +1        +2
```

```
                    UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1          16:27 Monday, June 29, 1998   5
                                          PITTSFIELD, MASSACHUSETTS

                                             Univariate Procedure

Variable=D             BENZO(K)FLUORANTHENE

                 Moments                                   Quantiles(Def=5)                                   Extremes

 N                4  Sum Wgts         4        100% Max      1800       99%      1800          Lowest    ID        Highest    ID
 Mean         612.5  Sum           2450         75% Q3       1050       95%      1800            90(SS103  - )         .(        )
 Std Dev   796.8846  Variance    635025         50% Med       280       90%      1800           260(SS102  - )        90(SS103  - )
 Skewness   1.92026  Kurtosis  3.759884         25% Q1        175       10%        90           300(SS104  - )       260(SS102  - )
 USS        3405700  CSS        1905075          0% Min        90        5%        90          1800(SS101  - )       300(SS104  - )
 CV        130.1036  Std Mean  398.4423                                  1%        90             .(        )       1800(SS101  - )
 T:Mean=0  1.537236  Pr>|T|      0.2218        Range         1710
 Num ^= 0         4  Num > 0          4        Q3-Q1          875
 M(Sign)          2  Pr>=|M|     0.1250        Mode            90
 Sgn Rank         5  Pr>=|S|     0.1250
 W:Normal  0.733146  Pr<W        0.0275


                                               Missing Value         N
                                               Count                 3
                                               % Count/Nobs      42.86


                  Stem Leaf                     #       Boxplot                        Normal Probability Plot
                    18 0                        1          |           1900+                              *   +++
                    16                                     |               |                              ++
                    14                                     |               |                            +++
                    12                                     |           1300+                          ++
                    10                                  +-----+            |                       +++
                     8                                  |     |            |                     ++
                     6                                  |  +  |         700+                  +++
                     4                                  |     |            |                ++
                     2 60                       2       *-----*            |             ++*     *
                     0 9                        1       +-----+         100+          *  ++
                       ----+----+----+----+                                 +----+----+----+----+----+----+----+----+----+----+
                   Multiply Stem.Leaf by 10**+2                                 -2        -1         0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 6
PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=E DIBENZ(A,H)ANTHRACENE

Moments

N	4	Sum Wgts	4
Mean	287.5	Sum	1150
Std Dev	142.6242	Variance	20341.67
Skewness	1.919196	Kurtosis	3.744551
USS	391650	CSS	61025
CV	49.60842	Std Mean	71.31211
T:Mean=0	4.031573	Pr>|T|	0.0274
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.73726	Pr<W	0.0300

Quantiles(Def=5)

100% Max	500	99%	500
75% Q3	367.5	95%	500
50% Med	227.5	90%	500
25% Q1	207.5	10%	195
0% Min	195	5%	195
		1%	195
Range	305		
Q3-Q1	160		
Mode	195		

Extremes

Lowest	ID	Highest	ID
195(SS104 -)		.( )	
220(SS102 -)		195(SS104 -)	
235(SS103 -)		220(SS102 -)	
500(SS101 -)		235(SS103 -)	
.( )		500(SS101 -)	

Missing Value	N
Count	3
% Count/Nobs	42.86

```
Stem Leaf                  #           Boxplot
   5 0                     1              |
   4                                      |
   4                                      |
   3                                   +-----+
   3                                   |     |
   2                                   |  +  |
   2 024                   3           *-----*
   1
     ----+----+----+----+
 Multiply Stem.Leaf by 10**+2
```

```
                       Normal Probability Plot
  525+                                        *    ++++
     |                                           +++
     |                                       ++++
     |                                    +++
     |                                ++++
     |                             +++
     |                         +++*     *
  175+                     *+++
      +----+----+----+----+----+----+----+----+----+----+
          -2        -1         0        +1        +2
```

```
                    UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1          16:27 Monday, June 29, 1998   7
                                        PITTSFIELD, MASSACHUSETTS

                                          Univariate Procedure

Variable=LA            Log of BENZO(A)ANTHRACENE

                Moments                                   Quantiles(Def=5)                                  Extremes

 N                 4  Sum Wgts          4       100% Max  7.649693       99%  7.649693          Lowest    ID       Highest    ID
 Mean       5.880791  Sum        23.52317        75% Q3   6.676738       95%  7.649693         4.49981(SS103 - )          .(         )
 Std Dev    1.305366  Variance   1.703979        50% Med  5.686832       90%  7.649693        5.669881(SS104 - )  4.49981(SS103 - )
 Skewness   0.865075  Kurtosis   1.918789        25% Q1   5.084845       10%   4.49981        5.703782(SS102 - ) 5.669881(SS104 - )
 USS        143.4468  CSS        5.111937         0% Min   4.49981        5%   4.49981        7.649693(SS101 - ) 5.703782(SS102 - )
 CV         22.19711  Std Mean   0.652683                                 1%   4.49981               .(         ) 7.649693(SS101 - )
 T:Mean=0   9.010183  Pr>|T|       0.0029       Range     3.149883
 Num ^= 0          4  Num > 0           4       Q3-Q1     1.591892
 M(Sign)           2  Pr>=|M|      0.1250       Mode       4.49981
 Sgn Rank          5  Pr>=|S|      0.1250
 W:Normal   0.921399  Pr<W         0.5298


                                              Missing Value         .
                                              Count                 3
                                              % Count/Nobs      42.86


                   Stem Leaf                  #         Boxplot                         Normal Probability Plot
                      7 6                     1            |           7.75+                                  *  ++++
                      7                                    |               |                                   ++++
                      6                               +-----+              |                               ++++
                      6                               |     |              |                           ++++
                      5 77                    2       *--+--*              |                       ++++  *
                      5                               +-----+              |                    ++++
                      4 5                     1            |               |                ++++
                      4                                                4.25+            ++++*
                        ----+----+----+----+                                +----+----+----+----+----+----+----+----+----+----+
                                                                                 -2        -1         0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 8
PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=LB Log of BENZO(A)PYRENE

Moments

N	4	Sum Wgts	4
Mean	5.988169	Sum	23.95268
Std Dev	1.293242	Variance	1.672474
Skewness	1.112661	Kurtosis	2.163083
USS	148.4501	CSS	5.017422
CV	21.59661	Std Mean	0.646621
T:Mean=0	9.260713	Pr>|T|	0.0027
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.912851	Pr<W	0.4875

Quantiles(Def=5)

100% Max	7.783224	99%	7.783224
75% Q3	6.791158	95%	7.783224
50% Med	5.734487	90%	7.783224
25% Q1	5.185181	10%	4.70048
0% Min	4.70048	5%	4.70048
		1%	4.70048
Range	3.082744		
Q3-Q1	1.605978		
Mode	4.70048		

Extremes

Lowest	ID	Highest	ID
4.70048	(SS103 -)	.	( )
5.669881	(SS102 -)	4.70048	(SS103 -)
5.799093	(SS104 -)	5.669881	(SS102 -)
7.783224	(SS101 -)	5.799093	(SS104 -)
.	( )	7.783224	(SS101 -)

Missing Value	.
Count	3
% Count/Nobs	42.86

```
Stem Leaf                  #        Boxplot                    Normal Probability Plot
   7 8                     1           |           7.75+                                 * ++++
   7                                   |               |                             ++++
   6                                +-----+            |                         ++++
   6                                |  +  |        6.25+                      +++
   5 78                    2        *-----*            |                  *+++  *
   5                                +-----+            |              ++++
   4 7                     1           |           4.75+          +*++
     ----+----+----+----+                               +----+----+----+----+----+----+----+----+----+----+
                                                             -2        -1         0        +1        +2
```

```
                    UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1              16:27 Monday, June 29, 1998   9
                                              PITTSFIELD, MASSACHUSETTS

                                                Univariate Procedure

Variable=LC           Log of BENZO(B)FLUORANTHENE

               Moments                                     Quantiles(Def=5)                                    Extremes

 N                4  Sum Wgts          4          100% Max  7.824046       99%  7.824046           Lowest    ID        Highest    ID
 Mean         5.969  Sum          23.876           75% Q3   6.855075       95%  7.824046         4.60517(SS103 - )          .(          )
 Std Dev   1.350904  Variance   1.824941           50% Med  5.723393       90%  7.824046        5.560682(SS102 - )  4.60517(SS103 - )
 Skewness  1.021681  Kurtosis    1.84284           25% Q1   5.082926       10%   4.60517        5.886104(SS104 - ) 5.560682(SS102 - )
 USS       147.9907  CSS        5.474823            0% Min   4.60517        5%   4.60517        7.824046(SS101 - ) 5.886104(SS104 - )
 CV        22.63199  Std Mean   0.675452                                    1%   4.60517               .(          ) 7.824046(SS101 - )
 T:Mean=0  8.837048  Pr>|T|       0.0031          Range     3.218876
 Num ^= 0         4  Num > 0           4          Q3-Q1     1.772149
 M(Sign)          2  Pr>=|M|      0.1250          Mode       4.60517
 Sgn Rank         5  Pr>=|S|      0.1250
 W:Normal  0.938369  Pr<W         0.6207


                                                   Missing Value         .
                                                   Count                 3
                                                   % Count/Nobs      42.86


                    Stem Leaf                  #          Boxplot                          Normal Probability Plot
                       7 8                     1             |              7.75+                                   * ++++
                       7                                     |                  |                                ++++
                       6                                  +-----+               |                            ++++
                       6                                  |  +  |           6.25+                        +++
                       5 69                    2          *-----*               |                     *+++  *
                       5                                  +-----+               |                 ++++
                       4 6                     1             |              4.75+              *++
                         ----+----+----+----+                                    +----+----+----+----+----+----+----+----+----+----+
                                                                                   -2        -1         0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 10
PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=LD Log of BENZO(K)FLUORANTHENE

Moments

N	4	Sum Wgts	4
Mean	5.814954	Sum	23.25982
Std Dev	1.242443	Variance	1.543665
Skewness	0.853051	Kurtosis	1.849591
USS	139.8858	CSS	4.630994
CV	21.36634	Std Mean	0.621222
T:Mean=0	9.360516	Pr>|T|	0.0026
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.936623	Pr<W	0.6114

Quantiles(Def=5)

100% Max	7.495542	99%	7.495542
75% Q3	6.599662	95%	7.495542
50% Med	5.632232	90%	7.495542
25% Q1	5.030246	10%	4.49981
0% Min	4.49981	5%	4.49981
		1%	4.49981
Range	2.995732		
Q3-Q1	1.569417		
Mode	4.49981		

Extremes

Lowest	ID	Highest	ID
4.49981	(SS103 -)	.	( )
5.560682	(SS102 -)	4.49981	(SS103 -)
5.703782	(SS104 -)	5.560682	(SS102 -)
7.495542	(SS101 -)	5.703782	(SS104 -)
.	( )	7.495542	(SS101 -)

Missing Value	.
Count	3
% Count/Nobs	42.86

```
Stem Leaf                  #            Boxplot                          Normal Probability Plot
   7 5                     1               |               7.75+                                        ++++
   7                                       |                   |                                    *+++
   6                                    +-----+                |                                ++++
   6                                    |     |                |                            ++++
   5 67                    2            *--+--*                |                       *++++ *
   5                                    +-----+                |                    ++++
   4 5                     1               |                   |                ++++
   4                                                       4.25+            ++++*
     ----+----+----+----+                                       +----+----+----+----+----+----+----+----+----+----+
                                                                    -2        -1         0        +1        +2
```

Univariate Procedure

Variable=LE Log of DIBENZ(A,H)ANTHRACENE

Moments

N	4	Sum Wgts	4
Mean	5.585205	Sum	22.34082
Std Dev	0.426655	Variance	0.182034
Skewness	1.801667	Kurtosis	3.40285
USS	125.3242	CSS	0.546103
CV	7.639016	Std Mean	0.213327
T:Mean=0	26.18138	Pr>|T|	0.0001
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.79315	Pr<W	0.0876

Quantiles(Def=5)

100% Max	6.214608	99%	6.214608
75% Q3	5.837097	95%	6.214608
50% Med	5.426607	90%	6.214608
25% Q1	5.333314	10%	5.273
0% Min	5.273	5%	5.273
		1%	5.273
Range	0.941609		
Q3-Q1	0.503783		
Mode	5.273		

Extremes

Lowest	ID	Highest	ID
5.273	(SS104 -)	.	( )
5.393628	(SS102 -)	5.273	(SS104 -)
5.459586	(SS103 -)	5.393628	(SS102 -)
6.214608	(SS101 -)	5.459586	(SS103 -)
.	( )	6.214608	(SS101 -)

Missing Value	.
Count	3
% Count/Nobs	42.86

```
Stem Leaf                    #          Boxplot                          Normal Probability Plot
  62 1                       1             |             6.3+                                   *    +++++
  60                                       |                |                                   +++++
  58                                    +-----+             |                               ++++
  56                                    |     |             |                          +++++
  54 6                       1          *--+--*             |                     +++++  *
  52 79                      2          +-----+          5.3+               *+++++ *
     ----+----+----+----+                                   +----+----+----+----+----+----+----+----+----+----+
  Multiply Stem.Leaf by 10**-1                                   -2        -1         0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 1
PITTSFIELD, MASSACHUSETTS

SAMP	INDENO(1,2,3-CD)PYRENE	PHENANTHRENE
SS101 -	1300	2600
SS102 -	200	440
SS103 -	235	90
SS104 -	130	250
SS40 - A	N	N
SS42 - A	N	N
SS90 - A	N	N

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1   16:27 Monday, June 29, 1998   2
PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=A   INDENO(1,2,3-CD)PYRENE

Moments

N	4	Sum Wgts	4
Mean	466.25	Sum	1865
Std Dev	557.5448	Variance	310856.3
Skewness	1.962938	Kurtosis	3.881711
USS	1802125	CSS	932568.8
CV	119.5807	Std Mean	278.7724
T:Mean=0	1.672511	Pr>|T|	0.1930
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.703356	Pr<W	0.0136

Quantiles(Def=5)

100% Max	1300	99%	1300
75% Q3	767.5	95%	1300
50% Med	217.5	90%	1300
25% Q1	165	10%	130
0% Min	130	5%	130
		1%	130
Range	1170		
Q3-Q1	602.5		
Mode	130		

Extremes

Lowest	ID	Highest	ID
130	(SS104 -)	.	( )
200	(SS102 -)	130	(SS104 -)
235	(SS103 -)	200	(SS102 -)
1300	(SS101 -)	235	(SS103 -)
.	( )	1300	(SS101 -)

Missing Value	N
Count	3
% Count/Nobs	42.86

```
Stem Leaf                    #      Boxplot                        Normal Probability Plot
  12 0                       1         |             1300+                                  *  +++
  10                                   |                 |                                ++++
   8                                   |                 |                            ++++
   6                                +-----+           700+                         +++
   4                                |  +  |              |                     ++++
   2 04                      2      *-----*              |                  ++*    *
   0 3                       1      +-----+           100+              * ++++
     ----+----+----+----+                                 +----+----+----+----+----+----+----+----+----+----+
   Multiply Stem.Leaf by 10**+2                              -2        -1         0        +1        +2
```

```
                  UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1          16:27 Monday, June 29, 1998   3
                                             PITTSFIELD, MASSACHUSETTS

                                               Univariate Procedure

Variable=B             PHENANTHRENE

                Moments                                        Quantiles(Def=5)                                       Extremes

 N                 4  Sum Wgts          4          100% Max      2600       99%        2600          Lowest    ID        Highest    ID
 Mean            845  Sum            3380           75% Q3       1520       95%        2600              90(SS103 - )        .(         )
 Std Dev    1178.714  Variance    1389367           50% Med       345       90%        2600             250(SS104 - )       90(SS103 - )
 Skewness   1.912478  Kurtosis   3.705469           25% Q1        170       10%          90             440(SS102 - )      250(SS104 - )
 USS         7024200  CSS         4168100            0% Min        90        5%          90            2600(SS101 - )      440(SS102 - )
 CV         139.4928  Std Mean    589.357                                     1%          90               .(         )    2600(SS101 - )
 T:Mean=0   1.433766  Pr>|T|       0.2471          Range         2510
 Num ^= 0          4  Num > 0           4          Q3-Q1         1350
 M(Sign)           2  Pr>=|M|      0.1250          Mode            90
 Sgn Rank          5  Pr>=|S|      0.1250
 W:Normal   0.740414  Pr<W         0.0321


                                                  Missing Value         N
                                                  Count                 3
                                                  % Count/Nobs      42.86


                     Stem Leaf                  #           Boxplot                           Normal Probability Plot
                       2 6                      1              |                 2750+                              *    ++++
                       2                                       |                     |                               +++++
                       1                                    +-----+                  |                           ++++
                       1                                    |     |                  |                       ++++
                       0                                    |  +  |                  |                   ++++
                       0 124                    3           *-----*               250+               *  ++++*     *
                         ----+----+----+----+                                         +----+----+----+----+----+----+----+----+----+----+
                      Multiply Stem.Leaf by 10**+3                                        -2        -1         0        +1        +2
```

Univariate Procedure

Variable=LA Log of INDENO(1,2,3-CD)PYRENE

Moments

N	4	Sum Wgts	4
Mean	5.698889	Sum	22.79556
Std Dev	1.012158	Variance	1.024464
Skewness	1.627856	Kurtosis	2.989505
USS	132.9827	CSS	3.073393
CV	17.76062	Std Mean	0.506079
T:Mean=0	11.26087	Pr>|T|	0.0015
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.842752	Pr<W	0.1978

Quantiles(Def=5)

100% Max	7.17012	99%	7.17012
75% Q3	6.314853	95%	7.17012
50% Med	5.378951	90%	7.17012
25% Q1	5.082926	10%	4.867534
0% Min	4.867534	5%	4.867534
		1%	4.867534
Range	2.302585		
Q3-Q1	1.231927		
Mode	4.867534		

Extremes

Lowest	ID	Highest	ID
4.867534(SS104 -)		.(	)
5.298317(SS102 -)		4.867534(SS104 -)	
5.459586(SS103 -)		5.298317(SS102 -)	
7.17012(SS101 -)		5.459586(SS103 -)	
.(	)	7.17012(SS101 -)	

Missing Value		.
Count		3
% Count/Nobs		42.86

```
Stem Leaf                  #        Boxplot                        Normal Probability Plot
   7 2                     1           |            7.25+                                  *  +++++
   6                                   |                |                                +++++
   6                                +-----+             |                           +++++
   5 5                     1        |  +  |             |                       ++++
   5 3                     1        *-----*             |                  +++++    *
   4 9                     1           |            4.75+             +*+++
     ----+----+----+----+                                +----+----+----+----+----+----+----+----+----+----+
                                                             -2        -1         0        +1        +2
```

Univariate Procedure

Variable=LB Log of PHENANTHRENE

Moments

N	4	Sum Wgts	4
Mean	5.992828	Sum	23.97131
Std Dev	1.409333	Variance	1.986219
Skewness	0.741108	Kurtosis	1.082041
USS	149.6146	CSS	5.958658
CV	23.51699	Std Mean	0.704666
T:Mean=0	8.504489	Pr>|T|	0.0034
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.971638	Pr<W	0.8199

Quantiles(Def=5)

100% Max	7.863267	99%	7.863267
75% Q3	6.975021	95%	7.863267
50% Med	5.804118	90%	7.863267
25% Q1	5.010635	10%	4.49981
0% Min	4.49981	5%	4.49981
		1%	4.49981
Range	3.363457		
Q3-Q1	1.964385		
Mode	4.49981		

Extremes

Lowest	ID	Highest	ID
4.49981	(SS103 -)	.	( )
5.521461	(SS104 -)	4.49981	(SS103 -)
6.086775	(SS102 -)	5.521461	(SS104 -)
7.863267	(SS101 -)	6.086775	(SS102 -)
.	( )	7.863267	(SS101 -)

Missing Value	.	
Count	3	
% Count/Nobs	42.86	

```
Stem Leaf                     #        Boxplot                       Normal Probability Plot
   7 9                        1           |            7.75+                        *++++
   7                                   +-----+              |                     +++
   6                                   |     |              |                 ++++
   6 1                        1        |  +  |              |              ++*
   5 5                        1        *-----*              |          *+++
   5                                   +-----+              |      ++++
   4 5                        1           |                 |   +++
   4                                                   4.25+ ++++*
     ----+----+----+----+                                   +----+----+----+----+----+----+----+----+----+----+
                                                                 -2        -1         0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 1
PITTSFIELD, MASSACHUSETTS

SAMP	Arsenic
SS101 -	9.7
SS102 -	5.9
SS103 -	5.9
SS104 -	5.6

Univariate Procedure

Variable=A Arsenic

Moments

N	4	Sum Wgts	4
Mean	6.775	Sum	27.1
Std Dev	1.955121	Variance	3.8225
Skewness	1.968133	Kurtosis	3.901174
USS	195.07	CSS	11.4675
CV	28.85788	Std Mean	0.977561
T:Mean=0	6.930516	Pr>|T|	0.0062
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.692254	Pr<W	0.0101

Quantiles(Def=5)

100% Max	9.7	99%	9.7
75% Q3	7.8	95%	9.7
50% Med	5.9	90%	9.7
25% Q1	5.75	10%	5.6
0% Min	5.6	5%	5.6
		1%	5.6
Range	4.1		
Q3-Q1	2.05		
Mode	5.9		

Extremes

Lowest	ID	Highest	ID
5.6	(SS104 -)	.	( )
5.9	(SS103 -)	5.6	(SS104 -)
5.9	(SS102 -)	5.9	(SS102 -)
9.7	(SS101 -)	5.9	(SS103 -)
.	( )	9.7	(SS101 -)

```
Stem Leaf                 #           Boxplot                        Normal Probability Plot
   9 7                    1              |              9.75+                                        *   +++
   9                                     |                  |                                          ++
   8                                     |                  |                                       +++
   8                                     |                  |                                     ++
   7                                  +-----+           7.75+                                 +++
   7                                  |     |               |                              ++
   6                                  |  +  |               |                           +++
   6                                  |     |               |                         ++
   5 699                  3           *-----*           5.75+                 *   +++*
     ----+----+----+----+                                   +----+----+----+----+----+----+----+----+----+----+
                                                                 -2        -1         0        +1        +2
```

UNIVARIATE STATISTICS FOR ALLENDALE SCHOOL, SOIL BORING AVERAGES 0-1 16:27 Monday, June 29, 1998 3
PITTSFIELD, MASSACHUSETTS

Univariate Procedure

Variable=LA Log of Arsenic

Moments

N	4	Sum Wgts	4
Mean	1.886199	Sum	7.544797
Std Dev	0.258458	Variance	0.0668
Skewness	1.944608	Kurtosis	3.832383
USS	14.43139	CSS	0.200401
CV	13.70257	Std Mean	0.129229
T:Mean=0	14.5958	Pr>|T|	0.0007
Num ^= 0	4	Num > 0	4
M(Sign)	2	Pr>=|M|	0.1250
Sgn Rank	5	Pr>=|S|	0.1250
W:Normal	0.711178	Pr<W	0.0166

Quantiles(Def=5)

100% Max	2.272126	99%	2.272126
75% Q3	2.023539	95%	2.272126
50% Med	1.774952	90%	2.272126
25% Q1	1.748859	10%	1.722767
0% Min	1.722767	5%	1.722767
		1%	1.722767
Range	0.549359		
Q3-Q1	0.27468		
Mode	1.774952		

Extremes

Lowest	ID	Highest	ID
1.722767(	SS104 -)	.(	)
1.774952(	SS103 -)	1.722767(	SS104 -)
1.774952(	SS102 -)	1.774952(	SS102 -)
2.272126(	SS101 -)	1.774952(	SS103 -)
.(	)	2.272126(	SS101 -)

```
Stem Leaf                      #          Boxplot
  22 7                         1             |
  21                                         |
  20                                      +-----+
  19                                      |     |
  18                                      |  +  |
  17 277                       3          *-----*
     ----+----+----+----+
  Multiply Stem.Leaf by 10**-1
```

```
                      Normal Probability Plot
2.25+                                             *  ++++
    |                                              ++++
    |                                          ++++
    |                                      ++++
    |                                  ++++
1.75+                    *  ++++*
     +----+----+----+----+----+----+----+----+----+----+
         -2        -1         0        +1        +2
```

APPENDIX C

VERTICAL AVERAGES OF SOIL BORINGS FOR 0 TO 1 AND 0 TO 10 FEET

APPENDIX C

VERTICAL AVERAGES OF SOIL BORINGS FOR 0 TO 1 AND 0 TO 10 FEET

C.1 INTRODUCTION

This appendix contains detailed tables showing data summaries for vertically averaged soil borings for 0 to 1 foot and 0 to 10-foot depths, as discussed in Section 2. Tables C-1 and C-2 are similar in format to Tables A-6 and A-7. The key difference is that Tables A-6 and A-7 summarized all of the detected data regardless of vertical or horizontal extent, whereas Tables C-1 and C-2 present the data after each location was vertically averaged.

APPENDIX C
Table C-1

Summary of Vertically Averaged Chemicals Detected in Soil (0-1')
Allendale School
Pittsfield, MA

Chemical	Frequency of Detection[a]	Range of Detected Concentrations	Location of Maximum Detected Concentration	Range of Sample Quantitation Limits[b]
Semivolatiles (ug/kg)				
Di-n-butylphthalate	1 / 4	5.20E+01 - 5.20E+01	AS-98-132	3.90E+02 - 6.20E+02
Polynuclear Aromatic Hydrocarbons (µg/kg)				
Acenaphthene	1 / 4	9.20E+01 - 9.20E+01	AS-98-129	3.90E+02 - 4.70E+02
Acenaphthylene	2 / 4	7.10E+01 - 4.80E+02	AS-98-129	4.40E+02 - 4.70E+02
Anthracene	3 / 4	5.60E+01 - 3.90E+02	AS-98-129	4.70E+02 - 4.70E+02
Benz(a)anthracene	4 / 4	9.00E+01 - 2.10E+03	AS-98-129	-
Benzo(b)fluoranthene	4 / 4	1.00E+02 - 2.50E+03	AS-98-129	-
Benzo(k)fluoranthene	4 / 4	9.00E+01 - 1.80E+03	AS-98-129	-
Benzo(g,h,i)perylene	1 / 4	1.20E+03 - 1.20E+03	AS-98-129	3.90E+02 - 4.70E+02
Benzo(a)pyrene	4 / 4	1.10E+02 - 2.40E+03	AS-98-129	-
Chrysene	4 / 4	1.30E+02 - 2.90E+03	AS-98-129	-
Dibenz(a,h)anthracene	1 / 4	5.00E+02 - 5.00E+02	AS-98-129	3.90E+02 - 4.70E+02
Fluoranthene	4 / 4	1.90E+02 - 4.60E+03	AS-98-129	-
Fluorene	1 / 4	2.70E+02 - 2.70E+02	AS-98-129	3.90E+02 - 4.70E+02
Indeno(1,2,3-cd)pyrene	3 / 4	1.30E+02 - 1.30E+03	AS-98-129	4.70E+02 - 4.70E+02
Phenanthrene	4 / 4	9.00E+01 - 2.60E+03	AS-98-129	-
Pyrene	4 / 4	1.40E+02 - 4.00E+03	AS-98-129	-
Pesticides(µg/kg)				
4,4'-DDE	1 / 4	4.50E+00 - 4.50E+00	AS-98-130	2.00E+00 - 3.20E+00
PCBs (µg/kg)				
Total PCBs	150 / 182	1.40E+01 - 8.00E+03	AS-97-125	1.00E+01 - 8.00E+02
Dioxin/Furans (pg/g)				
1234678-HpCDD	4 / 4	3.10E+00 - 2.70E+01	AS-98-129	-
1234678-HpCDF	1 / 4	1.60E+01 - 1.60E+01	AS-98-129	1.80E+00 - 4.50E+00
123478-HxCDF	1 / 4	6.80E+00 - 6.80E+00	AS-98-129	7.00E-01 - 3.20E+00
23478-PeCDF	1 / 4	6.20E+00 - 6.20E+00	AS-98-129	4.90E-01 - 1.50E+00
2378-TCDF	4 / 4	2.40E+00 - 2.40E+01	AS-98-129	-
OCDD	4 / 4	2.00E+01 - 1.70E+02	AS-98-129	-
OCDF	2 / 4	1.00E+01 - 1.60E+01	AS-98-129	1.90E+00 - 8.50E+00
Total HpCDD	4 / 4	3.10E+00 - 4.50E+01	AS-98-129	-
Total HpCDF	3 / 4	4.10E+00 - 3.00E+01	AS-98-129	1.80E+00 - 1.80E+00
Total HxCDD	1 / 4	2.00E+01 - 2.00E+01	AS-98-129	1.60E+00 - 2.10E+00
Total HxCDF	4 / 4	3.40E+00 - 7.60E+01	AS-98-129	-

APPENDIX C
Table C-1

Summary of Vertically Averaged Chemicals Detected in Soil (0-1')
Allendale School
Pittsfield, MA

Chemical	Frequency of Detection[a]	Range of Detected Concentrations	Location of Maximum Detected Concentration	Range of Sample Quantitation Limits[b]
Total PeCDF	4 / 4	6.10E+00 - 1.10E+02	AS-98-129	-
Total TCDD	1 / 4	2.90E+00 - 2.90E+00	AS-98-129	3.70E-01 - 4.80E-01
Total TCDF	4 / 4	7.40E+00 - 1.40E+02	AS-98-129	-
Total 2,3,7,8 TCDD(equiv)	4 / 4	9.84E-01 - 8.69E+00	AS-98-129	-
Inorganics (mg/kg)				
Arsenic	4 / 4	5.60E+00 - 9.70E+00	AS-98-129	-
Barium	4 / 4	2.89E+01 - 5.90E+01	AS-98-129	-
Beryllium	4 / 4	2.80E-01 - 4.60E-01	AS-98-129	-
Chromium	4 / 4	7.00E+00 - 1.27E+01	AS-98-129	-
Cobalt	4 / 4	8.50E+00 - 1.21E+01	AS-98-129	-
Copper	4 / 4	1.62E+01 - 2.51E+01	AS-98-129	-
Lead	4 / 4	1.43E+01 - 5.58E+01	AS-98-129	-
Mercury	4 / 4	2.20E-02 - 1.70E-01	AS-98-129	-
Nickel	4 / 4	1.39E+01 - 1.85E+01	AS-98-129	-
Selenium	3 / 4	8.20E-01 - 1.60E+00	AS-98-129	5.90E-01 - 5.90E-01
Vanadium	4 / 4	1.11E+01 - 1.85E+01	AS-98-129	-
Zinc	4 / 4	5.17E+01 - 1.01E+02	AS-98-129	-

NA = Not applicable.

[a] Number of sampling locations at which chemical was detected compared with total number of sampling locations; duplicates at a location were averaged and considered one sample.

[b] Based on non-detected samples.

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APPENDIX C
Table C-2

Summary of Vertically Averaged Chemicals Detected in Soil (0-10')
Allendale School
Pittsfield, MA

Chemical	Frequency of Detection[a]	Range of Detected Concentrations	Location of Maximum Detected Concentration	Range of Sample Quantitation Limits[b]
Volatiles (µg/kg)				
Acetone	3 / 32	9.00E+00 - 4.70E+01	ASB-27	1.00E+01 - 1.90E+01
Acetonitrile	1 / 13	2.20E+02 - 2.20E+02	ASB-30	1.10E+02 - 3.70E+02
Acrolein	1 / 13	5.40E+01 - 5.40E+01	ASB-30	1.10E+01 - 9.30E+01
2-Butanone	1 / 32	1.50E+01 - 1.50E+01	ASB-27	1.00E+01 - 1.90E+01
Chlorobenzene	1 / 32	9.00E+00 - 9.00E+00	ASB-19	5.00E+00 - 9.30E+00
Methylene Chloride	5 / 32	4.00E+00 - 9.00E+00	K16	5.00E+00 - 9.30E+00
Semivolatiles (ug/kg)				
bis(2-Ethylhexyl)phthalate	9 / 27	1.00E+02 - 3.00E+02	K20	3.60E+02 - 3.60E+03
Dibenzofuran	1 / 27	8.40E+02 - 8.40E+02	ASB-30	3.60E+02 - 6.20E+02
Di-n-butylphthalate	2 / 27	5.20E+01 - 6.10E+01	ASB-19	3.60E+02 - 3.60E+03
1,4-Dichlorobenzene	2 / 27	1.20E+02 - 1.50E+02	ASB-31	3.60E+02 - 3.60E+03
1,4-Dioxane	1 / 13	1.10E+03 - 1.10E+03	ASB-30	1.10E+03 - 1.90E+03
Isobutanol	1 / 13	4.30E+02 - 4.30E+02	ASB-30	4.40E+02 - 2.50E+03
2-Methylnaphthalene	1 / 27	9.60E+02 - 9.60E+02	ASB-3	3.60E+02 - 6.20E+02
N-Nitrosopiperidine	1 / 27	1.30E+02 - 1.30E+02	SCH-4	3.60E+02 - 3.60E+03
Polynuclear Aromatic Hydrocarbons (µg/kg)				
Acenaphthene	3 / 27	5.00E+01 - 1.00E+03	ASB-30	3.60E+02 - 5.60E+02
Acenaphthylene	6 / 27	7.10E+01 - 2.80E+03	ASB-30	3.60E+02 - 5.60E+02
Anthracene	8 / 27	5.60E+01 - 3.80E+03	ASB-30	3.60E+02 - 5.60E+02
Benz(a)anthracene	11 / 27	3.80E+01 - 1.50E+04	ASB-30	3.60E+02 - 5.60E+02
Benzo(b)fluoranthene	14 / 27	4.60E+01 - 1.40E+04	ASB-30	3.60E+02 - 5.60E+02
Benzo(k)fluoranthene	14 / 27	4.40E+01 - 1.20E+04	ASB-30	3.60E+02 - 5.60E+02
Benzo(g,h,i)perylene	6 / 27	4.10E+01 - 3.70E+03	ASB-30	3.60E+02 - 5.60E+02
Benzo(a)pyrene	13 / 27	4.60E+01 - 1.60E+04	ASB-30	3.60E+02 - 5.60E+02
Chrysene	13 / 27	5.70E+01 - 1.60E+04	ASB-30	3.60E+02 - 5.60E+02
Dibenz(a,h)anthracene	4 / 27	7.80E+01 - 2.50E+03	ASB-30	3.60E+02 - 5.60E+02
Fluoranthene	18 / 27	4.60E+01 - 2.20E+04	ASB-3	3.60E+02 - 4.10E+02
Fluorene	4 / 27	6.20E+01 - 1.10E+03	ASB-3	3.60E+02 - 5.60E+02
Indeno(1,2,3-cd)pyrene	8 / 27	4.40E+01 - 3.80E+03	ASB-3	3.60E+02 - 5.60E+02
Naphthalene	1 / 27	1.90E+03 - 1.90E+03	ASB-3	3.60E+02 - 6.20E+02
Phenanthrene	15 / 27	4.70E+01 - 1.20E+04	ASB-3	3.60E+02 - 5.60E+02
Pyrene	17 / 27	6.60E+01 - 2.00E+04	ASB-3	3.60E+02 - 4.20E+02
Propionitrile	1 / 13	4.30E+01 - 4.30E+01	ASB-30	4.40E+01 - 1.20E+02

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APPENDIX C
Table C-2

Summary of Vertically Averaged Chemicals Detected in Soil (0-10')
Allendale School
Pittsfield, MA

Chemical	Frequency of Detection[a]	Range of Detected Concentrations	Location of Maximum Detected Concentration	Range of Sample Quantitation Limits[b]
1,2,4,5-Tetrachlorobenzene	2 / 27	1.80E+01 - 6.30E+02	ASB-19	3.60E+02 - 3.60E+03
1,2,4-Trichlorobenzene	1 / 27	2.90E+02 - 2.90E+02	ASB-19	3.60E+02 - 3.60E+03
Pesticides(µg/kg)				
4,4'-DDE	1 / 28	4.50E+00 - 4.50E+00	AS-98-130	1.80E+00 - 2.10E+03
4,4'-DDT	1 / 28	2.30E+00 - 2.30E+00	SCH-3	1.80E+00 - 2.10E+03
Dieldrin	3 / 28	9.30E+00 - 6.40E+03	ASB-19	1.80E+00 - 4.00E+02
2,4,5-T	2 / 28	2.00E+01 - 2.00E+01	K17	1.10E+01 - 1.10E+02
2,4,5-TP (Silvex)	1 / 28	2.00E+01 - 2.00E+01	K18	1.10E+01 - 1.10E+02
PCBs (µg/kg)				
Total PCBs	247 / 296	1.00E+01 - 1.10E+06	B18	8.40E+00 - 1.00E+03
Dioxin/Furans (pg/g)				
1234678-HpCDD	10 / 23	3.10E+00 - 2.60E+02	ASB-31	3.10E-01 - 2.10E+00
1234678-HpCDF	9 / 23	4.20E+00 - 8.40E+03	ASB-31	1.40E-01 - 4.50E+00
123478-HxCDD	3 / 23	9.70E+00 - 7.00E+01	ASB-31	2.40E-01 - 2.50E+00
123478-HxCDF	9 / 23	3.70E+00 - 6.40E+02	ASB-31	1.30E-01 - 3.20E+00
1234789-HpCDF	6 / 23	1.90E+00 - 4.20E+02	ASB-19	9.20E-02 - 1.60E+00
123678-HxCDD	3 / 23	3.40E+00 - 8.30E+01	ASB-31	2.40E-01 - 9.30E+00
123678-HxCDF	5 / 23	3.10E+00 - 9.20E+02	ASB-31	1.30E-01 - 7.40E+01
12378-PeCDD	2 / 23	2.00E+01 - 6.70E+01	ASB-31	2.90E-01 - 3.60E+00
12378-PeCDF	3 / 23	1.60E+01 - 2.80E+01	ASB-3	2.20E-01 - 4.60E+00
123789-HxCDD	2 / 23	2.00E+01 - 1.10E+02	ASB-31	2.30E-01 - 2.70E+00
123789-HxCDF	2 / 23	4.90E+00 - 5.40E+00	ASB-19	1.20E-01 - 2.60E+00
234678-HxCDF	4 / 23	3.50E+00 - 1.20E+03	ASB-31	2.90E-01 - 4.20E+00
23478-PeCDF	5 / 23	5.90E+00 - 5.30E+01	ASB-31	2.30E-01 - 2.90E+00
2378-TCDD	2 / 27	1.60E+00 - 3.30E+00	ASB-31	1.50E-01 - 1.10E+02
2378-TCDF	14 / 23	5.70E-01 - 5.50E+01	ASB-3	1.20E-01 - 1.70E+01
OCDD	14 / 23	7.70E+00 - 4.70E+02	ASB-31	6.90E-01 - 4.30E+00
OCDF	10 / 23	3.80E+00 - 2.40E+03	ASB-31	4.10E-01 - 8.50E+00
Total HpCDD	10 / 23	3.10E+00 - 7.60E+02	ASB-31	3.10E-01 - 2.50E+00
Total HpCDF	11 / 23	4.10E+00 - 1.90E+04	ASB-31	1.60E-01 - 3.00E+00
Total HxCDD	7 / 27	6.40E+00 - 1.60E+03	ASB-31	2.40E-01 - 6.10E+02
Total HxCDF	16 / 27	3.40E+00 - 3.40E+04	ASB-31	2.90E-01 - 1.90E+01
Total PeCDD	3 / 27	5.20E+01 - 3.70E+02	ASB-31	3.10E-01 - 3.40E+02
Total PeCDF	19 / 27	1.00E+00 - 1.96E+04	K19	2.70E-01 - 2.20E+00

APPENDIX C
Table C-2

Summary of Vertically Averaged Chemicals Detected in Soil (0-10')
Allendale School
Pittsfield, MA

Chemical	Frequency of Detection[a]	Range of Detected Concentrations	Location of Maximum Detected Concentration	Range of Sample Quantitation Limits[b]
Total TCDD	6 / 27	9.30E-01 - 1.40E+02	ASB-31	1.50E-01 - 3.30E+02
Total TCDF	22 / 27	6.30E-01 - 8.80E+03	K19	2.20E-01 - 1.10E+00
Total 2,3,7,8 TCDD(equiv)	18 / 27	7.56E-01 - 4.61E+02	ASB-31	6.50E-01 - 1.10E+02
Inorganics (mg/kg)				
Antimony	1 / 28	2.90E+00 - 2.90E+00	SCH-2	2.20E+00 - 1.12E+01
Arsenic	28 / 28	2.70E+00 - 1.70E+01	K18	-
Barium	28 / 28	1.02E+01 - 1.01E+02	ASB-34	-
Beryllium	28 / 28	1.70E-01 - 6.50E-01	ASB-34	-
Cadmium	7 / 28	3.00E-02 - 7.00E-01	K17	5.00E-01 - 9.30E-01
Chromium	28 / 28	5.30E+00 - 2.49E+01	ASB-34	-
Cobalt	28 / 28	6.00E+00 - 1.76E+01	ASB-34	-
Copper	28 / 28	1.00E+01 - 3.43E+01	ASB-34	-
Lead	28 / 28	5.10E+00 - 6.01E+01	ASB-3	-
Mercury	12 / 28	5.10E-03 - 1.70E-01	AS-98-129	2.70E-02 - 1.00E-01
Nickel	28 / 28	9.00E+00 - 2.91E+01	ASB-34	-
Selenium	15 / 28	3.20E-01 - 1.60E+00	AS-98-129	2.90E-01 - 6.00E+00
Silver	5 / 28	4.10E-01 - 6.90E-01	SCH-4	3.60E-01 - 1.90E+00
Thallium	3 / 28	1.00E+00 - 1.70E+01	K18	4.00E-01 - 3.00E+00
Tin	3 / 28	1.00E+00 - 5.00E+00	K18	1.90E+00 - 1.86E+01
Vanadium	28 / 28	4.90E+00 - 2.79E+01	ASB-34	-
Zinc	28 / 28	3.91E+01 - 1.01E+02	AS-98-129	-

NA = Not applicable.

[a] Number of sampling locations at which chemical was detected compared with total number of sampling locations; duplicates at a location were averaged and considered one sample.

[b] Based on non-detected samples.

APPENDIX D

EXPOSURE DOSES FOR CURRENT USE SCENARIO

APPENDIX D

EXPOSURE DOSES FOR CURRENT USE SCENARIO

D.1 INTRODUCTION

This appendix presents the detailed carcinogenic and noncancer chronic daily intakes for the current use scenario that document results presented in Section 3 (Exposure Assessment).

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-1

Daily Intake from Soil Ingestion for the Child (1-6 years) - Cancer Effects
Reasonable Maximum Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	5.07E-12
1234678-HpCDF	3.01E-12
123478-HxCDF	1.28E-12
23478-PeCDF	1.16E-12
2378-TCDF	4.51E-12
OCDD	3.19E-11
OCDF	3.01E-12
Total 2,3,7,8 TCDD(equivalent)	1.28E-12
Polychlorinated Biphenyls	
Total PCBs	3.39E-08
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	3.95E-07
Benzo(a)pyrene	4.51E-07
Benzo(b)fluoranthene	4.70E-07
Benzo(k)fluoranthene	3.38E-07
Dibenz(a,h)anthracene	9.39E-08
Indeno(1,2,3-cd)pyrene	2.44E-07
Phenanthrene	4.88E-07
Metals	
Arsenic	1.82E-06

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-2

Daily Intake from Soil Ingestion for the Child (7-13 years) - Cancer Effects
Reasonable Maximum Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	1.36E-12
1234678-HpCDF	8.05E-13
123478-HxCDF	3.42E-13
23478-PeCDF	3.12E-13
2378-TCDF	1.21E-12
OCDD	8.55E-12
OCDF	8.05E-13
Total 2,3,7,8 TCDD(equivalent)	3.42E-13
Polychlorinated Biphenyls	
Total PCBs	9.09E-09
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	1.06E-07
Benzo(a)pyrene	1.21E-07
Benzo(b)fluoranthene	1.26E-07
Benzo(k)fluoranthene	9.06E-08
Dibenz(a,h)anthracene	2.52E-08
Indeno(1,2,3-cd)pyrene	6.54E-08
Phenanthrene	1.31E-07
Metals	
Arsenic	4.88E-07

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-3

Daily Intake from Soil Ingestion for the Groundskeeper - Cancer Effects
Reasonable Maximum Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	5.66E-13
1234678-HpCDF	3.35E-13
123478-HxCDF	1.43E-13
23478-PeCDF	1.30E-13
2378-TCDF	5.03E-13
OCDD	3.56E-12
OCDF	3.35E-13
Total 2,3,7,8 TCDD(equivalent)	1.42E-13
Polychlorinated Biphenyls	
Total PCBs	3.79E-09
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	4.40E-08
Benzo(a)pyrene	5.03E-08
Benzo(b)fluoranthene	5.24E-08
Benzo(k)fluoranthene	3.77E-08
Dibenz(a,h)anthracene	1.05E-08
Indeno(1,2,3-cd)pyrene	2.73E-08
Phenanthrene	5.45E-08
Metals	
Arsenic	2.03E-07

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-4

Daily Intake from Dermal Contact for the Child (1-6 years) - Cancer Effects
Reasonable Maximum Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	8.91E-13
1234678-HpCDF	5.28E-13
123478-HxCDF	2.24E-13
23478-PeCDF	2.04E-13
2378-TCDF	7.92E-13
OCDD	5.61E-12
OCDF	5.28E-13
Total 2,3,7,8 TCDD(equivalent)	2.24E-13
Polychlorinated Biphenyls	
Total PCBs	2.78E-08
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	3.00E-07
Benzo(a)pyrene	3.43E-07
Benzo(b)fluoranthene	3.57E-07
Benzo(k)fluoranthene	2.57E-07
Dibenz(a,h)anthracene	7.15E-08
Indeno(1,2,3-cd)pyrene	1.86E-07
Phenanthrene	3.72E-07
Metals	
Arsenic	3.20E-07

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-5

Daily Intake from Dermal Contact for the Child (7-13 years) - Cancer Effects
Reasonable Maximum Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	8.08E-13
1234678-HpCDF	4.79E-13
123478-HxCDF	2.03E-13
23478-PeCDF	1.86E-13
2378-TCDF	7.18E-13
OCDD	5.09E-12
OCDF	4.79E-13
Total 2,3,7,8 TCDD(equivalent)	2.03E-13
Polychlorinated Biphenyls	
Total PCBs	2.52E-08
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	2.72E-07
Benzo(a)pyrene	3.11E-07
Benzo(b)fluoranthene	3.24E-07
Benzo(k)fluoranthene	2.33E-07
Dibenz(a,h)anthracene	6.48E-08
Indeno(1,2,3-cd)pyrene	1.69E-07
Phenanthrene	3.37E-07
Metals	
Arsenic	2.90E-07

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-6

Daily Intake from Dermal Contact for the Groundskeeper - Cancer Effects
Reasonable Maximum Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	7.96E-13
1234678-HpCDF	4.72E-13
123478-HxCDF	2.00E-13
23478-PeCDF	1.83E-13
2378-TCDF	7.07E-13
OCDD	5.01E-12
OCDF	4.72E-13
Total 2,3,7,8 TCDD(equivalent)	2.00E-13
Polychlorinated Biphenyls	
Total PCBs	2.49E-08
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	2.68E-07
Benzo(a)pyrene	3.07E-07
Benzo(b)fluoranthene	3.19E-07
Benzo(k)fluoranthene	2.30E-07
Dibenz(a,h)anthracene	6.39E-08
Indeno(1,2,3-cd)pyrene	1.66E-07
Phenanthrene	3.32E-07
Metals	
Arsenic	2.86E-07

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-7

Daily Intake from Soil Ingestion for the Child (1-6 years) - Cancer Effects
Central Tendency Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	6.34E-13
1234678-HpCDF	3.76E-13
123478-HxCDF	1.60E-13
23478-PeCDF	1.46E-13
2378-TCDF	5.64E-13
OCDD	3.99E-12
OCDF	3.76E-13
Total 2,3,7,8 TCDD(equivalent)	1.60E-13
Polychlorinated Biphenyls	
Total PCBs	4.24E-09
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	4.93E-08
Benzo(a)pyrene	5.64E-08
Benzo(b)fluoranthene	5.87E-08
Benzo(k)fluoranthene	4.23E-08
Dibenz(a,h)anthracene	1.17E-08
Indeno(1,2,3-cd)pyrene	3.05E-08
Phenanthrene	6.11E-08
Metals	
Arsenic	2.28E-07

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-8

Daily Intake from Soil Ingestion for the Child (7-13 years) - Cancer Effects
Central Tendency Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	1.70E-13
1234678-HpCDF	1.01E-13
123478-HxCDF	4.28E-14
23478-PeCDF	3.90E-14
2378-TCDF	1.51E-13
OCDD	1.07E-12
OCDF	1.01E-13
Total 2,3,7,8 TCDD(equivalent)	4.27E-14
Polychlorinated Biphenyls	
Total PCBs	1.14E-09
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	1.32E-08
Benzo(a)pyrene	1.51E-08
Benzo(b)fluoranthene	1.57E-08
Benzo(k)fluoranthene	1.13E-08
Dibenz(a,h)anthracene	3.15E-09
Indeno(1,2,3-cd)pyrene	8.18E-09
Phenanthrene	1.64E-08
Metals	
Arsenic	6.10E-08

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-9

Daily Intake from Soil Ingestion for the Groundskeeper - Cancer Effects
Central Tendency Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	1.42E-13
1234678-HpCDF	8.39E-14
123478-HxCDF	3.56E-14
23478-PeCDF	3.25E-14
2378-TCDF	1.26E-13
OCDD	8.91E-13
OCDF	8.39E-14
Total 2,3,7,8 TCDD(equivalent)	3.56E-14
Polychlorinated Biphenyls	
Total PCBs	9.47E-10
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	1.10E-08
Benzo(a)pyrene	1.26E-08
Benzo(b)fluoranthene	1.31E-08
Benzo(k)fluoranthene	9.44E-09
Dibenz(a,h)anthracene	2.62E-09
Indeno(1,2,3-cd)pyrene	6.81E-09
Phenanthrene	1.36E-08
Metals	
Arsenic	5.08E-08

Table D-10

Daily Intake from Dermal Contact for the Child (1-6 years) - Cancer Effects
Central Tendency Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	4.45E-13
1234678-HpCDF	2.64E-13
123478-HxCDF	1.12E-13
23478-PeCDF	1.02E-13
2378-TCDF	3.96E-13
OCDD	2.80E-12
OCDF	2.64E-13
Total 2,3,7,8 TCDD(equivalent)	1.12E-13
Polychlorinated Biphenyls	
Total PCBs	1.39E-08
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	1.50E-07
Benzo(a)pyrene	1.72E-07
Benzo(b)fluoranthene	1.79E-07
Benzo(k)fluoranthene	1.29E-07
Dibenz(a,h)anthracene	3.57E-08
Indeno(1,2,3-cd)pyrene	9.29E-08
Phenanthrene	1.86E-07
Metals	
Arsenic	1.60E-07

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-11

Daily Intake from Dermal Contact for the Child (7-13 years) - Cancer Effects
Central Tendency Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	4.04E-13
1234678-HpCDF	2.39E-13
123478-HxCDF	1.02E-13
23478-PeCDF	9.28E-14
2378-TCDF	3.59E-13
OCDD	2.54E-12
OCDF	2.39E-13
Total 2,3,7,8 TCDD(equivalent)	1.02E-13
Polychlorinated Biphenyls	
Total PCBs	1.26E-08
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	1.36E-07
Benzo(a)pyrene	1.56E-07
Benzo(b)fluoranthene	1.62E-07
Benzo(k)fluoranthene	1.17E-07
Dibenz(a,h)anthracene	3.24E-08
Indeno(1,2,3-cd)pyrene	8.43E-08
Phenanthrene	1.69E-07
Metals	
Arsenic	1.45E-07

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-12

Daily Intake from Dermal Contact for the Groundskeeper - Cancer Effects
Central Tendency Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	7.96E-13
1234678-HpCDF	4.72E-13
123478-HxCDF	2.00E-13
23478-PeCDF	1.83E-13
2378-TCDF	7.07E-13
OCDD	5.01E-12
OCDF	4.72E-13
Total 2,3,7,8 TCDD(equivalent)	2.00E-13
Polychlorinated Biphenyls	
Total PCBs	2.49E-08
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	2.68E-07
Benzo(a)pyrene	3.07E-07
Benzo(b)fluoranthene	3.19E-07
Benzo(k)fluoranthene	2.30E-07
Dibenz(a,h)anthracene	6.39E-08
Indeno(1,2,3-cd)pyrene	1.66E-07
Phenanthrene	3.32E-07
Metals	
Arsenic	2.86E-07

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-13

Daily Intake from Soil Ingestion for the Child (1-6 years) - Noncancer Effects
Reasonable Maximum Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	5.92E-11
1234678-HpCDF	3.51E-11
123478-HxCDF	1.49E-11
23478-PeCDF	1.36E-11
2378-TCDF	5.26E-11
OCDD	3.73E-10
OCDF	3.51E-11
Total 2,3,7,8 TCDD(equivalent)	1.49E-11
Polychlorinated Biphenyls	
Total PCBs	3.96E-07
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	4.60E-06
Benzo(a)pyrene	5.26E-06
Benzo(b)fluoranthene	5.48E-06
Benzo(k)fluoranthene	3.95E-06
Dibenz(a,h)anthracene	1.10E-06
Indeno(1,2,3-cd)pyrene	2.85E-06
Phenanthrene	5.70E-06
Metals	
Arsenic	2.13E-05

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-14

Daily Intake from Soil Ingestion for the Child (7-13 years) - Noncancer Effects
Reasonable Maximum Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	1.59E-11
1234678-HpCDF	9.39E-12
123478-HxCDF	3.99E-12
23478-PeCDF	3.64E-12
2378-TCDF	1.41E-11
OCDD	9.98E-11
OCDF	9.39E-12
Total 2,3,7,8 TCDD(equivalent)	3.99E-12
Polychlorinated Biphenyls	
Total PCBs	1.06E-07
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	1.23E-06
Benzo(a)pyrene	1.41E-06
Benzo(b)fluoranthene	1.47E-06
Benzo(k)fluoranthene	1.06E-06
Dibenz(a,h)anthracene	2.94E-07
Indeno(1,2,3-cd)pyrene	7.63E-07
Phenanthrene	1.53E-06
Metals	
Arsenic	5.69E-06

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-15

Daily Intake from Soil Ingestion for the Groundskeeper - Noncancer Effects
Reasonable Maximum Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	1.59E-12
1234678-HpCDF	9.39E-13
123478-HxCDF	3.99E-13
23478-PeCDF	3.64E-13
2378-TCDF	1.41E-12
OCDD	9.98E-12
OCDF	9.39E-13
Total 2,3,7,8 TCDD(equivalent)	3.99E-13
Polychlorinated Biphenyls	
Total PCBs	1.06E-08
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	1.23E-07
Benzo(a)pyrene	1.41E-07
Benzo(b)fluoranthene	1.47E-07
Benzo(k)fluoranthene	1.06E-07
Dibenz(a,h)anthracene	2.94E-08
Indeno(1,2,3-cd)pyrene	7.63E-08
Phenanthrene	1.53E-07
Metals	
Arsenic	5.69E-07

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-16

Daily Intake from Dermal Contact for the Child (1-6 years) - Noncancer Effects
Reasonable Maximum Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	1.04E-11
1234678-HpCDF	6.16E-12
123478-HxCDF	2.62E-12
23478-PeCDF	2.39E-12
2378-TCDF	9.23E-12
OCDD	6.54E-11
OCDF	6.16E-12
Total 2,3,7,8 TCDD(equivalent)	2.62E-12
Polychlorinated Biphenyls	
Total PCBs	3.25E-07
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	3.50E-06
Benzo(a)pyrene	4.00E-06
Benzo(b)fluoranthene	4.17E-06
Benzo(k)fluoranthene	3.00E-06
Dibenz(a,h)anthracene	8.34E-07
Indeno(1,2,3-cd)pyrene	2.17E-06
Phenanthrene	4.34E-06
Metals	
Arsenic	3.73E-06

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-17

Daily Intake from Dermal Contact for the Child (7-13 years) - Noncancer Effects
Reasonable Maximum Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	9.42E-12
1234678-HpCDF	5.59E-12
123478-HxCDF	2.37E-12
23478-PeCDF	2.16E-12
2378-TCDF	8.38E-12
OCDD	5.93E-11
OCDF	5.59E-12
Total 2,3,7,8 TCDD(equivalent)	2.37E-12
Polychlorinated Biphenyls	
Total PCBs	2.94E-07
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	3.18E-06
Benzo(a)pyrene	3.63E-06
Benzo(b)fluoranthene	3.78E-06
Benzo(k)fluoranthene	2.72E-06
Dibenz(a,h)anthracene	7.56E-07
Indeno(1,2,3-cd)pyrene	1.97E-06
Phenanthrene	3.93E-06
Metals	
Arsenic	3.39E-06

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-18

Daily Intake from Dermal Contact for the Groundskeeper - Noncancer Effects
Reasonable Maximum Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	2.23E-12
1234678-HpCDF	1.32E-12
123478-HxCDF	5.61E-13
23478-PeCDF	5.12E-13
2378-TCDF	1.98E-12
OCDD	1.40E-11
OCDF	1.32E-12
Total 2,3,7,8 TCDD(equivalent)	5.61E-13
Polychlorinated Biphenyls	
Total PCBs	6.96E-08
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	7.51E-07
Benzo(a)pyrene	8.58E-07
Benzo(b)fluoranthene	8.94E-07
Benzo(k)fluoranthene	6.44E-07
Dibenz(a,h)anthracene	1.79E-07
Indeno(1,2,3-cd)pyrene	4.65E-07
Phenanthrene	9.30E-07
Metals	
Arsenic	8.01E-07

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-19

Daily Intake from Soil Ingestion for the Child (1-6 years) - Noncancer Effects
Central Tendency Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	7.40E-12
1234678-HpCDF	4.38E-12
123478-HxCDF	1.86E-12
23478-PeCDF	1.70E-12
2378-TCDF	6.58E-12
OCDD	4.66E-11
OCDF	4.38E-12
Total 2,3,7,8 TCDD(equivalent)	1.86E-12
Polychlorinated Biphenyls	
Total PCBs	4.95E-08
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	5.75E-07
Benzo(a)pyrene	6.58E-07
Benzo(b)fluoranthene	6.85E-07
Benzo(k)fluoranthene	4.93E-07
Dibenz(a,h)anthracene	1.37E-07
Indeno(1,2,3-cd)pyrene	3.56E-07
Phenanthrene	7.12E-07
Metals	
Arsenic	2.66E-06

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-20

Daily Intake from Soil Ingestion for the Child (7-13 years) - Noncancer Effects
Central Tendency Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	1.98E-12
1234678-HpCDF	1.17E-12
123478-HxCDF	4.99E-13
23478-PeCDF	4.55E-13
2378-TCDF	1.76E-12
OCDD	1.25E-11
OCDF	1.17E-12
Total 2,3,7,8 TCDD(equivalent)	4.99E-13
Polychlorinated Biphenyls	
Total PCBs	1.33E-08
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	1.54E-07
Benzo(a)pyrene	1.76E-07
Benzo(b)fluoranthene	1.83E-07
Benzo(k)fluoranthene	1.32E-07
Dibenz(a,h)anthracene	3.67E-08
Indeno(1,2,3-cd)pyrene	9.54E-08
Phenanthrene	1.91E-07
Metals	
Arsenic	7.12E-07

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-21

Daily Intake from Soil Ingestion for the Groundskeeper - Noncancer Effects
Central Tendency Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	3.96E-13
1234678-HpCDF	2.35E-13
123478-HxCDF	9.98E-14
23478-PeCDF	9.10E-14
2378-TCDF	3.52E-13
OCDD	2.50E-12
OCDF	2.35E-13
Total 2,3,7,8 TCDD(equivalent)	9.97E-14
Polychlorinated Biphenyls	
Total PCBs	2.65E-09
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	3.08E-08
Benzo(a)pyrene	3.52E-08
Benzo(b)fluoranthene	3.67E-08
Benzo(k)fluoranthene	2.64E-08
Dibenz(a,h)anthracene	7.34E-09
Indeno(1,2,3-cd)pyrene	1.91E-08
Phenanthrene	3.82E-08
Metals	
Arsenic	1.42E-07

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-22

Daily Intake from Dermal Contact for the Child (1-6 years) - Noncancer Effects
Central Tendency Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	5.19E-12
1234678-HpCDF	3.08E-12
123478-HxCDF	1.31E-12
23478-PeCDF	1.19E-12
2378-TCDF	4.62E-12
OCDD	3.27E-11
OCDF	3.08E-12
Total 2,3,7,8 TCDD(equivalent)	1.31E-12
Polychlorinated Biphenyls	
Total PCBs	1.62E-07
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	1.75E-06
Benzo(a)pyrene	2.00E-06
Benzo(b)fluoranthene	2.08E-06
Benzo(k)fluoranthene	1.50E-06
Dibenz(a,h)anthracene	4.17E-07
Indeno(1,2,3-cd)pyrene	1.08E-06
Phenanthrene	2.17E-06
Metals	
Arsenic	1.87E-06

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-23

Daily Intake from Dermal Contact for the Child (7-13 years) - Noncancer Effects
Central Tendency Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	4.71E-12
1234678-HpCDF	2.79E-12
123478-HxCDF	1.19E-12
23478-PeCDF	1.08E-12
2378-TCDF	4.19E-12
OCDD	2.97E-11
OCDF	2.79E-12
Total 2,3,7,8 TCDD(equivalent)	1.19E-12
Polychlorinated Biphenyls	
Total PCBs	1.47E-07
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	1.59E-06
Benzo(a)pyrene	1.82E-06
Benzo(b)fluoranthene	1.89E-06
Benzo(k)fluoranthene	1.36E-06
Dibenz(a,h)anthracene	3.78E-07
Indeno(1,2,3-cd)pyrene	9.83E-07
Phenanthrene	1.97E-06
Metals	
Arsenic	1.69E-06

REVISED DRAFT - CONFIDENTIAL
APPENDIX D

Table D-24

Daily Intake from Dermal Contact for the Groundskeeper - Noncancer Effects
Central Tendency Exposure Approach
Allendale School
Pittsfield, MA

Chemical	Daily Intake (mg/kg-day)
Dioxins/Furans	
1234678-HpCDD	2.23E-12
1234678-HpCDF	1.32E-12
123478-HxCDF	5.61E-13
23478-PeCDF	5.12E-13
2378-TCDF	1.98E-12
OCDD	1.40E-11
OCDF	1.32E-12
Total 2,3,7,8 TCDD(equivalent)	5.61E-13
Polychlorinated Biphenyls	
Total PCBs	6.96E-08
Polynuclear Aromatic Hydrocarbons	
Benz(a)anthracene	7.51E-07
Benzo(a)pyrene	8.58E-07
Benzo(b)fluoranthene	8.94E-07
Benzo(k)fluoranthene	6.44E-07
Dibenz(a,h)anthracene	1.79E-07
Indeno(1,2,3-cd)pyrene	4.65E-07
Phenanthrene	9.30E-07
Metals	
Arsenic	8.01E-07

APPENDIX E

RAGS PART D, TABLES 7, 8, AND 9

REVISED DRAFT - CONFIDENTIAL

APPENDIX E

TABLE E-1

RAGS PART D TABLE 7.1.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	1-6 years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	1.49E-11	mg/kg-day	NTV		N/A	N/A	N/A
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	3.96E-07	mg/kg-day	2.00E-05	mg/kg-day	N/A	N/A	1.98E-02
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	4.60E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	5.26E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	5.48E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	3.95E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.10E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	2.85E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	5.70E-06	mg/kg-day	2.00E-02	mg/kg-day	N/A	N/A	2.85E-04
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	2.13E-05	mg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	7.09E-02
												Total Hazard Index Across All Exposure Routes/Pathways	9.10E-02

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
NTV = No toxicity value available.
N/A = Not applicable.

REVISED DRAFT - CONFIDENTIAL

APPENDIX E

TABLE E-2

RAGS PART D TABLE 7.2.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	7-13 years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	3.99E-12	mg/kg-day	NTV		N/A	N/A	N/A
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	1.06E-07	mg/kg-day	2.00E-05	mg/kg-day	N/A	N/A	5.30E-03
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	1.23E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	1.41E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	1.47E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	1.06E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.94E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	7.63E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	1.53E-06	mg/kg-day	2.00E-02	mg/kg-day	N/A	N/A	7.63E-05
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	5.69E-06	mg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	1.90E-02
												Total Hazard Index Across All Exposure Routes/Pathways	2.44E-02

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
NTV = No toxicity value available.
N/A = Not applicable.

REVISED DRAFT - CONFIDENTIAL

APPENDIX E

TABLE E-3

RAGS PART D TABLE 7.3.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Groundskeeper
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	3.99E-13	mg/kg-day	NTV		N/A	N/A	N/A
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	1.06E-08	mg/kg-day	2.00E-05	mg/kg-day	N/A	N/A	5.30E-04
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	1.23E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	1.41E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	1.47E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	1.06E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.94E-08	mg/kg-day	NTV		N/A	N/A	N/A
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	7.63E-08	mg/kg-day	NTV		N/A	N/A	N/A
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	1.53E-07	mg/kg-day	2.00E-02	mg/kg-day	N/A	N/A	7.63E-06
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	5.69E-07	mg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	1.90E-03
												Total Hazard Index Across All Exposure Routes/Pathways	2.44E-03

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

NTV = No toxicity value available.

N/A = Not applicable.

REVISED DRAFT - CONFIDENTIAL

APPENDIX E

TABLE E-4

RAGS PART D TABLE 7.4.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	1-6 years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal Absorption	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	2.62E-12	mg/kg-day	NTV		N/A	N/A	N/A
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	3.25E-07	mg/kg-day	2.00E-05	mg/kg-day	N/A	N/A	1.62E-02
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	3.50E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	4.00E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	4.17E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	3.00E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	8.34E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	2.17E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	4.34E-06	mg/kg-day	2.00E-02	mg/kg-day	N/A	N/A	2.17E-04
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	3.73E-06	mg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	1.24E-02
												Total Hazard Index Across All Exposure Routes/Pathways	2.89E-02

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
NTV = No toxicity value available.
N/A = Not applicable.

REVISED DRAFT - CONFIDENTIAL

APPENDIX E

TABLE E-5

RAGS PART D TABLE 7.5.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	7-13 years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal Absorption	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	2.37E-12	mg/kg-day	NTV		N/A	N/A	N/A
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	2.94E-07	mg/kg-day	2.00E-05	mg/kg-day	N/A	N/A	1.47E-02
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	3.18E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	3.63E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	3.78E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	2.72E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	7.56E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	1.97E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	3.93E-06	mg/kg-day	2.00E-02	mg/kg-day	N/A	N/A	1.97E-04
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	3.39E-06	mg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	1.13E-02
							Total Hazard Index Across All Exposure Routes/Pathways						2.62E-02

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

NTV = No toxicity value available.

N/A = Not applicable.

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APPENDIX E

TABLE E-6

RAGS PART D TABLE 7.6.RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Groundskeeper
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal Absorption	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	5.61E-13	mg/kg-day	NTV		N/A	N/A	N/A
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	6.96E-08	mg/kg-day	2.00E-05	mg/kg-day	N/A	N/A	3.48E-03
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	7.51E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	8.58E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	8.94E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	6.44E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.79E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	4.65E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	9.30E-07	mg/kg-day	2.00E-02	mg/kg-day	N/A	N/A	4.65E-05
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	8.01E-07	mg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	2.67E-03
							Total Hazard Index Across All Exposure Routes/Pathways						6.20E-03

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

NTV = No toxicity value available.

N/A = Not applicable.

REVISED DRAFT - CONFIDENTIAL

APPENDIX E

TABLE E-7

RAGS PART D TABLE 7.1.CT
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	1-6 years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	1.86E-12	mg/kg-day	NTV		N/A	N/A	N/A
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	4.95E-08	mg/kg-day	2.00E-05	mg/kg-day	N/A	N/A	2.48E-03
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	5.75E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	6.58E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	6.85E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	4.93E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.37E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	3.56E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	7.12E-07	mg/kg-day	2.00E-02	mg/kg-day	N/A	N/A	3.56E-05
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	2.66E-06	mg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	8.86E-03
												Total Hazard Index Across All Exposure Routes/Pathways	1.14E-02

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
NTV = No toxicity value available.
N/A = Not applicable.

REVISED DRAFT - CONFIDENTIAL

APPENDIX E

TABLE E-8

RAGS PART D TABLE 7.2.CT
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	7-13 years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	4.99E-13	mg/kg-day	NTV		N/A	N/A	N/A
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	1.33E-08	mg/kg-day	2.00E-05	mg/kg-day	N/A	N/A	6.63E-04
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	1.54E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	1.76E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	1.83E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	1.32E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	3.67E-08	mg/kg-day	NTV		N/A	N/A	N/A
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	9.54E-08	mg/kg-day	NTV		N/A	N/A	N/A
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	1.91E-07	mg/kg-day	2.00E-02	mg/kg-day	N/A	N/A	9.54E-06
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	7.12E-07	mg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	2.37E-03
								Total Hazard Index Across All Exposure Routes/Pathways					3.05E-03

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

NTV = No toxicity value available.

N/A = Not applicable.

REVISED DRAFT - CONFIDENTIAL

APPENDIX E

TABLE E-9

RAGS PART D TABLE 7.3.CT
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Groundskeeper
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	9.97E-14	mg/kg-day	NTV		N/A	N/A	N/A
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	2.65E-09	mg/kg-day	2.00E-05	mg/kg-day	N/A	N/A	1.33E-04
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	3.08E-08	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	3.52E-08	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	3.67E-08	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	2.64E-08	mg/kg-day	NTV		N/A	N/A	N/A
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	7.34E-09	mg/kg-day	NTV		N/A	N/A	N/A
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	1.91E-08	mg/kg-day	NTV		N/A	N/A	N/A
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	3.82E-08	mg/kg-day	2.00E-02	mg/kg-day	N/A	N/A	1.91E-06
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	1.42E-07	mg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	4.75E-04
												Total Hazard Index Across All Exposure Routes/Pathways	6.09E-04

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

NTV = No toxicity value available.

N/A = Not applicable.

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APPENDIX E

TABLE E-10

RAGS PART D TABLE 7.4.CT
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	1-6 years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal Absorption	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	1.31E-12	mg/kg-day	NTV		N/A	N/A	N/A
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	1.62E-07	mg/kg-day	2.00E-05	mg/kg-day	N/A	N/A	8.11E-03
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	1.75E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	2.00E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	2.08E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	1.50E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	4.17E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	1.08E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	2.17E-06	mg/kg-day	2.00E-02	mg/kg-day	N/A	N/A	1.08E-04
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	1.87E-06	mg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	6.22E-03
							Total Hazard Index Across All Exposure Routes/Pathways						1.44E-02

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

NTV = No toxicity value available.

N/A = Not applicable.

REVISED DRAFT - CONFIDENTIAL

APPENDIX E

TABLE E-11

RAGS PART D TABLE 7.5.CT
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	7-13 years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal Absorption	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	1.19E-12	mg/kg-day	NTV		N/A	N/A	N/A
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	1.47E-07	mg/kg-day	2.00E-05	mg/kg-day	N/A	N/A	7.36E-03
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	1.59E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	1.82E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	1.89E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	1.36E-06	mg/kg-day	NTV		N/A	N/A	N/A
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	3.78E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	9.83E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	1.97E-06	mg/kg-day	2.00E-02	mg/kg-day	N/A	N/A	9.83E-05
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	1.69E-06	mg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	5.64E-03
												Total Hazard Index Across All Exposure Routes/Pathways	1.31E-02

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
NTV = No toxicity value available.
N/A = Not applicable.

REVISED DRAFT - CONFIDENTIAL

APPENDIX E

TABLE E-12

RAGS PART D TABLE 7.6.CT
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Groundskeeper
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal Absorption	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	5.61E-13	mg/kg-day	NTV		N/A	N/A	N/A
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	6.96E-08	mg/kg-day	2.00E-05	mg/kg-day	N/A	N/A	3.48E-03
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	7.51E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	8.58E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	8.94E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	6.44E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.79E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	4.65E-07	mg/kg-day	NTV		N/A	N/A	N/A
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	9.30E-07	mg/kg-day	2.00E-02	mg/kg-day	N/A	N/A	4.65E-05
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	8.01E-07	mg/kg-day	3.00E-04	mg/kg-day	N/A	N/A	2.67E-03
								Total Hazard Index Across All Exposure Routes/Pathways					6.20E-03

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
NTV = No toxicity value available.
N/A = Not applicable.

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APPENDIX E

TABLE E-13

RAGS PART D TABLE 8.1.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	1-6 years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	1.28E-12	mg/kg-day	1.50E+05	$(mg/kg\text{-}day)^{-1}$	1.92E-07
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	3.39E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	6.79E-08
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	3.95E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.88E-07
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	4.51E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	3.29E-06
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	4.70E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	3.43E-07
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	3.38E-07	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	2.47E-08
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	9.39E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	6.86E-07
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	2.44E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.78E-07
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	4.88E-07	mg/kg-day	NTV	$(mg/kg\text{-}day)^{-1}$	N/A
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	1.82E-06	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.73E-06
									Total Risk Across All Exposure Routes/Pathways		7.80E-06

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

NTV = No toxicity value available.

N/A = Not applicable.

REVISED DRAFT - CONFIDENTIAL

APPENDIX E

TABLE E-14

RAGS PART D TABLE 8.2.RME

CALCULATION OF CANCER RISKS

REASONABLE MAXIMUM EXPOSURE

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	7-13 years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	3.42E-13	mg/kg-day	1.50E+05	$(mg/kg\text{-}day)^{-1}$	5.13E-08
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	9.09E-09	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	1.82E-08
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	1.06E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	7.71E-08
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	1.21E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	8.82E-07
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	1.26E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	9.18E-08
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	9.06E-08	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	6.61E-09
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.52E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.84E-07
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	6.54E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	4.78E-08
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	1.31E-07	mg/kg-day	NTV	$(mg/kg\text{-}day)^{-1}$	N/A
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	4.88E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	7.32E-07
									Total Risk Across All Exposure Routes/Pathways		2.09E-06

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

NTV = No toxicity value available.

N/A = Not applicable.

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APPENDIX E

TABLE E-15

RAGS PART D TABLE 8.3.RME

CALCULATION OF CANCER RISKS

REASONABLE MAXIMUM EXPOSURE

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Groundskeeper
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	1.42E-13	mg/kg-day	1.50E+05	$(mg/kg\text{-}day)^{-1}$	2.14E-08
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	3.79E-09	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	7.58E-09
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	4.40E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	3.21E-08
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	5.03E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	3.67E-07
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	5.24E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	3.83E-08
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	3.77E-08	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	2.76E-09
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.05E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	7.65E-08
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	2.73E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.99E-08
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	5.45E-08	mg/kg-day	NTV	$(mg/kg\text{-}day)^{-1}$	N/A
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	2.03E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	3.05E-07
										Total Risk Across All Exposure Routes/Pathways	8.71E-07

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

NTV = No toxicity value available.

N/A = Not applicable.

REVISED DRAFT - CONFIDENTIAL

APPENDIX E

TABLE E-16

RAGS PART D TABLE 8.4.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	1-6 years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Dermal Absorption	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	2.24E-13	mg/kg-day	1.50E+05	$(mg/kg\text{-}day)^{-1}$	3.36E-08
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	2.78E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	5.56E-08
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	3.00E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.19E-07
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	3.43E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.50E-06
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	3.57E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.61E-07
	Benzo(k)fluoranthene	1 80E+00	mg/kg	1.80E+00	mg/kg	M	2.57E-07	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	1.88E-08
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	7.15E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	5.22E-07
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	1.86E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.36E-07
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	3.72E-07	mg/kg-day	NTV	$(mg/kg\text{-}day)^{-1}$	N/A
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	3.20E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	4.80E-07
										Total Risk Across All Exposure Routes/Pathways	4.23E-06

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

NTV = No toxicity value available.

N/A = Not applicable.

REVISED DRAFT - CONFIDENTIAL

APPENDIX E

TABLE E-17

RAGS PART D TABLE 8.5.RME

CALCULATION OF CANCER RISKS

REASONABLE MAXIMUM EXPOSURE

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	7-13 years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Dermal Absorption	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	2.03E-13	mg/kg-day	1.50E+05	$(mg/kg\text{-}day)^{-1}$	3.05E-08
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	2.52E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	5.05E-08
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	2.72E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.99E-07
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	3.11E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.27E-06
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	3.24E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.37E-07
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	2.33E-07	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	1.70E-08
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	6.48E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	4.73E-07
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	1.69E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.23E-07
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	3.37E-07	mg/kg-day	NTV	$(mg/kg\text{-}day)^{-1}$	N/A
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	2.90E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	4.35E-07
									Total Risk Across All Exposure Routes/Pathways		3.84E-06

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

NTV = No toxicity value available.

N/A = Not applicable.

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APPENDIX E

TABLE E-18

RAGS PART D TABLE 8.6.RME
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE

ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Groundskeeper
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Dermal Absorption	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	2.00E-13	mg/kg-day	1.50E+05	$(mg/kg\text{-}day)^{-1}$	3.00E-08
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	2.49E-08	mg/kg-day	2.00E+00	$(mg/kg\text{-}day)^{-1}$	4.97E-08
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	2.68E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.96E-07
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	3.07E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.24E-06
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	3.19E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.33E-07
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	2.30E-07	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	1.68E-08
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	6.39E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	4.66E-07
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	1.66E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.21E-07
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	3.32E-07	mg/kg-day	NTV	$(mg/kg\text{-}day)^{-1}$	N/A
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	2.86E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	4.29E-07
										Total Risk Across All Exposure Routes/Pathways	3.78E-06

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

NTV = No toxicity value available.

N/A = Not applicable.

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APPENDIX E

TABLE E-19

RAGS PART D TABLE 8.1.CT
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	1-6 years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	1.60E-13	mg/kg-day	1.50E+05	$(mg/kg\text{-}day)^{-1}$	2.39E-08
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	4.24E-09	mg/kg-day	1.00E+00	$(mg/kg\text{-}day)^{-1}$	4.24E-09
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	4.93E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	3.60E-08
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	5.64E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	4.11E-07
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	5.87E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	4.29E-08
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	4.23E-08	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	3.09E-09
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.17E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	8.57E-08
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	3.05E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	2.23E-08
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	6.11E-08	mg/kg-day	NTV	$(mg/kg\text{-}day)^{-1}$	N/A
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	2.28E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	3.42E-07
										Total Risk Across All Exposure Routes/Pathways	9.71E-07

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.
NTV = No toxicity value available.
N/A = Not applicable.

APPENDIX E

TABLE E-20

RAGS PART D TABLE 8.2.CT

CALCULATION OF CANCER RISKS

CENTRAL TENDENCY EXPOSURE

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	*Surface Soil*
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	7-13 years

Exposure Route	Chemical of Potential *Concern*	Medium EPC Value	Medium EPC Units	Route EPC *Value*	Route EPC *Units*	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	4.27E-14	mg/kg-day	1.50E+05	$(mg/kg\text{-}day)^{-1}$	6.41E-09
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	1.14E-09	mg/kg-day	1.00E+00	$(mg/kg\text{-}day)^{-1}$	1.14E-09
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	1.32E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	9.64E-09
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	1.51E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.10E-07
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	1.57E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.15E-08
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	1.13E-08	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	8.27E-10
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	3.15E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.30E-08
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	8.18E-09	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	5.97E-09
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	1.64E-08	mg/kg-day	NTV	$(mg/kg\text{-}day)^{-1}$	N/A
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	6.10E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	9.15E-08
							Total Risk Across All Exposure Routes/Pathways				2.60E-07

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

NTV = No toxicity value available.

N/A = Not applicable.

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APPENDIX E

TABLE E-21

RAGS PART D TABLE 8.3.CT
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURE
ALLENDALE SCHOOL
PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Groundskeeper
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	3.56E-14	mg/kg-day	1.50E+05	$(mg/kg\text{-}day)^{-1}$	5.34E-09
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	9.47E-10	mg/kg-day	1.00E+00	$(mg/kg\text{-}day)^{-1}$	9.47E-10
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	1.10E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	8.04E-09
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	1.26E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	9.18E-08
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	1.31E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	9.57E-09
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	9.44E-09	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	6.89E-10
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.62E-09	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.91E-08
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	6.81E-09	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	4.97E-09
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	1.36E-08	mg/kg-day	NTV	$(mg/kg\text{-}day)^{-1}$	N/A
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	5.08E-08	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	7.63E-08
									Total Risk Across All Exposure Routes/Pathways		2.17E-07

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.
NTV = No toxicity value available.
N/A = Not applicable.

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APPENDIX E

TABLE E-22

RAGS PART D TABLE 8.4.CT

CALCULATION OF CANCER RISKS

CENTRAL TENDENCY EXPOSURE

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	1-6 years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Dermal Absorption	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	1.12E-13	mg/kg-day	1.50E+05	$(mg/kg\text{-}day)^{-1}$	1.68E-08
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	1.39E-08	mg/kg-day	1.00E+00	$(mg/kg\text{-}day)^{-1}$	1.39E-08
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	1.50E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.10E-07
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	1.72E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.25E-06
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	1.79E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.30E-07
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	1.29E-07	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	9.39E-09
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	3.57E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.61E-07
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	9.29E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	6.78E-08
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	1.86E-07	mg/kg-day	NTV	$(mg/kg\text{-}day)^{-1}$	N/A
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	1.60E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.40E-07
										Total Risk Across All Exposure Routes/Pathways	2.10E-06

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

NTV = No toxicity value available.

N/A = Not applicable.

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APPENDIX E

TABLE E-23

RAGS PART D TABLE 8.5.CT

CALCULATION OF CANCER RISKS

CENTRAL TENDENCY EXPOSURE

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Child
Receptor Age:	7-13 years

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Dermal Absorption	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	1.02E-13	mg/kg-day	1.50E+05	$(mg/kg\text{-}day)^{-1}$	1.53E-08
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	1.26E-08	mg/kg-day	1.00E+00	$(mg/kg\text{-}day)^{-1}$	1.26E-08
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	1.36E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	9.94E-08
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	1.56E-07	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	1.14E-06
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	1.62E-07	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	1.18E-07
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	1.17E-07	mg/kg-day	7.30E-02	$(mg/kg\text{-}day)^{-1}$	8.52E-09
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	3.24E-08	mg/kg-day	7.30E+00	$(mg/kg\text{-}day)^{-1}$	2.37E-07
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	8.43E-08	mg/kg-day	7.30E-01	$(mg/kg\text{-}day)^{-1}$	6.15E-08
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	1.69E-07	mg/kg-day	NTV	$(mg/kg\text{-}day)^{-1}$	N/A
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	1.45E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.18E-07
										Total Risk Across All Exposure Routes/Pathways	1.91E-06

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

NTV = No toxicity value available.

N/A = Not applicable.

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APPENDIX E

TABLE E-24

RAGS PART D TABLE 8 6.CT

CALCULATION OF CANCER RISKS

CENTRAL TENDENCY EXPOSURE

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil
Exposure Point:	Soil - Schoolyard
Receptor Population:	Groundskeeper
Receptor Age:	Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Dermal Absorption	2,3,7,8-TCDD Equivalent	6.80E-06	mg/kg	6.80E-06	mg/kg	M	2.00E-13	mg/kg-day	1.50E+05	$(mg/kg-day)^{-1}$	3.00E-08
	Total PCBs	1.81E-01	mg/kg	1.81E-01	mg/kg	M	2.49E-08	mg/kg-day	1.00E+00	$(mg/kg-day)^{-1}$	2.49E-08
	Benz(a)anthracene	2.10E+00	mg/kg	2.10E+00	mg/kg	M	2.68E-07	mg/kg-day	7.30E-01	$(mg/kg-day)^{-1}$	1.96E-07
	Benzo(a)pyrene	2.40E+00	mg/kg	2.40E+00	mg/kg	M	3.07E-07	mg/kg-day	7.30E+00	$(mg/kg-day)^{-1}$	2.24E-06
	Benzo(b)fluoranthene	2.50E+00	mg/kg	2.50E+00	mg/kg	M	3.19E-07	mg/kg-day	7.30E-01	$(mg/kg-day)^{-1}$	2.33E-07
	Benzo(k)fluoranthene	1.80E+00	mg/kg	1.80E+00	mg/kg	M	2.30E-07	mg/kg-day	7.30E-02	$(mg/kg-day)^{-1}$	1.68E-08
	Dibenz(a,h)anthracene	5.00E-01	mg/kg	5.00E-01	mg/kg	M	6.39E-08	mg/kg-day	7.30E+00	$(mg/kg-day)^{-1}$	4.66E-07
	Indeno(1,2,3-cd)pyrene	1.30E+00	mg/kg	1.30E+00	mg/kg	M	1.66E-07	mg/kg-day	7.30E-01	$(mg/kg-day)^{-1}$	1.21E-07
	Phenanthrene	2.60E+00	mg/kg	2.60E+00	mg/kg	M	3.32E-07	mg/kg-day	NTV	$(mg/kg-day)^{-1}$	N/A
	Arsenic	9.70E+00	mg/kg	9.70E+00	mg/kg	M	2.86E-07	mg/kg-day	1.50E+00	$(mg/kg-day)^{-1}$	4.29E-07
										Total Risk Across All Exposure Routes/Pathways	3.75E-06

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for risk calculation.

NTV = No toxicity value available.

N/A = Not applicable.

REVISED DRAFT - CONFIDENTIAL

APPENDIX E

TABLE E-25

RAGS PART D TABLE 9.1 RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe:	Current
Receptor Population:	Child
Receptor Age:	1-6 years

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Schoolyard surface soil	2,3,7,8-TCDD Equivalent	1.92E-07	NE	3.36E-08	2.25E-07	2,3,7,8-TCDD Equivalent		NTV	NE	NTV	N/A
			Total PCBs	6.79E-08	NE	5.56E-08	1.24E-07	Total PCBs	Ocular/Immunologic	1.98E-02	NE	1.62E-02	3.60E-02
			Benz(a)anthracene	2.88E-07	NE	2.19E-07	5.07E-07	Benz(a)anthracene		NTV	NE	NTV	N/A
			Benzo(a)pyrene	3.29E-06	NE	2.50E-06	5.80E-06	Benzo(a)pyrene		NTV	NE	NTV	N/A
			Benzo(b)fluoranthene	3.43E-07	NE	2.61E-07	6.04E-07	Benzo(b)fluoranthene		NTV	NE	NTV	N/A
			Benzo(k)fluoranthene	2.47E-08	NE	1.88E-08	4.35E-08	Benzo(k)fluoranthene		NTV	NE	NTV	N/A
			Dibenz(a,h)anthracene	6.86E-07	NE	5.22E-07	1.21E-06	Dibenz(a,h)anthracene		NTV	NE	NTV	N/A
			Indeno(1,2,3-cd)pyrene	1.78E-07	NE	1.36E-07	3.14E-07	Indeno(1,2,3-cd)pyrene		NTV	NE	NTV	N/A
			Phenanthrene	NC	NE	NC	N/A	Phenanthrene	Decreased mean terminal body weight in males	2.85E-04	NE	2.17E-04	5.02E-04
			Arsenic	2.73E-06	NE	4.80E-07	3.21E-06	Arsenic	Hyperpigmentation, keratosis and possible vascular complications	7.09E-02	NE	1.24E-02	8.33E-02
			Total	7.80E-06	NE	4.23E-06	1.20E-05	Total		9.10E-02	NE	2.89E-02	1.20E-01
						Total Risk Across[Medium]	1.20E-05					Total Hazard Index Across All Media and All Exposure Routes	1.20E-01
						Total Risk Across All Media and All Exposure Routes	1.20E-05						

NE = Not evaluated.

NTV = No toxicity value available

N/A = Not applicable.

NC = Not classified as a carcinogen.

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APPENDIX E

TABLE E-26

RAGS PART D TABLE 9.2 RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe:	Current
Receptor Population:	Child
Receptor Age:	7-13 years

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Schoolyard surface soil	2,3,7,8-TCDD Equivalent	5.13E-08	NE	3.05E-08	8.18E-08	2,3,7,8-TCDD Equivalent		NTV	NE	NTV	N/A
			Total PCBs	1.82E-08	NE	5.05E-08	6.87E-08	Total PCBs	Ocular/Immunologic	5.30E-03	NE	1.47E-02	2.00E-02
			Benz(a)anthracene	7.71E-08	NE	1.99E-07	2.76E-07	Benz(a)anthracene		NTV	NE	NTV	N/A
			Benzo(a)pyrene	8.82E-07	NE	2.27E-06	3.15E-06	Benzo(a)pyrene		NTV	NE	NTV	N/A
			Benzo(b)fluoranthene	9.18E-08	NE	2.37E-07	3.28E-07	Benzo(b)fluoranthene		NTV	NE	NTV	N/A
			Benzo(k)fluoranthene	6.61E-09	NE	1.70E-08	2.36E-08	Benzo(k)fluoranthene		NTV	NE	NTV	N/A
			Dibenz(a,h)anthracene	1.84E-07	NE	4.73E-07	6.57E-07	Dibenz(a,h)anthracene		NTV	NE	NTV	N/A
			Indeno(1,2,3-cd)pyrene	4.78E-08	NE	1.23E-07	1.71E-07	Indeno(1,2,3-cd)pyrene		NTV	NE	NTV	N/A
			Phenanthrene	NC	NE	NC	N/A	Phenanthrene	Decreased mean terminal body weight in males	7.63E-05	NE	1.97E-04	2.73E-04
			Arsenic	7.32E-07	NE	4.35E-07	1.17E-06	Arsenic	Hyperpigmentation, keratosis and possible vascular complications	1.90E-02	NE	1.13E-02	3.03E-02
			Total	2.09E-06	NE	3.84E-06	5.93E-06	Total		2.44E-02	NE	2.62E-02	5.06E-02
						Total Risk Across[Medium]	5.93E-06					Total Hazard Index Across All Media and All Exposure Routes	5.06E-02
						Total Risk Across All Media and All Exposure Routes	5.93E-06						

NE = Not evaluated.

NTV = No toxicity value available.

N/A = Not applicable.

NC = Not classified as a carcinogen.

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APPENDIX E

TABLE E-27

RAGS PART D TABLE 9.3 RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

ALLENDALE SCHOCL

PITTSFIELD, MA

Scenario Timeframe:	Current
Receptor Population:	Groundskeeper
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Schoolyard surface soil	2,3,7,8-TCDD Equivalent	2.14E-08	NE	3.00E-08	5.14E-08	2,3,7,8-TCDD Equivalent		NTV	NE	NTV	N/A
			Total PCBs	7.58E-09	NE	4.97E-08	5.73E-08	Total PCBs	Ocular/Immunologic	5.30E-04	NE	3.48E-03	4.01E-03
			Benz(a)anthracene	3.21E-08	NE	1.96E-07	2.28E-07	Benz(a)anthracene		NTV	NE	NTV	N/A
			Benzo(a)pyrene	3.67E-07	NE	2.24E-06	2.61E-06	Benzo(a)pyrene		NTV	NE	NTV	N/A
			Benzo(b)fluoranthene	3.83E-08	NE	2.33E-07	2.71E-07	Benzo(b)fluoranthene		NTV	NE	NTV	N/A
			Benzo(k)fluoranthene	2.76E-09	NE	1.68E-08	1.95E-08	Benzo(k)fluoranthene		NTV	NE	NTV	N/A
			Dibenz(a,h)anthracene	7.65E-08	NE	4.66E-07	5.43E-07	Dibenz(a,h)anthracene		NTV	NE	NTV	N/A
			Indeno(1,2,3-cd)pyrene	1.99E-08	NE	1.21E-07	1.41E-07	Indeno(1,2,3-cd)pyrene		NTV	NE	NTV	N/A
			Phenanthrene	NC	NE	NC	N/A	Phenanthrene	Decreased mean terminal body weight in males	7.63E-06	NE	4.65E-05	5.41E-05
			Arsenic	3.05E-07	NE	4.29E-07	7.34E-07	Arsenic	Hyperpigmentation, keratosis and possible vascular complications	1.90E-03	NE	2.67E-03	4.57E-03
			Total	8.71E-07	NE	3.78E-06	4.65E-06	Total		2.44E-03	NE	6.20E-03	8.63E-03

Total Risk Across[Medium]	4.65E-06
Total Risk Across All Media and All Exposure Routes	4.65E-06
Total Hazard Index Across All Media and All Exposure Routes	8.63E-03

NE = Not evaluated.

NTV = No toxicity value available.

N/A = Not applicable.

NC = Not classified as a carcinogen.

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APPENDIX E

TABLE E-28

RAGS PART D TABLE 9.1.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe:	Current
Receptor Population:	Child
Receptor Age:	1-6 years

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Schoolyard surface soil	2,3,7,8-TCDD Equivalent	2.39E-08	NE	1.68E-08	4.07E-08	2,3,7,8-TCDD Equivalent		NTV	NE	NTV	N/A
			Total PCBs	4.24E-09	NE	1.39E-08	1.82E-08	Total PCBs	Ocular/Immunologic	2.48E-03	NE	8.11E-03	1.06E-02
			Benz(a)anthracene	3.60E-08	NE	1.10E-07	1.46E-07	Benz(a)anthracene		NTV	NE	NTV	N/A
			Benzo(a)pyrene	4.11E-07	NE	1.25E-06	1.66E-06	Benzo(a)pyrene		NTV	NE	NTV	N/A
			Benzo(b)fluoranthene	4.29E-08	NE	1.30E-07	1.73E-07	Benzo(b)fluoranthene		NTV	NE	NTV	N/A
			Benzo(k)fluoranthene	3.09E-09	NE	9.39E-09	1.25E-08	Benzo(k)fluoranthene		NTV	NE	NTV	N/A
			Dibenz(a,h)anthracene	8.57E-08	NE	2.61E-07	3.47E-07	Dibenz(a,h)anthracene		NTV	NE	NTV	N/A
			Indeno(1,2,3-cd)pyrene	2.23E-08	NE	6.78E-08	9.01E-08	Indeno(1,2,3-cd)pyrene		NTV	NE	NTV	N/A
			Phenanthrene	NC	NE	NC	N/A	Phenanthrene	Decreased mean terminal body weight in males	3.56E-05	NE	1.08E-04	1.44E-04
			Arsenic	3.42E-07	NE	2.40E-07	5.82E-07	Arsenic	Hyperpigmentation, keratosis and possible vascular complications	8.86E-03	NE	6.22E-03	1.51E-02
			Total	9.71E-07	NE	2.10E-06	3.07E-06	Total		1.14E-02	NE	1.44E-02	2.58E-02

Total Risk Across[Medium]: 3.07E-06

Total Risk Across All Media and All Exposure Routes: 3.07E-06

Total Hazard Index Across All Media and All Exposure Routes: 2.58E-02

NE = Not evaluated.

NTV = No toxicity value available.

N/A = Not applicable.

NC = Not classified as a carcinogen.

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APPENDIX E

TABLE E-29

RAGS PART D TABLE 9.2.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

ALLENDALE SCHOOL

PITTSFIELD, MA

Scenario Timeframe: Current
Receptor Population: Child
Receptor Age: 7-13 years

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Schoolyard surface soil	2,3,7,8-TCDD Equivalent	6.41E-09	NE	1.53E-08	2.17E-08	2,3,7,8-TCDD Equivalent		NTV	NE	NTV	N/A
			Total PCBs	1.14E-09	NE	1.26E-08	1.38E-08	Total PCBs	Ocular/Immunologic	6.63E-04	NE	7.36E-03	8.02E-03
			Benz(a)anthracene	9.64E-09	NE	9.94E-08	1.09E-07	Benz(a)anthracene		NTV	NE	NTV	N/A
			Benzo(a)pyrene	1.10E-07	NE	1.14E-06	1.25E-06	Benzo(a)pyrene		NTV	NE	NTV	N/A
			Benzo(b)fluoranthene	1.15E-08	NE	1.18E-07	1.30E-07	Benzo(b)fluoranthene		NTV	NE	NTV	N/A
			Benzo(k)fluoranthene	8.27E-10	NE	8.52E-09	9.34E-09	Benzo(k)fluoranthene		NTV	NE	NTV	N/A
			Dibenz(a,h)anthracene	2.30E-08	NE	2.37E-07	2.60E-07	Dibenz(a,h)anthracene		NTV	NE	NTV	N/A
			Indeno(1,2,3-cd)pyrene	5.97E-09	NE	6.15E-08	6.75E-08	Indeno(1,2,3-cd)pyrene		NTV	NE	NTV	N/A
			Phenanthrene	NC	NE	NC	N/A	Phenanthrene	Decreased mean terminal body weight in males	9.54E-06	NE	9.83E-05	1.08E-04
			Arsenic	9.15E-08	NE	2.18E-07	3.09E-07	Arsenic	Hyperpigmentation, keratosis and possible vascular complications	2.37E-03	NE	5.64E-03	8.02E-03
			Total	2.60E-07	NE	1.91E-06	2.17E-06	Total		3.05E-03	NE	1.31E-02	1.61E-02
						Total Risk Across[Medium]	2.17E-06					Total Hazard Index Across All Media and All Exposure Routes	1.61E-02
						Total Risk Across All Media and All Exposure Routes	2.17E-06						

NE = Not evaluated.

NTV = No toxicity value available.

N/A = Not applicable.

NC = Not classified as a carcinogen.

APPENDIX F

COMPARISONS OF RBCs WITH FUTURE USE—0 TO 10-FOOT SOIL BORINGS

APPENDIX F

COMPARISONS OF RBCs WITH FUTURE USE—0 TO 10-FOOT SOIL BORINGS

F.1 INTRODUCTION

This appendix contains the detailed tables showing the comparison of vertically averaged 0 to 10-foot soil borings with site-specific RBCs as presented in Sections 5 and 6.

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APPENDIX F

Table F-1

Summary of Potential Cancer Risks for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Total PCBs (mg/kg)	Cancer Risk	Dieldrin (mg/kg)	Cancer Risk	2,3,7,8-TCDD Equivalent (mg/kg)	Cancer Risk	Benz(a) anthracene (mg/kg)	Cancer Risk	Benzo(a) pyrene (mg/kg)	Cancer Risk	Benzo(b) fluoranthene (mg/kg)	Cancer Risk
AS1	9.10E-01	2.28E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS2	2.81E+00	7.04E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS3	2.14E+00	5.37E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS4	2.08E-01	5.21E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS5	5.25E-01	1.32E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS6	1.15E-01	2.89E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS7	1.13E+00	2.82E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS8	1.48E+00	3.72E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS9	3.10E-01	7.78E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS10	2.90E-01	7.28E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-1	9.80E-02	2.46E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-2	4.83E-02	1.21E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-3	9.05E-02	2.27E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-4	7.50E-02	1.88E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-5	3.58E-02	8.97E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-6	4.33E-02	1.09E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-7	4.45E-02	1.12E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-8	6.25E-02	1.57E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-9	1.40E-01	3.51E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-10	1.13E-01	2.84E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-11	3.63E-02	9.10E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-12	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-13	4.88E-02	1.22E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-14	2.00E-01	5.02E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-15	8.35E-02	2.10E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-16	7.30E-02	1.83E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-17	2.15E-01	5.40E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-18	1.27E-01	3.18E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-19	8.15E-02	2.05E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-20	3.13E-02	7.84E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-21	3.95E-02	9.92E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-22	4.45E-02	1.12E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-23	4.40E-02	1.10E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-24	3.45E-02	8.66E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-25	6.38E-02	1.60E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-26	8.05E-02	2.02E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-27	7.40E-02	1.86E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-28	4.50E-02	1.13E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-29	7.75E-02	1.95E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-30	4.08E-02	1.02E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-31	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-32	3.40E-02	8.53E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-33	3.68E-02	9.22E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-34	1.33E-01	3.34E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-35	4.25E-02	1.07E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-36	6.08E-02	1.52E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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APPENDIX F

Table F-1

Summary of Potential Cancer Risks for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Total PCBs (mg/kg)	Cancer Risk	Dieldrin (mg/kg)	Cancer Risk	2,3,7,8-TCDD Equivalent (mg/kg)	Cancer Risk	Benz(a) anthracene (mg/kg)	Cancer Risk	Benzo(a) pyrene (mg/kg)	Cancer Risk	Benzo(b) fluoranthene (mg/kg)	Cancer Risk
AS-96-37	7.20E-02	1.81E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-38	1.28E-01	3.20E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-39	4.10E-02	1.03E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-40	3.66E-02	9.19E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-41	1.25E-01	3.14E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-42	6.40E-02	1.61E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-43	7.05E-02	1.77E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-44	3.20E-02	8.03E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-45	1.22E-01	3.05E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-46	7.35E-02	1.84E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-47	6.95E-02	1.74E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-48	4.48E-02	1.12E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-49	6.55E-02	1.64E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-58	7.70E-02	1.93E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-50	1.08E-01	2.70E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-51	1.05E-01	2.62E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-52	3.45E-02	8.66E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-53	7.10E-02	1.78E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-54	6.50E-02	1.63E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-55	5.05E-02	1.27E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-56	6.85E-02	1.72E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-57	7.85E-02	1.97E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-59	1.02E-01	2.56E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-60	9.05E-02	2.27E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-61	5.25E-02	1.32E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-62	1.03E-01	2.59E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-63	5.15E-01	1.29E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-68	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-69	9.60E-02	2.41E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-73	4.88E-02	1.22E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-77	8.50E-02	2.13E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-78	6.25E-02	1.57E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-82	8.85E-02	2.22E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-83	6.85E-02	1.72E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-84	2.05E-01	5.15E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-86	1.50E-01	3.77E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-87	2.24E-01	5.61E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-88	5.75E-01	1.44E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-89	3.50E-01	8.79E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-90	2.70E-01	6.78E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-91	1.90E-01	4.77E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-92	4.05E-01	1.02E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-93	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-94	2.50E-01	6.28E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-95	1.75E-01	4.39E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-96	4.40E-01	1.10E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

APPENDIX F

Table F-1

Summary of Potential Cancer Risks for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Total PCBs (mg/kg)	Cancer Risk	Dieldrin (mg/kg)	Cancer Risk	2,3,7,8-TCDD Equivalent (mg/kg)	Cancer Risk	Benz(a) anthracene (mg/kg)	Cancer Risk	Benzo(a) pyrene (mg/kg)	Cancer Risk	Benzo(b) fluoranthene (mg/kg)	Cancer Risk
AS-96-97	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-98	2.20E-01	5.52E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-99	9.15E-02	2.30E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-100	5.20E-01	1.31E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-101	1.60E-01	4.02E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-102	5.40E-01	1.36E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-103	1.30E-01	3.26E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-104	5.40E-01	1.36E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-105	3.40E-01	8.53E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-106	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-107	4.05E-02	1.02E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-108	2.22E-01	5.57E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-109	1.16E-01	2.91E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-110	6.10E-01	1.53E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-111	5.80E-02	1.46E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-112	8.20E-02	2.06E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-113	7.15E-02	1.79E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-114	6.68E-02	1.68E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-115	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-116	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-117	3.65E-02	9.16E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-118	4.97E-02	1.25E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-119	4.50E-02	1.13E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-125	4.33E+00	1.09E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-127	2.74E-01	6.87E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-98-129	2.40E-01	6.02E-07	ND	ND	8.69E-06	1.01E-06	2.10E+00	2.51E-06	2.40E+00	2.30E-05	2.50E+00	2.38E-06
AS-98-130	7.80E-02	1.96E-07	ND	ND	1.46E-06	1.71E-07	3.00E-01	3.58E-07	2.90E-01	2.78E-06	2.60E-01	2.48E-07
AS-98-132	9.00E-02	2.26E-07	ND	ND	2.70E-06	3.16E-07	9.00E-02	1.07E-07	1.10E-01	1.05E-06	1.00E-01	9.52E-08
AS-98-133	8.60E-02	2.16E-07	ND	ND	9.84E-07	1.15E-07	2.90E-01	3.46E-07	3.30E-01	3.16E-06	3.60E-01	3.43E-07
ASB-1	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-2	2.46E-02	6.17E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-3	4.71E+00	1.18E-05	2.30E-01	2.16E-05	4.14E-05	4.84E-06	ND	ND	ND	ND	ND	ND
ASB-4	1.05E-01	2.64E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-5	2.83E-02	7.09E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-6	1.84E-02	4.61E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-7	1.31E-01	3.29E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-8	2.10E-01	5.26E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-9	6.32E-01	1.59E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-10	1.25E+00	3.14E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-11	8.00E-01	2.01E-06	ND	ND	1.93E-06	2.25E-07	ND	ND	ND	ND	ND	ND
ASB-12	4.01E+01	1.01E-04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-13	1.98E+00	4.97E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-14	8.88E-02	2.23E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-15	6.68E-02	1.68E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-16	1.24E+01	3.11E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-17	8.77E+00	2.20E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

REVISED DRAFT - CONFIDENTIAL

APPENDIX F

Table F-1

Summary of Potential Cancer Risks for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Total PCBs (mg/kg)	Cancer Risk	Dieldrin (mg/kg)	Cancer Risk	2,3,7,8-TCDD Equivalent (mg/kg)	Cancer Risk	Benz(a) anthracene (mg/kg)	Cancer Risk	Benzo(a) pyrene (mg/kg)	Cancer Risk	Benzo(b) fluoranthene (mg/kg)	Cancer Risk
ASB-18	5.49E+01	1.38E-04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-19	3.16E+02	7.94E-04	6.40E+00	6.00E-04	1.17E-04	1.37E-05	ND	ND	5.30E-02	5.07E-07	6.50E-02	6.19E-08
ASB-20	1.59E+00	3.99E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-21	4.03E-01	1.01E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-22	5.87E+00	1.47E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-23	1.27E-01	3.19E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ASB-24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ASB-25	7.15E-02	1.79E-07	5.13E-03	4.81E-07	1.26E-06	1.47E-07	1.24E-01	1.48E-07	1.23E-01	1.18E-06	1.23E-01	1.17E-07
ASB-26	3.58E+00	8.98E-06	ND	ND	3.87E-06	4.52E-07	7.90E-01	9.43E-07	9.50E-01	9.09E-06	8.30E-01	7.90E-07
ASB-27	8.68E+00	2.18E-05	ND	ND	2.29E-06	2.68E-07	2.00E-01	2.39E-07	2.70E-01	2.58E-06	2.20E-01	2.10E-07
ASB-28	1.32E+02	3.31E-04	ND	ND	9.04E-07	1.06E-07	ND	ND	ND	ND	ND	ND
ASB-29	1.39E+00	3.49E-06	ND	ND	1.07E-06	1.25E-07	NA	NA	NA	NA	NA	NA
ASB-30	1.48E+01	3.72E-05	ND	ND	7.28E-06	8.50E-07	1.50E+01	1.79E-05	1.60E+01	1.53E-04	1.40E+01	1.33E-05
ASB-31	2.28E+01	5.72E-05	ND	ND	4.61E-04	5.38E-05	ND	ND	ND	ND	ND	ND
ASB-32	1.24E+01	3.11E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ASB-33	1.59E+01	3.99E-05	ND	ND	7.94E-07	9.27E-08	ND	ND	ND	ND	ND	ND
ASB-34	5.15E+01	1.29E-04	ND	ND	7.43E-06	8.67E-07	ND	ND	ND	ND	ND	ND
ASB-44	8.00E-01	2.01E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-45	1.30E+00	3.26E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-47	1.80E+00	4.52E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-52	2.56E-02	6.43E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-54	9.20E-01	2.31E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-57	3.45E-01	8.66E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-59	2.50E-01	6.28E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-60	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-61	4.30E-01	1.08E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B1	3.89E+01	9.77E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B2	9.72E+01	2.44E-04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B3	3.41E+00	8.55E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B6	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B7	2.97E+01	7.45E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B8	1.80E+01	4.52E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B13	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B14	8.47E+00	2.13E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B15	1.09E+01	2.73E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B16	4.76E+01	1.19E-04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B17	3.44E+01	8.64E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18	1.64E+02	4.13E-04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B20	1.12E+01	2.82E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B28	3.55E+00	8.91E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B29	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B39	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B43	5.10E-01	1.28E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B44	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B48	2.20E+00	5.52E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B50	4.42E-01	1.11E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-1

Summary of Potential Cancer Risks for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Total PCBs (mg/kg)	Cancer Risk	Dieldrin (mg/kg)	Cancer Risk	2,3,7,8-TCDD Equivalent (mg/kg)	Cancer Risk	Benz(a) anthracene (mg/kg)	Cancer Risk	Benzo(a) pyrene (mg/kg)	Cancer Risk	Benzo(b) fluoranthene (mg/kg)	Cancer Risk
B52	7.75E-01	1.95E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B54	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B55	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B56	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B57	6.40E+00	1.61E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B58	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B59	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B60	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B61	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B62	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B63	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B64	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B65	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B66	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B68	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K1	9.20E-01	2.31E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K2	9.25E+01	2.32E-04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K3	2.13E+00	5.33E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K4	6.24E+00	1.57E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K5	4.73E+00	1.19E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K6	1.13E+01	2.84E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K7	1.30E+00	3.26E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K8	1.25E+01	3.13E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K9	3.03E+00	7.59E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K10	1.42E+00	3.57E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K11	5.48E-01	1.37E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K12	4.18E-01	1.05E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K13	2.10E-01	5.27E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K14	4.88E-01	1.22E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K15	2.55E-01	6.40E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K16	ND	ND	ND	ND	ND	ND	ND	ND	4.60E-02	4.40E-07	5.10E-02	4.86E-08
K17	4.00E+00	1.00E-05	ND	ND	NA	NA	1.14E-01	1.36E-07	1.21E-01	1.16E-06	1.30E-01	1.23E-07
K18	9.80E-01	2.46E-06	ND	ND	ND	ND	5.00E-02	5.97E-08	6.50E-02	6.22E-07	8.20E-02	7.81E-08
K19	4.50E+00	1.13E-05	ND	ND	ND	ND	ND	ND	ND	ND	4.60E-02	4.38E-08
K20	1.70E+00	4.27E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
K21	2.12E+01	5.32E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K11-7-28-SS1	1.40E-01	3.51E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K11-7-28-SS2	3.50E-01	8.79E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-1	7.35E-02	1.84E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-2	1.02E-01	2.55E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-3	4.50E-02	1.13E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-4	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-5	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-6	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-7	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-8	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-1

Summary of Potential Cancer Risks for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Total PCBs (mg/kg)	Cancer Risk	Dieldrin (mg/kg)	Cancer Risk	2,3,7,8-TCDD Equivalent (mg/kg)	Cancer Risk	Benz(a) anthracene (mg/kg)	Cancer Risk	Benzo(a) pyrene (mg/kg)	Cancer Risk	Benzo(b) fluoranthene (mg/kg)	Cancer Risk
PRE-9	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-10	2.82E-02	7.07E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-11	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-12	2.59E-02	6.50E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-13	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-14	2.68E-02	6.74E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-15	2.53E-02	6.36E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-16	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-17	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-18	4.35E-02	1.09E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-19	2.62E-02	6.58E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-20	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-21	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-22	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-24	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-26	9.00E-02	2.26E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-23	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-25	2.58E-01	6.46E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SCH-1	3.91E-02	9.81E-08	ND	ND	7.56E-07	8.82E-08	ND	ND	ND	ND	ND	ND
SCH-2	1.76E-01	4.42E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SCH-3	4.83E-02	1.21E-07	ND	ND	9.39E-07	1.10E-07	4.90E-01	5.85E-07	6.40E-01	6.12E-06	5.90E-01	5.62E-07
SCH-4	7.75E-02	1.95E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T-1	9.88E-03	2.48E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-2	1.85E-02	4.64E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-3	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-4	1.33E-02	3.34E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-5	7.63E-03	1.91E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-6	1.24E-02	3.11E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-7	2.79E-02	7.00E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-8	1.78E-02	4.46E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-9	3.30E-02	8.28E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-10	3.13E-02	7.86E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-11	2.84E-02	7.12E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-12	9.13E-03	2.29E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-13	1.03E-02	2.59E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-14	7.73E-03	1.94E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-15	2.33E-02	5.84E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-16	2.85E-02	7.15E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-17	7.75E-03	1.95E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-18	1.00E-02	2.51E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-19	1.68E-02	4.20E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-21	9.88E-03	2.48E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-22	3.05E-02	7.66E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-23	9.38E-03	2.35E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-20	7.13E-03	1.79E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-24	7.19E-03	1.80E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

REVISED DRAFT - CONFIDENTIAL

APPENDIX F

Table F-1

Summary of Potential Cancer Risks for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Total PCBs (mg/kg)	Cancer Risk	Dieldrin (mg/kg)	Cancer Risk	2,3,7,8-TCDD Equivalent (mg/kg)	Cancer Risk	Benz(a) anthracene (mg/kg)	Cancer Risk	Benzo(a) pyrene (mg/kg)	Cancer Risk	Benzo(b) fluoranthene (mg/kg)	Cancer Risk
T-25	2.55E-02	6.39E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-26	2.95E-01	7.40E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-27	1.77E-01	4.43E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-28	1.31E-01	3.30E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-29	3.29E-01	8.26E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-30	4.73E-01	1.19E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-3/1	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-3/2	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-7/1	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-7/2	6.00E-02	1.51E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-11/1	5.00E-02	1.26E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-11/2	1.10E-01	2.76E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-15/1	1.00E-01	2.51E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-15/2	8.00E-02	2.01E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-19/1	1.00E-01	2.51E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-19/2	1.20E-01	3.01E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-23/1	1.90E-01	4.77E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-23/2	2.00E-01	5.02E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-31/1	5.00E-02	1.26E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-31/2	9.00E-02	2.26E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

* Concentrations are in mg/kg.

ND = Not detected.

NA = Not analyzed.

NTV = No toxicity value.

NC = Not classified as a carcinogen.

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APPENDIX F

Table F-1

Summary of Potential Cancer Risks for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Benzo(k) fluoranthene (mg/kg)	Cancer Risk	Dibenz(a,h) anthracene (mg/kg)	Cancer Risk	Indeno (1,2,3-cd)pyrene (mg/kg)	Cancer Risk	Phenanthrene (mg/kg)	Cancer Risk	Arsenic (mg/kg)	Cancer Risk	Thallium (mg/kg)	Cancer Risk
AS1	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS2	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS3	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS4	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS5	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS6	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS7	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS8	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS9	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS10	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-1	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-2	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-3	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-4	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-5	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-6	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-7	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-8	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-9	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-10	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-11	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-12	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-13	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-14	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-15	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-16	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-17	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-18	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-19	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-20	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-21	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-22	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-23	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-24	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-25	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-26	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-27	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-28	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-29	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-30	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-31	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-32	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-33	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-34	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-35	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-36	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-1

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Allendale School
Pittsfield, MA

Soil Boring	Benzo(k) fluoranthene (mg/kg)	Cancer Risk	Dibenz(a,h) anthracene (mg/kg)	Cancer Risk	Indeno (1,2,3-cd)pyrene (mg/kg)	Cancer Risk	Phenanthrene (mg/kg)	Cancer Risk	Arsenic (mg/kg)	Cancer Risk	Thallium (mg/kg)	Cancer Risk
AS-96-37	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-38	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-39	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-40	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-41	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-42	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-43	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-44	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-45	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-46	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-47	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-48	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-49	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-58	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-50	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-51	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-52	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-53	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-54	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-55	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-56	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-57	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-59	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-60	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-61	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-62	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-63	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-68	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-69	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-73	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-77	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-78	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-82	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-83	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-84	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-86	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-87	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-88	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-89	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-90	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-91	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-92	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-93	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-94	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-95	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-96	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-1

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Allendale School
Pittsfield, MA

Soil Boring	Benzo(k) fluoranthene (mg/kg)	Cancer Risk	Dibenz(a,h) anthracene (mg/kg)	Cancer Risk	Indeno (1,2,3-cd)pyrene (mg/kg)	Cancer Risk	Phenanthrene (mg/kg)	Cancer Risk	Arsenic (mg/kg)	Cancer Risk	Thallium (mg/kg)	Cancer Risk
AS-96-97	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-98	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-99	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-100	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-101	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-102	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-103	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-104	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-105	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-106	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-107	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-108	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-109	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-110	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-111	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-112	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-113	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-96-114	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-97-115	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-97-116	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-97-117	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-97-118	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-97-119	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-97-125	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-97-127	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
AS-98-129	1.80E+00	1.44E-07	5.00E-01	4.27E-06	1.30E+00	1.09E-06	2.60E+00	NC	9.70E+00	1.37E-05	ND	NC
AS-98-130	2.60E-01	2.08E-08	ND	ND	2.00E-01	1.68E-07	4.40E-01	NC	5.90E+00	8.35E-06	ND	NC
AS-98-132	9.00E-02	7.19E-09	ND	ND	ND	ND	9.00E-02	NC	5.90E+00	8.35E-06	ND	NC
AS-98-133	3.00E-01	2.40E-08	ND	ND	1.30E-01	1.09E-07	2.50E-01	NC	5.60E+00	7.92E-06	ND	NC
ASB-1	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-2	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-3	ND	ND	ND	ND	3.80E+00	3.19E-06	1.20E+01	NC	5.30E+00	7.50E-06	ND	NC
ASB-4	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-5	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-6	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-7	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-8	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-9	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-10	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-11	ND	ND	ND	ND	ND	ND	ND	NC	3.40E+00	4.81E-06	1.00E+00	NC
ASB-12	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-13	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-14	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-15	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-16	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-17	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

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Allendale School
Pittsfield, MA

Soil Boring	Benzo(k) fluoranthene (mg/kg)	Cancer Risk	Dibenz(a,h) anthracene (mg/kg)	Cancer Risk	Indeno (1,2,3-cd)pyrene (mg/kg)	Cancer Risk	Phenanthrene (mg/kg)	Cancer Risk	Arsenic (mg/kg)	Cancer Risk	Thallium (mg/kg)	Cancer Risk
ASB-18	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-19	7.20E-02	5.75E-09	ND	ND	ND	ND	8.30E-02	NC	6.70E+00	9.48E-06	ND	NC
ASB-20	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-21	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-22	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-23	ND	ND	ND	ND	ND	ND	ND	NC	8.00E+00	1.13E-05	ND	NC
ASB-24	ND	ND	ND	ND	ND	ND	ND	NC	5.50E+00	7.78E-06	ND	NC
ASB-25	1.28E-01	1.02E-08	ND	ND	ND	ND	1.45E-01	NC	6.23E+00	8.81E-06	ND	NC
ASB-26	7.20E-01	5.75E-08	2.40E-01	2.05E-06	7.70E-01	6.46E-07	1.50E+00	NC	3.60E+00	5.09E-06	ND	NC
ASB-27	2.20E-01	1.76E-08	ND	ND	2.00E-01	1.68E-07	4.60E-01	NC	4.90E+00	6.93E-06	ND	NC
ASB-28	ND	ND	ND	ND	ND	ND	ND	NC	2.70E+00	3.82E-06	ND	NC
ASB-29	NA	NA	NA	NA	NA	NA	NA	NC	3.60E+00	5.09E-06	ND	NC
ASB-30	1.20E+01	9.59E-07	2.50E+00	2.14E-05	ND	ND	5.10E-02	NC	3.20E+00	4.53E-06	ND	NC
ASB-31	ND	ND	ND	ND	ND	ND	ND	NC	6.70E+00	9.48E-06	ND	NC
ASB-32	ND	ND	ND	ND	ND	ND	ND	NC	2.80E+00	3.96E-06	ND	NC
ASB-33	ND	ND	ND	ND	ND	ND	ND	NC	5.00E+00	7.08E-06	1.00E+00	NC
ASB-34	ND	ND	ND	ND	ND	ND	ND	NC	6.10E+00	8.63E-06	ND	NC
ASB-44	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-45	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-47	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-52	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-54	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-57	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-59	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-60	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
ASB-61	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B1	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B2	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B3	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B6	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B7	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B8	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B13	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B14	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B15	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B16	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B17	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B18	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B20	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B28	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B29	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B39	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B43	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B44	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B48	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B50	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

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Pittsfield, MA

Soil Boring	Benzo(k) fluoranthene (mg/kg)	Cancer Risk	Dibenz(a,h) anthracene (mg/kg)	Cancer Risk	Indeno (1,2,3-cd)pyrene (mg/kg)	Cancer Risk	Phenanthrene (mg/kg)	Cancer Risk	Arsenic (mg/kg)	Cancer Risk	Thallium (mg/kg)	Cancer Risk
B52	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B54	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B55	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B56	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B57	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B58	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B59	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B60	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B61	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B62	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B63	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B64	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B65	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B66	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
B68	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K1	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K2	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K3	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K4	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K5	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K6	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K7	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K8	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K9	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K10	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K11	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K12	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K13	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K14	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K15	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K16	4.50E-02	3.60E-09	ND	ND	ND	ND	5.70E-02	NC	7.00E+00	9.91E-06	ND	NC
K17	1.24E-01	9.91E-09	ND	ND	ND	ND	1.30E-01	NC	1.10E+01	1.56E-05	ND	NC
K18	6.90E-02	5.51E-09	ND	ND	4.40E-02	3.69E-08	8.70E-02	NC	1.70E+01	2.41E-05	1.70E+01	NC
K19	4.40E-02	3.52E-09	ND	ND	ND	ND	4.70E-02	NC	3.00E+00	4.25E-06	ND	NC
K20	ND	ND	ND	ND	ND	ND	ND	NC	6.00E+00	8.49E-06	ND	NC
K21	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K11-7-28-SS1	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
K11-7-28-SS2	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-1	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-2	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-3	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-4	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-5	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-6	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-7	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-8	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-1

Summary of Potential Cancer Risks for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Benzo(k) fluoranthene (mg/kg)	Cancer Risk	Dibenz(a,h) anthracene (mg/kg)	Cancer Risk	Indeno (1,2,3-cd)pyrene (mg/kg)	Cancer Risk	Phenanthrene (mg/kg)	Cancer Risk	Arsenic (mg/kg)	Cancer Risk	Thallium (mg/kg)	Cancer Risk
PRE-9	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-10	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-11	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-12	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-13	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-14	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-15	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-16	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-17	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-18	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-19	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-20	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-21	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-22	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-24	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-26	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-23	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
PRE-25	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
SCH-1	ND	ND	ND	ND	ND	ND	ND	NC	6.30E+00	8.92E-06	ND	NC
SCH-2	ND	ND	ND	ND	ND	ND	ND	NC	6.10E+00	8.63E-06	ND	NC
SCH-3	6.40E-01	5.11E-08	7.80E-02	6.67E-07	2.10E-01	1.76E-07	5.90E-01	NC	5.50E+00	7.78E-06	ND	NC
SCH-4	ND	ND	ND	ND	ND	ND	ND	NC	4.10E+00	5.80E-06	ND	NC
T-1	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-2	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-3	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-4	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-5	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-6	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-7	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-8	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-9	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-10	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-11	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-12	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-13	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-14	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-15	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-16	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-17	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-18	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-19	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-21	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-22	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-23	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-20	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-24	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-1

Summary of Potential Cancer Risks for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Benzo(k) fluoranthene (mg/kg)	Cancer Risk	Dibenz(a,h) anthracene (mg/kg)	Cancer Risk	Indeno (1,2,3-cd)pyrene (mg/kg)	Cancer Risk	Phenanthrene (mg/kg)	Cancer Risk	Arsenic (mg/kg)	Cancer Risk	Thallium (mg/kg)	Cancer Risk
T-25	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-26	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-27	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-28	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-29	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
T-30	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
VA-3/1	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
VA-3/2	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
VA-7/1	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
VA-7/2	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
VA-11/1	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
VA-11/2	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
VA-15/1	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
VA-15/2	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
VA-19/1	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
VA-19/2	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
VA-23/1	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
VA-23/2	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
VA-31/1	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC
VA-31/2	NA	NA	NA	NA	NA	NA	NA	NC	NA	NA	NA	NC

* Concentrations are in mg/kg.

ND = Not detected.

NA = Not analyzed.

NTV = No toxicity value.

NC = Not classified as a carcinogen

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-2

Summary of Potential Hazard Quotients for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Total PCBs (mg/kg)	Hazard Quotient	Dieldrin (mg/kg)	Hazard Quotient	2,3,7,8-TCDD Equivalent (mg/kg)	Hazard Quotient	Benz(a) anthracene (mg/kg)	Hazard Quotient	Benzo(a) pyrene (mg/kg)	Hazard Quotient	Benzo(b) fluoranthene (mg/kg)	Hazard Quotient
AS1	9.10E-01	3.99E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS2	2.81E+00	1.23E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS3	2.14E+00	9.39E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS4	2.08E-01	9.10E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS5	5.25E-01	2.30E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS6	1.15E-01	5.05E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS7	1.13E+00	4.94E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS8	1.48E+00	6.49E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS9	3.10E-01	1.36E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS10	2.90E-01	1.27E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-1	9.80E-02	4.30E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-2	4.83E-02	2.12E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-3	9.05E-02	3.97E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-4	7.50E-02	3.29E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-5	3.58E-02	1.57E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-6	4.33E-02	1.90E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-7	4.45E-02	1.95E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-8	6.25E-02	2.74E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-9	1.40E-01	6.14E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-10	1.13E-01	4.96E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-11	3.63E-02	1.59E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-12	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-13	4.88E-02	2.14E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-14	2.00E-01	8.77E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-15	8.35E-02	3.66E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-16	7.30E-02	3.20E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-17	2.15E-01	9.43E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-18	1.27E-01	5.55E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-19	8.15E-02	3.58E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-20	3.13E-02	1.37E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-21	3.95E-02	1.73E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-22	4.45E-02	1.95E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-23	4.40E-02	1.93E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-24	3.45E-02	1.51E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-25	6.38E-02	2.80E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-26	8.05E-02	3.53E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-27	7.40E-02	3.25E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-28	4.50E-02	1.97E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-29	7.75E-02	3.40E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-30	4.08E-02	1.79E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-31	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-32	3.40E-02	1.49E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-33	3.68E-02	1.61E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-34	1.33E-01	5.83E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-35	4.25E-02	1.86E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-36	6.08E-02	2.67E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-37	7.20E-02	3.16E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-2

Summary of Potential Hazard Quotients for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Total PCBs (mg/kg)	Hazard Quotient	Dieldrin (mg/kg)	Hazard Quotient	2,3,7,8-TCDD Equivalent (mg/kg)	Hazard Quotient	Benz(a) anthracene (mg/kg)	Hazard Quotient	Benzo(a) pyrene (mg/kg)	Hazard Quotient	Benzo(b) fluoranthene (mg/kg)	Hazard Quotient
AS-96-38	1.28E-01	5.59E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-39	4.10E-02	1.80E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-40	3.66E-02	1.61E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-41	1.25E-01	5.48E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-42	6.40E-02	2.81E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-43	7.05E-02	3.09E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-44	3.20E-02	1.40E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-45	1.22E-01	5.33E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-46	7.35E-02	3.22E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-47	6.95E-02	3.05E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-48	4.48E-02	1.96E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-49	6.55E-02	2.87E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-58	7.70E-02	3.38E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-50	1.08E-01	4.73E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-51	1.05E-01	4.58E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-52	3.45E-02	1.51E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-53	7.10E-02	3.11E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-54	6.50E-02	2.85E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-55	5.05E-02	2.22E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-56	6.85E-02	3.01E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-57	7.85E-02	3.44E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-59	1.02E-01	4.47E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-60	9.05E-02	3.97E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-61	5.25E-02	2.30E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-62	1.03E-01	4.52E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-63	5.15E-01	2.26E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-68	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-69	9.60E-02	4.21E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-73	4.88E-02	2.14E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-77	8.50E-02	3.73E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-78	6.25E-02	2.74E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-82	8.85E-02	3.88E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-83	6.85E-02	3.01E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-84	2.05E-01	8.99E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-86	1.50E-01	6.58E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-87	2.24E-01	9.81E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-88	5.75E-01	2.52E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-89	3.50E-01	1.54E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-90	2.70E-01	1.18E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-91	1.90E-01	8.34E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-92	4.05E-01	1.78E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-93	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-94	2.50E-01	1.10E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-95	1.75E-01	7.68E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-96	4.40E-01	1.93E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-97	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-2

Summary of Potential Hazard Quotients for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Total PCBs (mg/kg)	Hazard Quotient	Dieldrin (mg/kg)	Hazard Quotient	2,3,7,8-TCDD Equivalent (mg/kg)	Hazard Quotient	Benz(a) anthracene (mg/kg)	Hazard Quotient	Benzo(a) pyrene (mg/kg)	Hazard Quotient	Benzo(b) fluoranthene (mg/kg)	Hazard Quotient
AS-96-98	2.20E-01	9.65E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-99	9.15E-02	4.01E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-100	5.20E-01	2.28E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-101	1.60E-01	7.02E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-102	5.40E-01	2.37E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-103	1.30E-01	5.70E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-104	5.40E-01	2.37E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-105	3.40E-01	1.49E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-106	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-107	4.05E-02	1.78E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-108	2.22E-01	9.74E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-109	1.16E-01	5.09E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-110	6.10E-01	2.68E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-111	5.80E-02	2.54E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-112	8.20E-02	3.60E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-113	7.15E-02	3.14E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-114	6.68E-02	2.93E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-115	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-116	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-117	3.65E-02	1.60E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-118	4.97E-02	2.18E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-119	4.50E-02	1.97E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-125	4.33E+00	1.90E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-127	2.74E-01	1.20E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-98-129	2.40E-01	1.05E-01	ND	ND	8.69E-06	NTV	2.10E+00	NTV	2.40E+00	NTV	2.50E+00	NTV
AS-98-130	7.80E-02	3.42E-02	ND	ND	1.46E-06	NTV	3.00E-01	NTV	2.90E-01	NTV	2.60E-01	NTV
AS-98-132	9.00E-02	3.95E-02	ND	ND	2.70E-06	NTV	9.00E-02	NTV	1.10E-01	NTV	1.00E-01	NTV
AS-98-133	8.60E-02	3.77E-02	ND	ND	9.84E-07	NTV	2.90E-01	NTV	3.30E-01	NTV	3.60E-01	NTV
ASB-1	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-2	2.46E-02	1.08E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-3	4.71E+00	2.07E+00	2.30E-01	1.17E-01	4.14E-05	NTV	ND	ND	ND	ND	ND	ND
ASB-4	1.05E-01	4.61E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-5	2.83E-02	1.24E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-6	1.84E-02	8.05E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-7	1.31E-01	5.76E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-8	2.10E-01	9.20E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-9	6.32E-01	2.77E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-10	1.25E+00	5.48E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-11	8.00E-01	3.51E-01	ND	ND	1.93E-06	NTV	ND	ND	ND	ND	ND	ND
ASB-12	4.01E+01	1.76E+01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-13	1.98E+00	8.69E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-14	8.88E-02	3.90E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-15	6.68E-02	2.93E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-16	1.24E+01	5.43E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-17	8.77E+00	3.85E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-18	5.49E+01	2.41E+01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

REVISED DRAFT - CONFIDENTIAL

APPENDIX F

Table F-2

Summary of Potential Hazard Quotients for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Total PCBs (mg/kg)	Hazard Quotient	Dieldrin (mg/kg)	Hazard Quotient	2,3,7,8-TCDD Equivalent (mg/kg)	Hazard Quotient	Benz(a) anthracene (mg/kg)	Hazard Quotient	Benzo(a) pyrene (mg/kg)	Hazard Quotient	Benzo(b) fluoranthene (mg/kg)	Hazard Quotient
ASB-19	3.16E+02	1.39E+02	6.40E+00	3.25E+00	1.17E-04	NTV	ND	ND	5.30E-02	NTV	6.50E-02	NTV
ASB-20	1.59E+00	6.98E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-21	4.03E-01	1.77E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-22	5.87E+00	2.57E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-23	1.27E-01	5.58E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ASB-24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ASB-25	7.15E-02	3.14E-02	5.13E-03	2.60E-03	1.26E-06	NTV	1.24E-01	NTV	1.23E-01	NTV	1.23E-01	NTV
ASB-26	3.58E+00	1.57E+00	ND	ND	3.87E-06	NTV	7.90E-01	NTV	9.50E-01	NTV	8.30E-01	NTV
ASB-27	8.68E+00	3.81E+00	ND	ND	2.29E-06	NTV	2.00E-01	NTV	2.70E-01	NTV	2.20E-01	NTV
ASB-28	1.32E+02	5.79E+01	ND	ND	9.04E-07	NTV	ND	ND	ND	ND	ND	ND
ASB-29	1.39E+00	6.10E-01	ND	ND	1.07E-06	NTV	NA	NA	NA	NA	NA	NA
ASB-30	1.48E+01	6.51E+00	ND	ND	7.28E-06	NTV	1.50E+01	NTV	1.60E+01	NTV	1.40E+01	NTV
ASB-31	2.28E+01	1.00E+01	ND	ND	4.61E-04	NTV	ND	ND	ND	ND	ND	ND
ASB-32	1.24E+01	5.43E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ASB-33	1.59E+01	6.97E+00	ND	ND	7.94E-07	NTV	ND	ND	ND	ND	ND	ND
ASB-34	5.15E+01	2.26E+01	ND	ND	7.43E-06	NTV	ND	ND	ND	ND	ND	ND
ASB-44	8.00E-01	3.51E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-45	1.30E+00	5.70E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-47	1.80E+00	7.90E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-52	2.56E-02	1.12E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-54	9.20E-01	4.04E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-57	3.45E-01	1.51E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-59	2.50E-01	1.10E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-60	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-61	4.30E-01	1.89E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B1	3.89E+01	1.71E+01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B2	9.72E+01	4.26E+01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B3	3.41E+00	1.49E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B6	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B7	2.97E+01	1.30E+01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B8	1.80E+01	7.90E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B13	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B14	8.47E+00	3.72E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B15	1.09E+01	4.77E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B16	4.76E+01	2.09E+01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B17	3.44E+01	1.51E+01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18	1.64E+02	7.22E+01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B20	1.12E+01	4.93E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B28	3.55E+00	1.56E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B29	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B39	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B43	5.10E-01	2.24E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B44	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B48	2.20E+00	9.65E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B50	4.42E-01	1.94E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B52	7.75E-01	3.40E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-2

Summary of Potential Hazard Quotients for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Total PCBs (mg/kg)	Hazard Quotient	Dieldrin (mg/kg)	Hazard Quotient	2,3,7,8-TCDD Equivalent (mg/kg)	Hazard Quotient	Benz(a) anthracene (mg/kg)	Hazard Quotient	Benzo(a) pyrene (mg/kg)	Hazard Quotient	Benzo(b) fluoranthene (mg/kg)	Hazard Quotient
B54	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B55	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B56	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B57	6.40E+00	2.81E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B58	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B59	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B60	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B61	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B62	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B63	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B64	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B65	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B66	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B68	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K1	9.20E-01	4.04E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K2	9.25E+01	4.06E+01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K3	2.13E+00	9.32E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K4	6.24E+00	2.74E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K5	4.73E+00	2.07E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K6	1.13E+01	4.96E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K7	1.30E+00	5.69E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K8	1.25E+01	5.46E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K9	3.03E+00	1.33E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K10	1.42E+00	6.24E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K11	5.48E-01	2.40E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K12	4.18E-01	1.83E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K13	2.10E-01	9.21E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K14	4.88E-01	2.14E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K15	2.55E-01	1.12E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K16	ND	ND	ND	ND	ND	ND	ND	ND	4.60E-02	NTV	5.10E-02	NTV
K17	4.00E+00	1.75E+00	ND	ND	NA	NA	1.14E-01	NTV	1.21E-01	NTV	1.30E-01	NTV
K18	9.80E-01	4.30E-01	ND	ND	ND	ND	5.00E-02	NTV	6.50E-02	NTV	8.20E-02	NTV
K19	4.50E+00	1.97E+00	ND	ND	ND	ND	ND	ND	ND	ND	4.60E-02	NTV
K20	1.70E+00	7.46E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
K21	2.12E+01	9.30E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K11-7-28-SS1	1.40E-01	6.14E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K11-7-28-SS2	3.50E-01	1.54E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-1	7.35E-02	3.22E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-2	1.02E-01	4.45E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-3	4.50E-02	1.97E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-4	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-5	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-6	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-7	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-8	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-9	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-2

Summary of Potential Hazard Quotients for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Total PCBs (mg/kg)	Hazard Quotient	Dieldrin (mg/kg)	Hazard Quotient	2,3,7,8-TCDD Equivalent (mg/kg)	Hazard Quotient	Benz(a) anthracene (mg/kg)	Hazard Quotient	Benzo(a) pyrene (mg/kg)	Hazard Quotient	Benzo(b) fluoranthene (mg/kg)	Hazard Quotient
PRE-10	2.82E-02	1.24E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-11	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-12	2.59E-02	1.14E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-13	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-14	2.68E-02	1.18E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-15	2.53E-02	1.11E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-16	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-17	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-18	4.35E-02	1.91E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-19	2.62E-02	1.15E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-20	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-21	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-22	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-24	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-26	9.00E-02	3.95E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-23	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-25	2.58E-01	1.13E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SCH-1	3.91E-02	1.71E-02	ND	ND	7.56E-07	NTV	ND	ND	ND	ND	ND	ND
SCH-2	1.76E-01	7.73E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SCH-3	4.83E-02	2.12E-02	ND	ND	9.39E-07	NTV	4.90E-01	NTV	6.40E-01	NTV	5.90E-01	NTV
SCH-4	7.75E-02	3.40E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T-1	9.88E-03	4.33E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-2	1.85E-02	8.12E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-3	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-4	1.33E-02	5.84E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-5	7.63E-03	3.35E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-6	1.24E-02	5.43E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-7	2.79E-02	1.22E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-8	1.78E-02	7.79E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-9	3.30E-02	1.45E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-10	3.13E-02	1.37E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-11	2.84E-02	1.24E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-12	9.13E-03	4.00E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-13	1.03E-02	4.52E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-14	7.73E-03	3.39E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-15	2.33E-02	1.02E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-16	2.85E-02	1.25E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-17	7.75E-03	3.40E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-18	1.00E-02	4.39E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-19	1.68E-02	7.35E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-21	9.88E-03	4.33E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-22	3.05E-02	1.34E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-23	9.38E-03	4.11E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-20	7.13E-03	3.13E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-24	7.19E-03	3.15E-03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-25	2.55E-02	1.12E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-2

Summary of Potential Hazard Quotients for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Total PCBs (mg/kg)	Hazard Quotient	Dieldrin (mg/kg)	Hazard Quotient	2,3,7,8-TCDD Equivalent (mg/kg)	Hazard Quotient	Benz(a) anthracene (mg/kg)	Hazard Quotient	Benzo(a) pyrene (mg/kg)	Hazard Quotient	Benzo(b) fluoranthene (mg/kg)	Hazard Quotient
T-26	2.95E-01	1.29E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-27	1.77E-01	7.74E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-28	1.31E-01	5.76E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-29	3.29E-01	1.44E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-30	4.73E-01	2.08E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-3/1	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-3/2	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-7/1	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-7/2	6.00E-02	2.63E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-11/1	5.00E-02	2.19E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-11/2	1.10E-01	4.83E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-15/1	1.00E-01	4.39E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-15/2	8.00E-02	3.51E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-19/1	1.00E-01	4.39E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-19/2	1.20E-01	5.26E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-23/1	1.90E-01	8.34E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-23/2	2.00E-01	8.77E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-31/1	5.00E-02	2.19E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-31/2	9.00E-02	3.95E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

* Concentrations are in mg/kg

ND = Not detected

NA = Not analyzed

NTV = No toxicity value.

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-2

Summary of Potential Hazard Quotients for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Benzo(k) fluoranthene (mg/kg)	Hazard Quotient	Dibenz(a,h) anthracene (mg/kg)	Hazard Quotient	Indeno (1,2,3-cd)pyrene (mg/kg)	Hazard Quotient	Phenanthrene (mg/kg)	Hazard Quotient	Arsenic (mg/kg)	Hazard Quotient	Thallium (mg/kg)	Hazard Quotient
AS1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-32	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-33	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-37	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-2

Summary of Potential Hazard Quotients for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Benzo(k) fluoranthene (mg/kg)	Hazard Quotient	Dibenz(a,h) anthracene (mg/kg)	Hazard Quotient	Indeno (1,2,3-cd)pyrene (mg/kg)	Hazard Quotient	Phenanthrene (mg/kg)	Hazard Quotient	Arsenic (mg/kg)	Hazard Quotient	Thallium (mg/kg)	Hazard Quotient
AS-96-38	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-39	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-43	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-58	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-51	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-52	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-53	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-54	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-56	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-57	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-60	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-62	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-63	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-68	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-69	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-77	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-78	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-82	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-83	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-84	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-90	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-91	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-93	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-95	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-96	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-97	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-2

Summary of Potential Hazard Quotients for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Benzo(k) fluoranthene (mg/kg)	Hazard Quotient	Dibenz(a,h) anthracene (mg/kg)	Hazard Quotient	Indeno (1,2,3-cd)pyrene (mg/kg)	Hazard Quotient	Phenanthrene (mg/kg)	Hazard Quotient	Arsenic (mg/kg)	Hazard Quotient	Thallium (mg/kg)	Hazard Quotient
AS-96-98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-101	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-102	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-103	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-104	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-105	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-106	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-107	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-108	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-109	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-111	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-112	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-113	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-96-114	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-115	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-116	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-117	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-118	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-119	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-125	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-97-127	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
AS-98-129	1.80E+00	NTV	5.00E-01	NTV	1.30E+00	NTV	2.60E+00	2.25E-03	9.70E+00	2.17E-01	ND	ND
AS-98-130	2.60E-01	NTV	ND	ND	2.00E-01	NTV	4.40E-01	3.81E-04	5.90E+00	1.32E-01	ND	ND
AS-98-132	9.00E-02	NTV	ND	ND	ND	ND	9.00E-02	7.79E-05	5.90E+00	1.32E-01	ND	ND
AS-98-133	3.00E-01	NTV	ND	ND	1.30E-01	NTV	2.50E-01	2.16E-04	5.60E+00	1.26E-01	ND	ND
ASB-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-3	ND	ND	ND	ND	3.80E+00	NTV	1.20E+01	1.04E-02	5.30E+00	1.19E-01	ND	ND
ASB-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-11	ND	ND	ND	ND	ND	ND	ND	ND	3.40E+00	7.62E-02	1.00E+00	7.23E-02
ASB-12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-2

Summary of Potential Hazard Quotients for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Benzo(k) fluoranthene (mg/kg)	Hazard Quotient	Dibenz(a,h) anthracene (mg/kg)	Hazard Quotient	Indeno (1,2,3-cd)pyrene (mg/kg)	Hazard Quotient	Phenanthrene (mg/kg)	Hazard Quotient	Arsenic (mg/kg)	Hazard Quotient	Thallium (mg/kg)	Hazard Quotient
ASB-19	7.20E-02	NTV	ND	ND	ND	ND	8.30E-02	7.18E-05	6.70E+00	1.50E-01	ND	ND
ASB-20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-23	ND	ND	ND	ND	ND	ND	ND	ND	8.00E+00	1.79E-01	ND	ND
ASB-24	ND	ND	ND	ND	ND	ND	ND	ND	5.50E+00	1.23E-01	ND	ND
ASB-25	1.28E-01	NTV	ND	ND	ND	ND	1.45E-01	1.26E-04	6.23E+00	1.40E-01	ND	ND
ASB-26	7.20E-01	NTV	2.40E-01	NTV	7.70E-01	NTV	1.50E+00	1.30E-03	3.60E+00	8.07E-02	ND	ND
ASB-27	2.20E-01	NTV	ND	ND	2.00E-01	NTV	4.60E-01	3.98E-04	4.90E+00	1.10E-01	ND	ND
ASB-28	ND	ND	ND	ND	ND	ND	ND	ND	2.70E+00	6.05E-02	ND	ND
ASB-29	NA	NA	NA	NA	NA	NA	NA	NA	3.60E+00	8.07E-02	ND	ND
ASB-30	1.20E+01	NTV	2.50E+00	NTV	ND	ND	5.10E-02	4.41E-05	3.20E+00	7.17E-02	ND	ND
ASB-31	ND	ND	ND	ND	ND	ND	ND	ND	6.70E+00	1.50E-01	ND	ND
ASB-32	ND	ND	ND	ND	ND	ND	ND	ND	2.80E+00	6.28E-02	ND	ND
ASB-33	ND	ND	ND	ND	ND	ND	ND	ND	5.00E+00	1.12E-01	1.00E+00	7.23E-02
ASB-34	ND	ND	ND	ND	ND	ND	ND	ND	6.10E+00	1.37E-01	ND	ND
ASB-44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-52	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-54	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-57	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-60	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ASB-61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B39	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B43	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B52	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-2

Summary of Potential Hazard Quotients for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Benzo(k) fluoranthene (mg/kg)	Hazard Quotient	Dibenz(a,h) anthracene (mg/kg)	Hazard Quotient	Indeno (1,2,3-cd)pyrene (mg/kg)	Hazard Quotient	Phenanthrene (mg/kg)	Hazard Quotient	Arsenic (mg/kg)	Hazard Quotient	Thallium (mg/kg)	Hazard Quotient
B54	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B55	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B56	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B57	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B58	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B60	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B62	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B63	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B64	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B65	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B66	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B68	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K16	4.50E-02	NTV	ND	ND	ND	ND	5.70E-02	4.93E-05	7.00E+00	1.57E-01	ND	ND
K17	1.24E-01	NTV	ND	ND	ND	ND	1.30E-01	1.12E-04	1.10E+01	2.47E-01	ND	ND
K18	6.90E-02	NTV	ND	ND	4.40E-02	NTV	8.70E-02	7.53E-05	1.70E+01	3.81E-01	1.70E+01	1.23E+00
K19	4.40E-02	NTV	ND	ND	ND	ND	4.70E-02	4.07E-05	3.00E+00	6.73E-02	ND	ND
K20	ND	ND	ND	ND	ND	ND	ND	ND	6.00E+00	1.35E-01	ND	ND
K21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K11-7-28-SS1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
K11-7-28-SS2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

REVISED DRAFT - CONFIDENTIAL
APPENDIX F

Table F-2

Summary of Potential Hazard Quotients for Averaged Soil Borings (0-10')
Allendale School
Pittsfield, MA

Soil Boring	Benzo(k) fluoranthene (mg/kg)	Hazard Quotient	Dibenz(a,h) anthracene (mg/kg)	Hazard Quotient	Indeno (1,2,3-cd)pyrene (mg/kg)	Hazard Quotient	Phenanthrene (mg/kg)	Hazard Quotient	Arsenic (mg/kg)	Hazard Quotient	Thallium (mg/kg)	Hazard Quotient
PRE-10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PRE-25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SCH-1	ND	ND	ND	ND	ND	ND	ND	ND	6.30E+00	1.41E-01	ND	ND
SCH-2	ND	ND	ND	ND	ND	ND	ND	ND	6.10E+00	1.37E-01	ND	ND
SCH-3	6.40E-01	NTV	7.80E-02	NTV	2.10E-01	NTV	5.90E-01	5.11E-04	5.50E+00	1.23E-01	ND	ND
SCH-4	ND	ND	ND	ND	ND	ND	ND	ND	4.10E+00	9.19E-02	ND	ND
T-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Soil Boring	Benzo(k) fluoranthene (mg/kg)	Hazard Quotient	Dibenz(a,h) anthracene (mg/kg)	Hazard Quotient	Indeno (1,2,3-cd)pyrene (mg/kg)	Hazard Quotient	Phenanthrene (mg/kg)	Hazard Quotient	Arsenic (mg/kg)	Hazard Quotient	Thallium (mg/kg)	Hazard Quotient
T-26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
T-30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-3/1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-3/2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-7/1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-7/2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-11/1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-11/2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-15/1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-15/2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-19/1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-19/2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-23/1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-23/2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-31/1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VA-31/2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

* Concentrations are in mg/kg.

ND = Not detected.

NA = Not analyzed.

NTV = No toxicity value.