2/24/98-00447

Work In Progress
Ecological Risk Assessments
Landfill B (Site 2), Burning Grounds (Site 5), Landfill C (Site 3), and Landfill D (Site 4)

St. Juliens Creek Annex

Chesapeake, Virginia

Contract Task Orders 027 and 028

February 24, 1998

Work-in-Progress for the St. Juliens Creek Annex Sites Ecological Risk Assessments

Historical Background of Facility

The St. Juliens Creek Annex Facility is situated at the confluence of St. Juliens Creek and the Elizabeth River in the city of Chesapeake, located in southeastern Virginia (Figure 1-1). The facility covers approximately 490 acres and includes 221 buildings, 653 feet of wharf, a central heating plant, numerous non-operational industrial facilities, and miscellaneous structures including a housing area. A Virginia Power Company power line runs diagonally across the facility in a northwest-southeast trending direction, splitting the area roughly in half. Structures northwest of the power line are light industrial and manufacturing, administrative, and housing facilities; the search radar test range for the Norfolk Naval Shipyard is also located in this area. The facility is bordered to the north by the Norfolk and Western Railroad, the City of Portsmouth, and residential areas, to the west by residential areas, to the south by St. Juliens Creek, and to the East by the south branch of the Elizabeth River. According to the U.S. Geological Survey (USGS) Norfolk South Quadrangle topographic map, in 1982 a large industrial waste pond was located adjacent to the property boundary in the Northeast portion of the Annex. Most of the surrounding areas are developed, and include residences, schools, recreational areas, and shipping facilities for several large industries. The Norfolk Naval Shipyard is located approximately three miles north. Some undeveloped areas are located in various areas surrounding the facility.

The St. Juliens Creek Annex Facility began operations in 1849 as a U.S. Naval facility. Processes and operations at the St. Juliens Creek Annex facility have included general ordinance operations involving loading, assembling, issuing, and receiving ammunitions. The facility also served as the principal experimental and test loading facility for new ammunition types for the Bureau of Ordnance.

The St. Juliens Creek Annex facility has also been involved in non-ordnance operations, including degreasing operations, paint shops, machine shops, vehicle and locomotive maintenance shops, pest control shops, battery shops, print shops, electrical shops, boiler plant operations, washrack operations, potable and salt water fire protection systems, and fire training operations. Many of these operations have been discontinued, such as locomotive maintenance, printing, and pest control.

Currently, the St. Juliens Creek Annex provides administrative offices, light industrial shops and storage facilities for tenant naval commands, and a radar testing range for the nearby Norfolk Naval Shipyard and other local Navy activities.

Physical Setting of Facility

The St. Juliens Creek Annex facility is a low-lying wedge of land between the Southern Branch of the Elizabeth River and St. Juliens Creek. Elevations range from sea level along the banks of the two bordering waterways, and along Blows creek located in the northern part of the facility, to 15 feet above man sea level (msl) northeast of Blows Creek. A northwest-southeast trending ridge generally bisects the area, dividing the St. Juliens Creek drainage basin to the southwest and the Blows Creek drainage basin to the northeast.

Blows Creek and St. Juliens Creek receive the majority of surface water runoff from the Annex. Both creeks flow east to empty into the Southern Branch of the Elizabeth River. The remaining runoff from the Annex flows directly into the Southern Branch of the Elizabeth River, or is diverted into storm drains that empty either into the Elizabeth River or St. Juliens Creek. The Southern Branch of the Elizabeth River flows through a highly industrialized area which includes oil storage and cresol facilities, and fertilizer plants. The river, which is part of the intracoastal waterway, is used by many recreational boaters during the summer and by larger commercial and naval craft throughout the year. The Southern Branch of the Elizabeth River flows north to discharge into the James River, which flows into the Chesapeake Bay.

Adjacent to the St. Juliens Creek sites, Blows and St. Juliens Creeks are tidal and are considered to possess estuarine water regimes. The salinity of the southern branch of the Elizabeth River at St. Juliens Creek is approximately 17 parts per thousand (Hartland, 1997). However, the salinity within the each of the Creeks is expected to be somewhat less than that.

The Virginia Department of Environmental Quality has designated the watercourses in the area as IIB. Class IIB waters may be used for bathing and fishing, but taking shellfish is prohibited. A water classification of IIB indicates that the fecal coliform bacteria count should not exceed the geometric mean of 200 colonies per 100 milliliters; tidal water should have a dissolved oxygen content of at least 4.0 milligrams per liter (mg/l); and have a pH range of 6.0 to 8.5.

Site Briefs

Site 2 (Landfill B) is an inactive unlined landfill in the southwestern section of the facility covering. The approximately 1.3 acre site is bounded to the north by a drainage ditch and to the east by Building 130. The drainage ditch intermittently contains water and empties to the emergent wetland in the eastern portion of the landfill. The deepest water of this wetland area appears to be 2-3 feet deep. The relatively open water of this wetland is tidal and contains small fish. The surface water appears to drain to the south, into the tidal St. Juliens Creek. Grass covers some of the landfill; areas of heavy brush are located in the southwestern part of the site. Refer to Figure 2-1 for Site 2 (Landfill B) for a view of existing site conditions.

Site 3 (Landfill C) is a relatively flat area in the northeastern corner of the St. Juliens Creek Annex property and covers approximately 10 acres. The area was originally a mudflat where refuse was dumped and allowed to burn; the ash was then used to fill in the area. The landfill is currently an open field of grass that is mowed regularly. Rainwater tends to accumulate in large puddles in a few locations at this site. Grass-lined drainage channels also exist on either side of the paved roads which border/traverse the site. An active communication/radar facility is located within the northeastern portion of the landfill. Site 4 is located approximately 600 feet south of this site and surface drainage from Site 3 appears to drain toward it. Refer to Figure 2-1 for Site 3 (Landfill C) for a view of existing site conditions.

Site 4 (Landfill D) covers an estimated 5 acres and is approximately 600 feet south (downgradient) of Site 3. While in operation, the site was an unlined trench and fill landfill. The northeast portion of the landfill contains low grass and sandy areas that lack vegetation. Trees and shrubs border the northern edge of the landfill and extend into a forested area at the western edge of Site 4. Metal and concrete debris piles are scattered throughout the site. Common reed dominate the southern

portion of the site. A subtidal estuarine emergent marsh associated with Blows Creek is located immediately to the south (downgradient) of the Site. Refer to Figure 2-2 for Site 4 (Landfill D) for a view of existing site conditions.

Site 5 (the Burning grounds) is located in the northern part of the facility. It encompasses an approximately 2-acre area. The Burning grounds site is a relatively flat area that is primarily open field and scattered zones of trees and shrubs. The surface topography is relatively flat, but appears to have a slight southeastern downhill trend. As a result, surface drainage appears to be in the direction of Blows Creek.. Refer to Figure 2-2 for Site 5 (Burning grounds) for a view of existing site conditions.

Selection of COPCs

Chemicals of potential concern (COPCs) were determined for each site with the following process:

1. The maximum detected chemical concentrations were noted for soil, sediment, and surface water for each site

    - Chemicals that were not detected substantially above the level reported in the field or laboratory blank were removed from consideration as COPCs (following the approach described in the U. S. Environmental Agency's 1989 document, Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual);

    - When a sample had a duplicate associated with it, the higher the detected value for the chemical was used;

2. Maximum detected concentrations were compared to Region III BTAG Screening Levels (August 9, 1995 Revision). A contaminant was considered a COPC when the ratio of maximum contaminant concentrations to BTAG values was one or greater, or when no BTAG value existed for the contaminant (with the exception of those inorganic ions which naturally occur in high concentrations – calcium, potassium, magnesium, and sodium).

    - The lowest (most conservative) BTAG value applicable to each media was used for this comparison. For example, for soils, this value could have been the BTAG value for soil fauna or the BTAG value for soil flora.

Tables follow that provide a summary of the COPCs for each site and each medium. Figures (the C-series) are also provided for each site that depict individual sample results along with hazard quotients obtained using BTAG screening values.

Endpoints

Assessment Endpoints

Assessment endpoints were selected to evaluate the risk of contaminants associated with Sites 2, 3, 4 and 5. These included:

1. (Site 2 only.) Protection of benthic invertebrate communities from the toxic effects of contaminants in sediments and surface water to maintain species diversity, biomass, and

nutrient cycling (trophic structure), to provide a food source for higher level consumers, and to ensure that contaminant levels in benthic invertebrate tissues are low enough to minimize the risk of bioaccumulation and/or other negative toxic effects in higher trophic levels.

2. (Site 2 only.) Protection of fish communities from toxic effects of contaminants in sediments and surface water to maintain species diversity. Also, to ensure that ingestion of contaminants in fish and invertebrates does not have a negative effect on growth, survival, and reproduction. Additionally, to ensure that contaminant levels accumulated in fish tissues are low enough to minimize risk of accumulation and negative effects in higher trophic levels.

3. (All sites.) Protection of soil invertebrate communities to maintain species diversity and nutrient cycling (trophic structure), to provide a food source for higher level consumers, and to ensure that contaminant levels in soil invertebrate tissues are low enough to minimize the risk of bioaccumulation and/or other negative toxic effects in higher trophic levels.

4. (Site 2 only.) Protection of piscivorous birds to ensure that ingestion of contaminants in sediments and food organisms does not have negative effects on growth, survival, and reproduction.

5. (All sites.) Protection of worm-eating birds to ensure that ingestion of contaminants in earthworms and soils does not have negative effects on growth, survival, and reproduction.

6. (All sites.) Protection of carnivorous birds to ensure that ingestion of contaminants in prey and soils does not have negative effects on growth, survival, and reproduction.

7. (All sites.) Protection of carnivorous mammals to ensure that ingestion of contaminants in prey and soils does not have negative effects on growth, survival, and reproduction.

8. (All sites.) Protection of mammals that feed on soil invertebrates to ensure that ingestion of contaminants in prey and soils does not have negative effects on growth, survival, and reproduction.

9. (All sites.) Protection of omnivorous mammals to ensure that ingestion of contaminants in prey, forage, and soils does not have negative effects on growth, survival, and reproduction; to provide a food source for higher level consumers; and to ensure that those contaminant levels in tissues are low enough to minimize risk of bioaccumulation and/or other negative effects in higher trophic levels.

10. (Site 2 only.) Protection of amphibians and reptiles from contaminants in surface water, sediment, soils, and vegetation to maintain species diversity to provide a food source for higher level consumers, and to ensure that contaminant levels in amphibians and reptiles are low enough to minimize risk of bioaccumulation and/or other negative effects in higher trophic levels.

11. (Sites 2 and 4.) Protection of plant-eating, semi-aquatic mammals to ensure that ingestion of contaminants in vegetation and sediment does not have negative effects on growth, survival, and reproduction.

Hypothesis Formulation

The determination of potential threats to receptor species is based on the following hypothesis formulation:

Are the levels of contaminants in sediment sufficient to cause adverse alterations to the structure and/or function of the benthic community, at the population or community level?

Are levels of site contaminants in surface water and sediment sufficient to cause adverse effects on the fish community at Site 2?

Are the levels of site contaminants in surface water, sediment, and soil sufficient to cause adverse effects on the long-term health and reproductive capacity of avian species that utilize Sites 2, 3, 4 and 5?

Are the levels of contaminants in surface water, sediment, and soil sufficient to cause adverse effects on the long-term health and reproductive capacity of mammal species that utilize Sites 2, 3, 4 and 5?

Are the levels of site contaminants in the surface water and sediments sufficient to cause adverse effects on the long-term health and reproductive capacity of amphibian and reptilian species using Site 2?

Measurement Endpoints

Measurement endpoints are used to evaluate the assessment endpoint, and therefore must correspond to, or be predictive of assessment endpoints. The measurement endpoints selected to address media contamination at Sites 2, 3, 4 and 5 include the following:

- For the assessment endpoint that deals with ecological health of the benthic community, specifically in terms of the structure and function, the corresponding measurement endpoint = what? LOEL or NOEL was compared to maximum and average contaminant concentrations determined in sediments and surface water (Site 2 only).

- For the assessment endpoint that addresses the health of fish resources that utilize the site, the measurement endpoint considered that fish could be affected by contaminants through short-term toxicity to larvae and juveniles and long-term exposure to organisms ultimately affecting reproduction. For purposes of this ecological risk assessment, the mummichog was selected as the measurement endpoint receptor species. It is highly unlikely that largemouth bass would occur in the brackish water at Site 2, however, the largemouth bass is used as a surrogate species to represent the aquatic predator because of its available exposure factors. Levels of contamination exposure to bass were compared to levels documented to cause adverse effects in fish.

- For the assessment endpoint that addresses the long-term health and reproductive capacity of avian species that utilize the site, food chain accumulation was used to evaluate the risk to avian species that utilize the site for feeding. Measurement endpoint receptor species include the American robin and American woodcock for primarily terrestrial species; the great blue heron as a fish-feeding species (Site 2 only), and the red-tail hawk as a carnivorous bird. These species have appropriate forage organisms on the sites and the dietary exposure of receptors to contaminants was quantified and compared to existing toxicity data for these, and other related species.

- For the assessment endpoint that addresses the long term health and reproductive capacity of mammal species that utilize the sites, this risk evaluation incorporated food chain accumulation estimates. Measurement endpoint receptor species include the deer mouse as an omnivorous mammal, the red fox as a carnivorous mammal, and short-tailed shrew as the mammal that feeds on soil invertebrates. Forage species were identified and the exposure to contaminants via dietary activity was qualified.

- For the assessment endpoint that addresses the long term health and reproductive capacity of amphibian and reptile species, this risk evaluation incorporated food chain accumulation estimates. The bullfrog was selected as the measurement endpoint receptor species for Site 2. It serves as a prey item for higher trophic level species such as the great blue heron.

Several trophic levels were evaluated. Receptor organisms were identified that would likely be exposed to contaminants due to specific behavior, extent of habitat use, or feeding habitats, as well as on the availability of appropriate toxicity data for use in risk calculations. The aquatic receptor species (Site 2 only) included the bullfrog, great blue heron, the largemouth bass and aquatic invertebrates. The terrestrial receptor species include the deer mouse, American robin, American woodcock, short-tailed shrew, red-tailed hawk, red fox, raccoon and earthworm. The semi-aquatic receptor species (for Sites 2 and 4) include the muskrat.

Exposure Pathway Model

Benthic macroinvertebrates and soil invertebrates may be exposed to contaminants in sediment and soil, respectively, through direct toxicity. Likewise, organisms such as fish and great blue heron may be exposed directly to contaminants in the surface water at the site. Aquatic receptors also may be exposed by feeding on organisms in which COPCs may have accumulated. Terrestrial species also may feed on organisms which have accumulated COPCs in their tissues. The higher trophic level organisms also may become exposed through the incidental ingestion of soil, sediment, or water. The following pathways were evaluated in this risk assessment:

- Aquatic invertebrates—comparison to surface water quality and sediment quality guidelines
- Soil invertebrates—comparison to Region III BTAG soil fauna screening values
- Deer mouse—ingestion of terrestrial invertebrates, vegetation and soil
- Robin—ingestion of soil invertebrates, water and soil
- Short-tailed shrew—ingestion of soil invertebrates, soil and water
- Great blue heron—ingestion of fish, sediment and water
- Red-tailed hawk—ingestion of fish, soil and water
- Fish—ingestion of benthic invertebrates, sediment and water
- Woodcock—ingestion of earthworms, soil and water
- Red fox—ingestion of small mammals, soil and water
- Raccoon—ingestion of vegetation, invertebrates, soil, sediment and water
- Muskrat—ingestion of vegetation, sediment and water

Receptors

Endangered, Threatened, or Special Concern Species

The status of threatened, endangered, or special concern flora and fauna at and within the vicinity

of the Forest Glen site was investigated by consulting the Virginia Departments of Agriculture, Conservation and Recreation, and Game and Inland Fisheries. These agencies stated that no reports of Federal or State-listed or proposed endangered or threatened species on or in the vicinity of the sites existed in their files. Also, no designated critical habitat was located on or in the vicinity of the sites.

Receptor Species Selection

Selection of site receptors as a subset of all potential ecological receptors at the site, is an important part of the assessment. Since it is not feasible to evaluate every species which may be impacted, the selection of indicator species is an accepted step to focus the ecological assessment and allow for characterization of site risk. Receptor selection was guided by the results of the site habitat characterization and resident species information.

A table is provided that summarizes the life history information for the receptor species used in the exposure model (discussed above).

Toxicity Benchmark Data

No Observed Adverse Effect Levels (NOAELs) and Lowest Observed Effect Levels (LOAELs) were determined from literature values of chronic ingestion ecotoxicity for COPCs for receptor species (or closely-related species). Where no chronic toxicity data were available, the median lethal dose LD_{50} was used. The LD_{50} was converted to a LOAEL by applying factor of 100. A factor of 10 was applied to the LOAEL for conversion to the NOAEL.

Summary of Life History Information for Receptor Species
St. Juliens Creek Annex Facility
Chesapeake, VA

Common Name	Scientific Name	Weight (KG)	Food Ingestion Rate (kg/day)	Water Ingestion Rate (L/day)	Soil/Sediment Ingestion Rate (kg/day)	Diet (%)	Home Range*
Short-tailed shrew	Blarina brevicauda	0.015[1]	0.0093[1]	0.003345[1]	0.009672[2]	100% soil invertebrates	0.39 ha[1]
American robin	Turdus migratorius	0.0773[1]	0.1175[1]	0.0108[1]	0.03525[2]	100% soil invertebrates	0.11 - 0.42 ha[1]
Red-tailed Hawk	Buteo jamaicensis	0.957[1]	0.109[3]	0.064[3]	0.0028[4]	100% small mammals	60 - 1770 ha[1]
American Woodcock	Scolopax minor	0.134[1]	0.15[3]	0.02[3]	0.0075[2]	100% earthworms	0.3 - 171.2ha[1]
Red Fox	Vulpes vulpes	3.9[1]	0.45[3]	0.38[3]	0.0165074[3]	100% small mammals	96 - 1967 ha[1]
Deer Mouse	Peromyscus leucopus	0.0148[1]	0.00666[1]	0.002812[1]	0.0007[3]	60% invertebrates, 40% vegetation	0.014 - 0.128 ha[1]
Raccoon	Procyon lotor	3.67[1]	0.8[5]	0.3[1]	0.04[6]	50% invertebrates, 50% vegetation	39 - 2560 ha[1]
Muskrat	Ondatra zibethicus	0.837[1]	0.285[1]	0.82026[1]	0.0285[7]	100% vegetation	0.048 - 0.17 ha[1]
Great blue heron	Ardea herodias	2.229[1]	0.42[3]	0.1058[3]	0.054[2]	100% fish	0.6 - 8.4 ha[1]
Bullfrog	Rana catesbeiana	0.1428[1]	0.101388[1]	NA	0.0005982[8]	100% invertebrates	2.7 m (radius)[1]
Largemouth bass	Micropterus salmoides	1.1[9]	0.133[10]	NA	NA	50% benthic invertebrates, 50% fish	NA

model did not use

explain why, say Heron 100% fish but document says bull frog may not make any difference

NA - not available
* Not used in exposure model calculations. An area use factor of one was assumed.

1. USEPA, 1993
2. Beyer, 1994
3. USDOE, 1996
4. USEPA, 1993; BTAG life history fact sheet
5. USEPA, 1993; calculated using the equation for placental mammals and the assumption that dry weight makes up 1/4 the total weight of foodstuffs
6. Estimated values for soil and sediment ingestion; each estimated at 5% of the ingestion rate
7. Estimated value for sediment ingestion; estimated at 10% of the ingestion rate
8. Kirkwood, 1980
9. Pflieger, 1975
10. NRC, 1993

References

Baker Corp. 1997 (Work in Progress). Summary of Screening-Level Ecological Risk Assessment, Site 12- Chemical Burn Area, Naval Surface Warfare Center, Dahlgren, Virginia.

Beyer, W.N., E.E. Connor, and S. Gerould. 1994. "Estimates of Soil Ingestion by Wildlife." J. Wildl. Manage. 58(2): 375-382.

Charters, D.W., N.J. Finley, and M. Huston. 1996. Draft Report, Preliminary Ecological Risk Assessment, Avtex Fibers Site, Front Royal, Virginia. U.S. Environmental Protection Agency, Environmental Response Team Center, Office of Emergency and Remedial Response.

CH2MHILL. 1997. Draft Ecological Risk Assessment of the NM Slag Pile (Site 2), Naval Base, Norfolk, Norfolk, VA. CH2MHILL; Herndon, VA. Prepared for Department of the Navy. September 1997.

Clement International Corporation (CIC). 1990 Toxicological Profile for Silver. U.S. Public Health Service; Atlanta, GA. Prepared for the Agency for Toxic Substances and Disease Registry. TP-90-24. December.

Harlan, W. 1997. Personal communication. Virginia Department of Environmental Quality, Tidewater Regional Office, Virginia Beach, VA. December 10, 1997.

Kirkwood, J.K. 1980. "Maintenance Energy Requirements and Rate of Weight Loss During Starvation in Birds of Prey." Recent Advances in the Study of Raptor Diseases, Proceedings of the International Symposium on Diseases of Birds of Prey. J.E. Cooper and A.G. Greenwood (eds.). London.

Lewis, R. J., Sr. 1992. Sax's Dangerous Properties of Industrial Materials. Eighth Edition. Van Nostrand Reinhold, New York.

Long, E.R., D.D. MacDonald, S.L. Smith, and F.D. Calder. 1995. Incidence of Adverse Biological Effects within Ranges of Chemical Concentrations in Marine and Estuarine Sediments. Environmental Management 19: 81-97.

Martin, B.J. 1980. Effects of Petroleum Compounds on Estuarine Fishes. U.S. Environmental Protection Agency. Office of Research and Development. Environmental Research Laboratory. Gulf Breeze, FL. EPA-600/3-80-019.

Matida, Y., H. Kumada, S. Kimura, Y. Saiga, T. Nose, M. Yokote, and H. Kawatsu. 1988. "Toxicity of Mercury Compounds to Aquatic Organisms and Accumulation of the Compounds by the Organisms." Bull. Fresh. Fish. Res. Lab., 21(2): 197-227.

National Research Council (NRC). 1993. "Nutrient Requirements of Fish." NRC, Committee on Animal Nutrition, Board of Agriculture. National Academy Press, Washington, D.C.

Pflieger, W.L. 1975. The Fishes of Missouri. Missouri Dept. Conservation.

Research Triangle Institute (RTI). 1995. Draft Toxicological Profile for Polychlorinated Biphenyls. Agency for Toxic Substances and Disease Registry; Atlanta, GA. Prepared for U.S. Department of Health and Human Services, Public Health Service.

Trust, K.A., A. Fairbrother, and M.J. Hooper. 1993. "Effects of 7,12-Dimethylbenz(a)anthracene on Immune Function and Mixed-Function Oxygenase Activity in the European Starling." Environmental Toxicology and Chemistry 13: 821-830.

U.S. Environmental Protection Agency (USEPA). 1986. Quality Criteria for Water, 1986. Office of Water Regulations and Standards. EPA 440/5-86-001. May 1, 1986, with Updates.

U.S. Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual. Office of Emergency and Remedial Response, U.S. Environmental Protection Agency; Washington, D.C.

U.S. Environmental Protection Agency (USEPA). 1993. Wildlife Exposure Factors Handbook, Volume I of II. USEPA, Office of Health and Environmental Assessment, Office of Research and Development; Washington, D.C. EPA/600/R-93/187a. December 1993.

U. S. Environmental Protection Agency (USEPA). 1995a. Health Effects Summary Tables. Office of Research and Development, Office of Emergency and Remedial Response; Washington, D.C. EPA 540/R-95-036. May 1995.

U.S. Environmental Protection Agency (USEPA). 1995b. Revised Region III BTAG Benchmark Values. U.S. EPA Region III BTAG. Technical Support Section. Philadelphia, PA. EPA 540-R-97-006. June 1995.

U.S. Environmental Protection Agency (USEPA). 1997. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final.

U.S. Department of Energy (USDOE). 1996. Toxicological Benchmarks for Wildlife: 1996 Revision. Prepared by B.E. Sample, D.M. Opresko, and G.W. Suter II, Risk Assessment Program, Health Sciences Research Division, Oak Ridge, TN for the U.S. Department of Energy. ES/ER/TM-86/R3. June 1996.

SITES 2 (LANDFILL B) AND 5 (BURNING GROUNDS)

LOCATION OF SITE 2 (LANDFILL B) AND SITE 5 (BURNING GROUNDS) SAINT JULIENS CREEK ANNEX

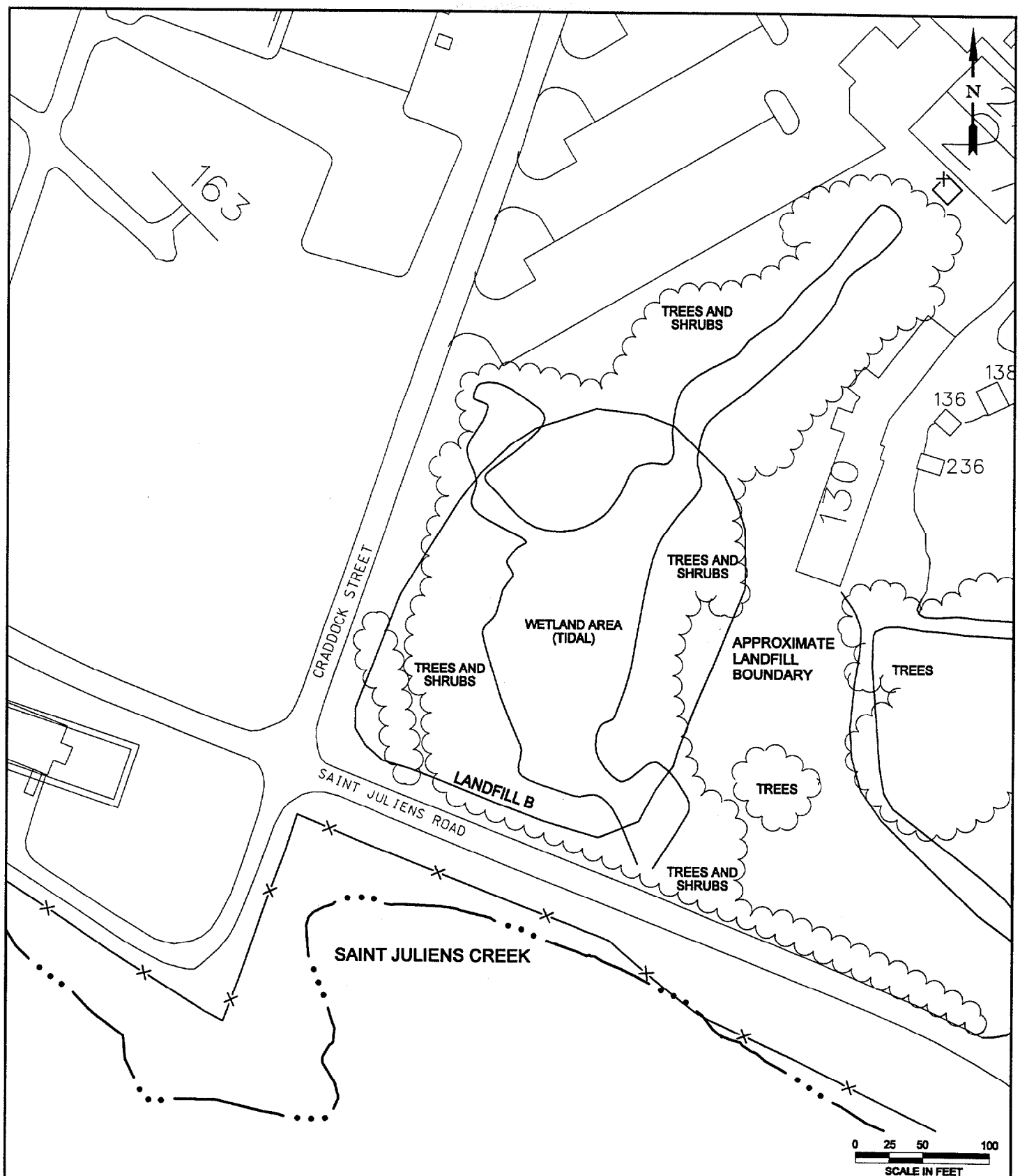
FIGURE 1-1

LEGEND

NUMBER	SITE NAME/DESCRIPTION
2	LANDFILL B
5	BURNING GROUNDS

CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

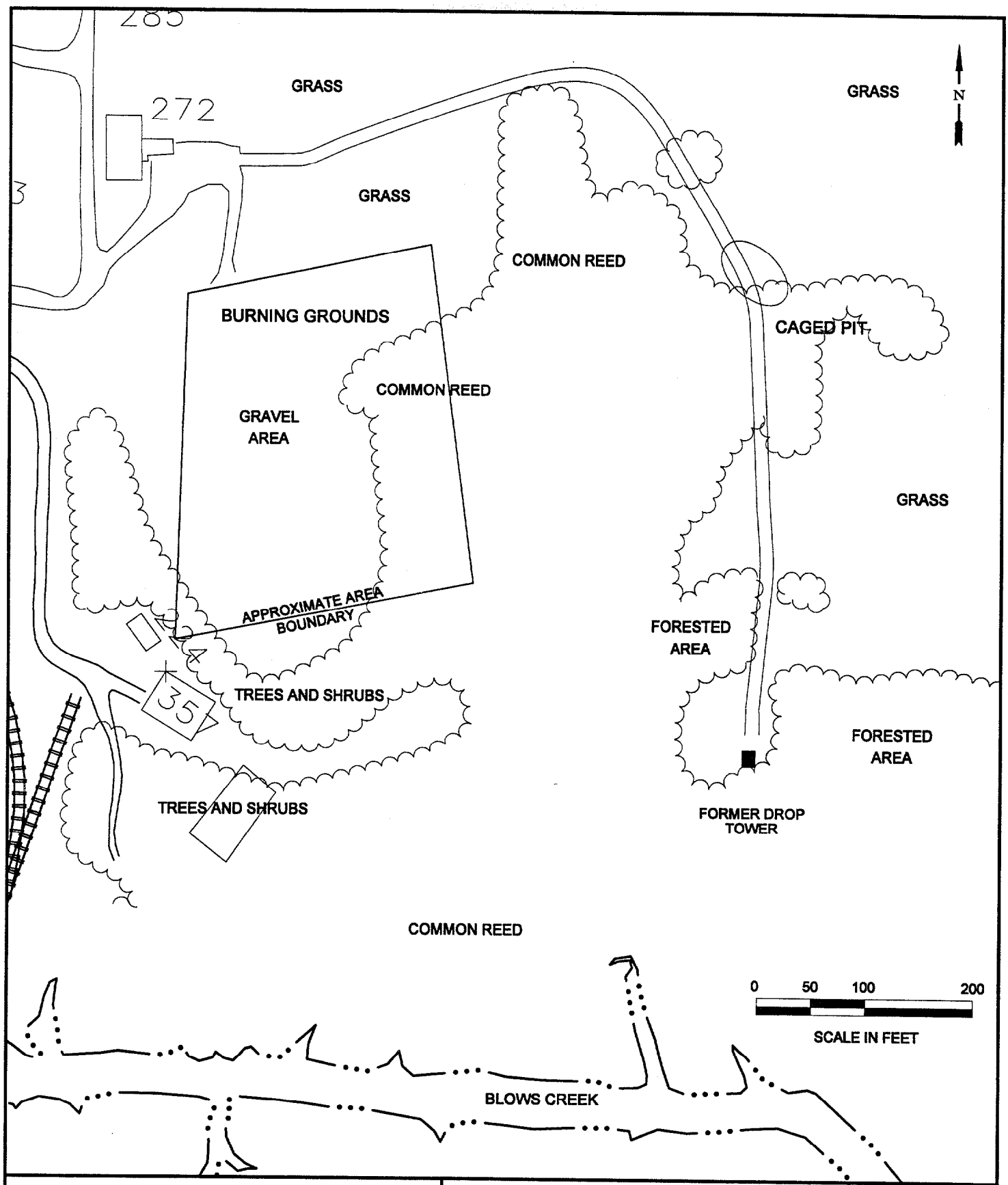


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

LANDFILL B, SITE 2
SAINT JULIENS CREEK ANNEX

FIGURE
2-1

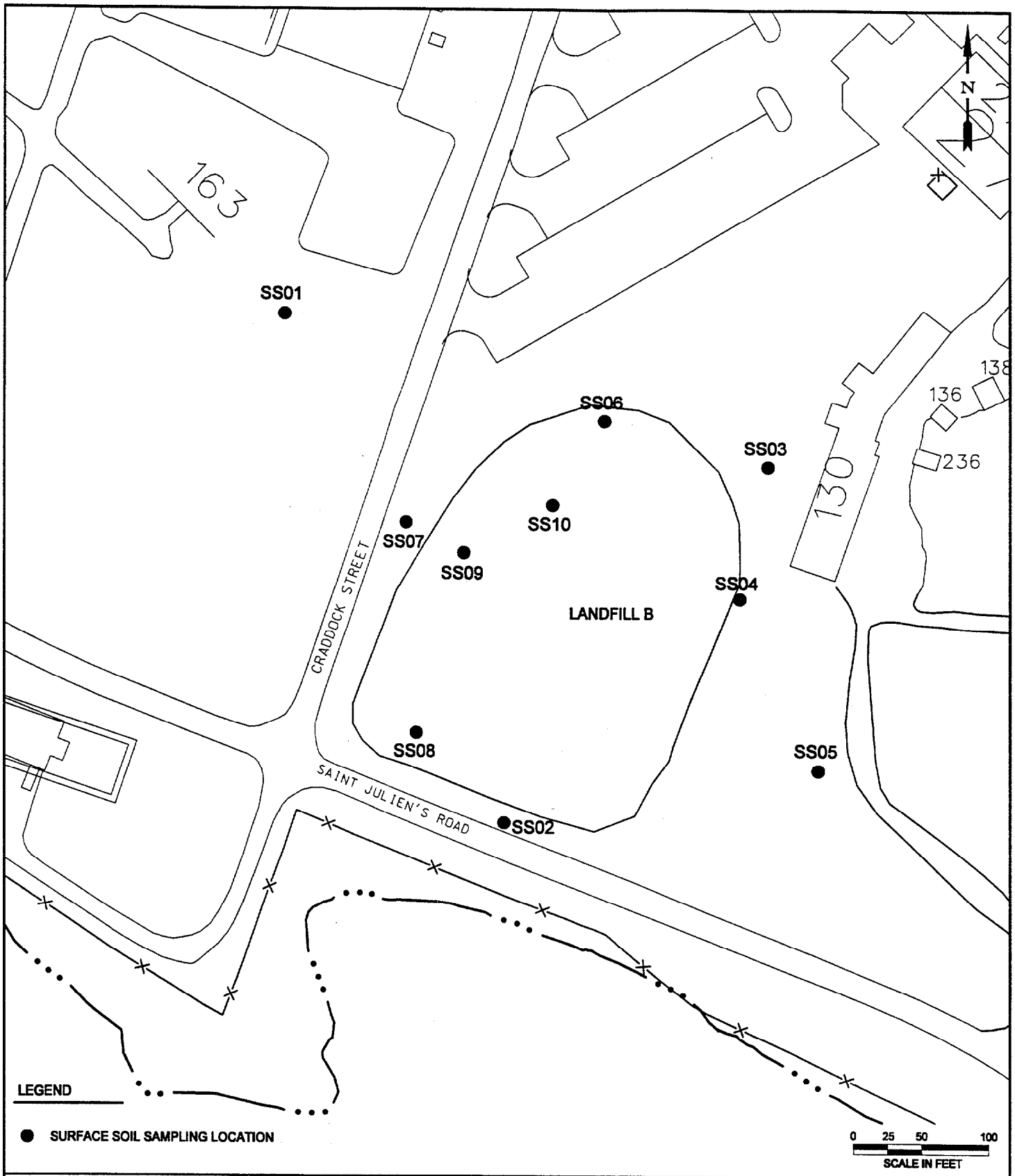


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

BURNING GROUNDS, SITE 5
SAINT JULIENS CREEK ANNEX

FIGURE
2-2

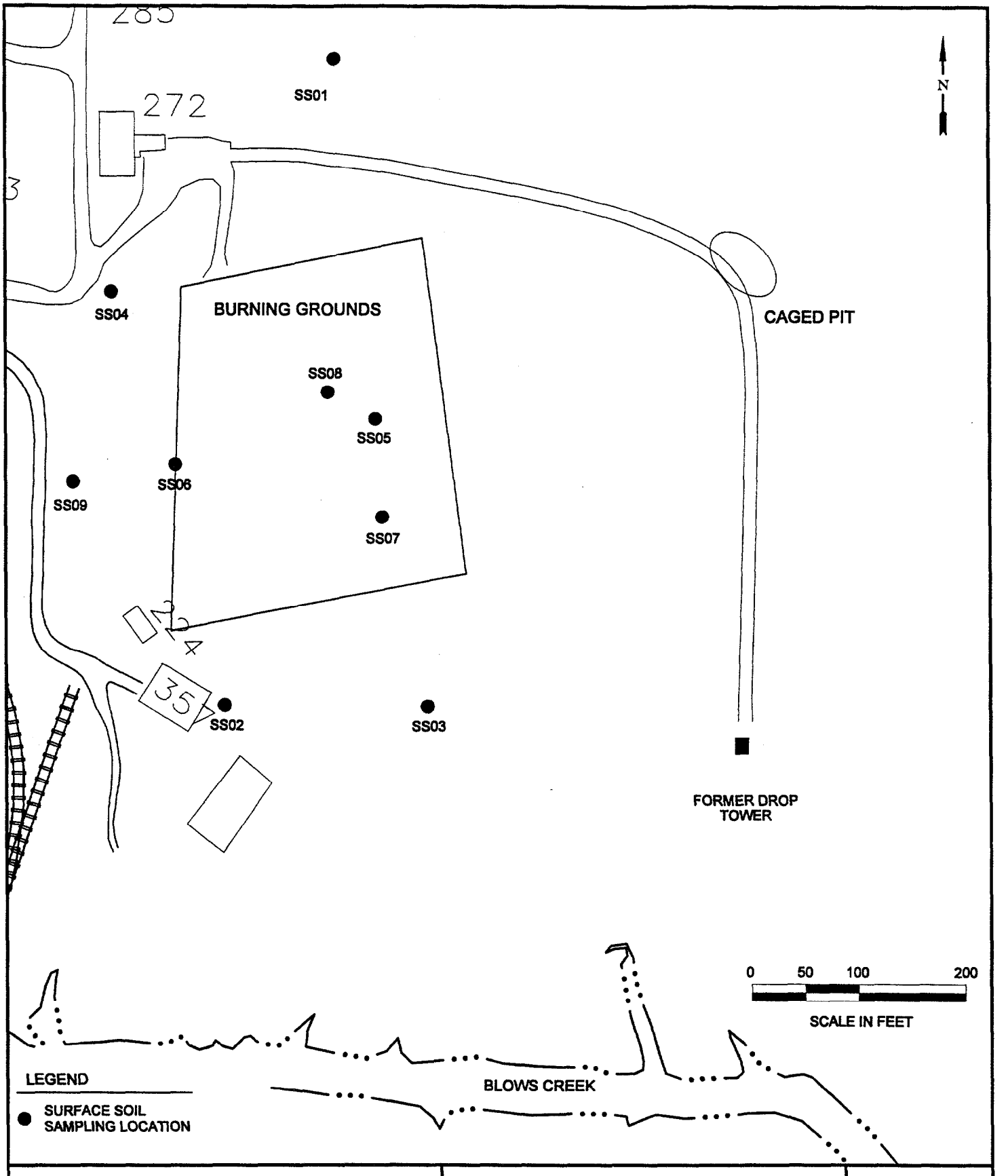


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

SURFACE SOIL SAMPLING LOCATIONS, SITE 2
SAINT JULIENS CREEK ANNEX

FIGURE 2-3

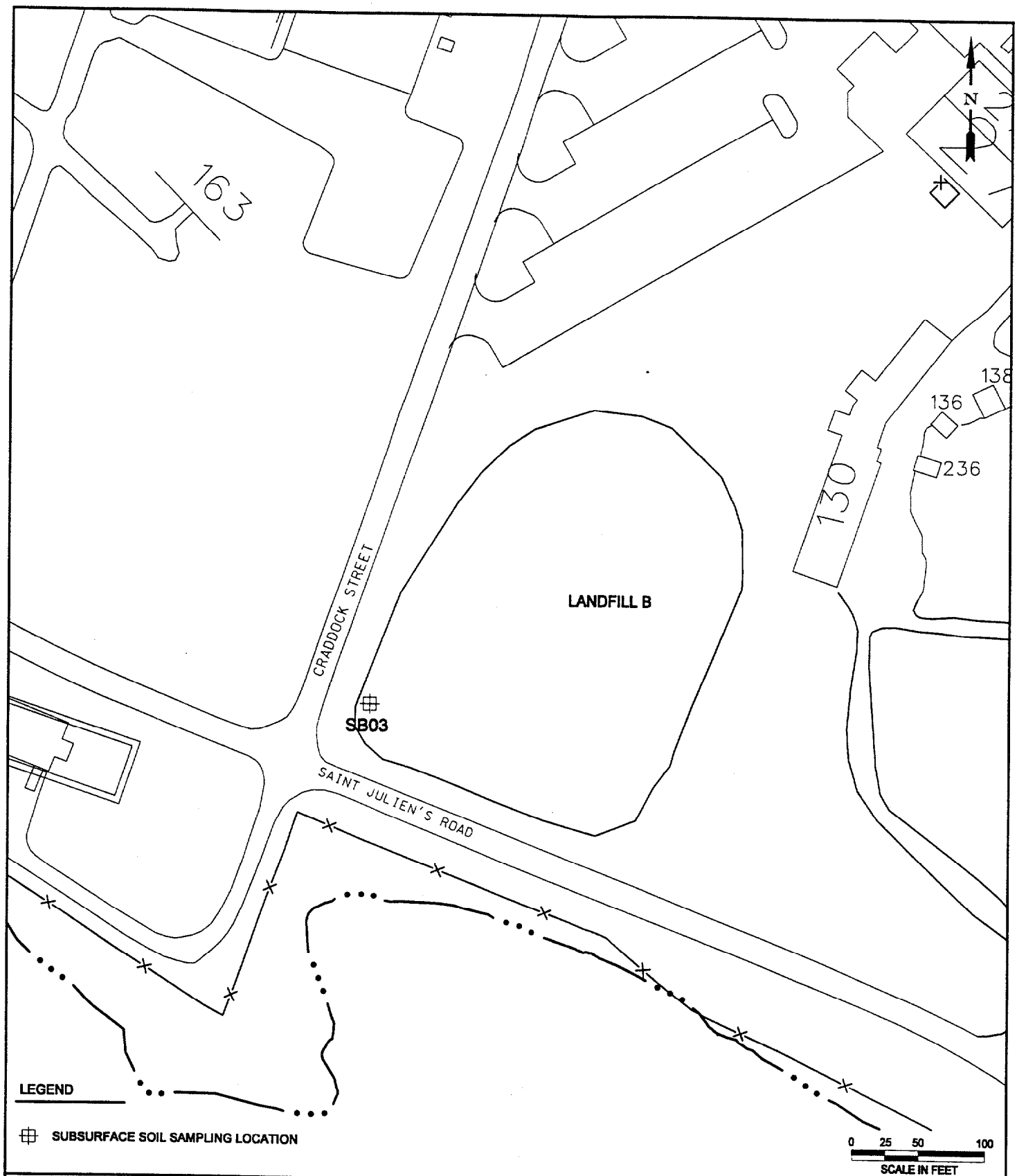


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

SURFACE SOIL SAMPLING LOCATIONS, SITE 5
SAINT JULIENS CREEK ANNEX

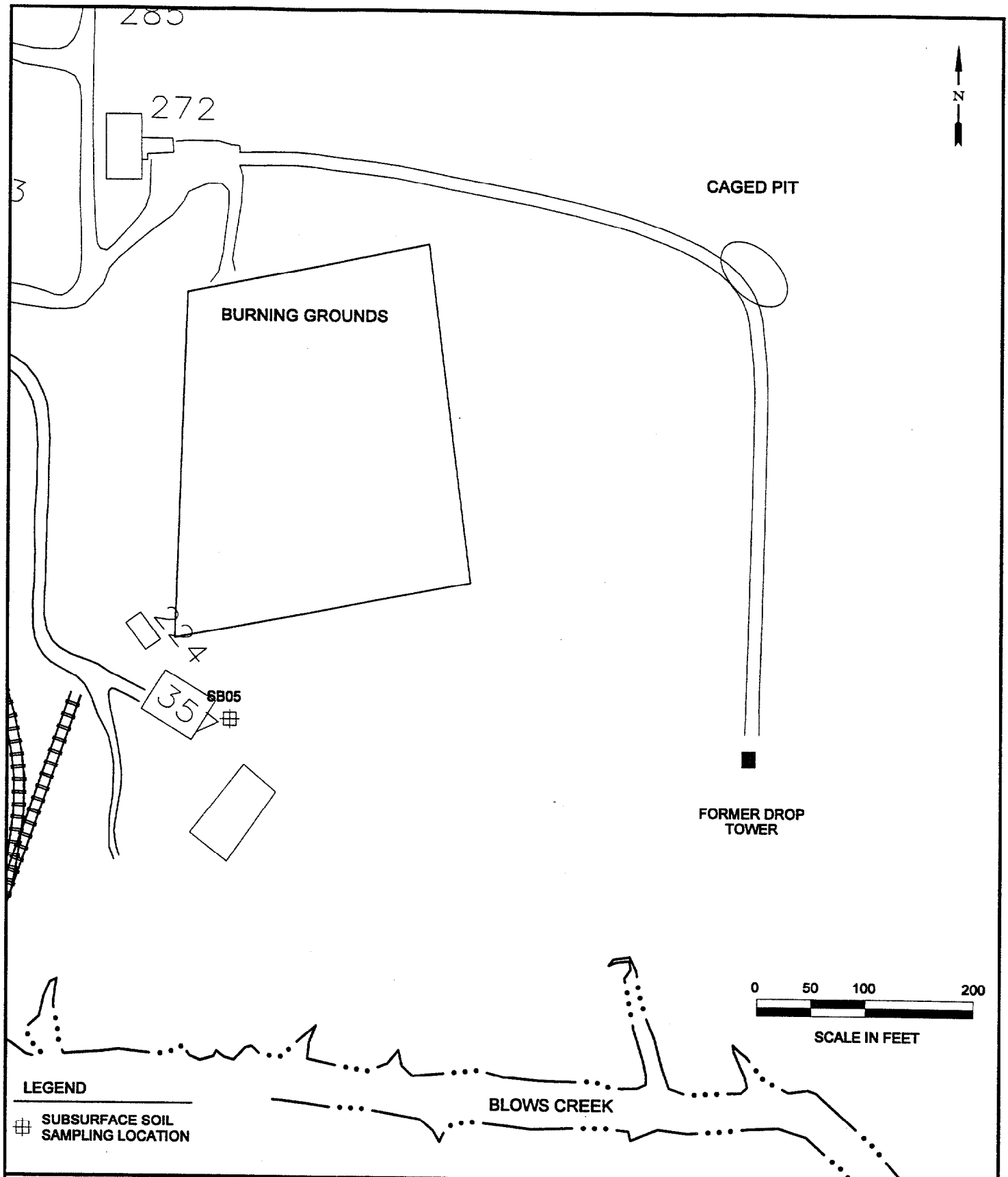
FIGURE 2-4



CDM Federal Programs Corporation
A Subsidiary of Camp Dresser & McKee Inc.

ECOLOGICAL SUBSURFACE SOIL SAMPLING LOCATION, SITE 2
SAINT JULIENS CREEK ANNEX

FIGURE 2-5

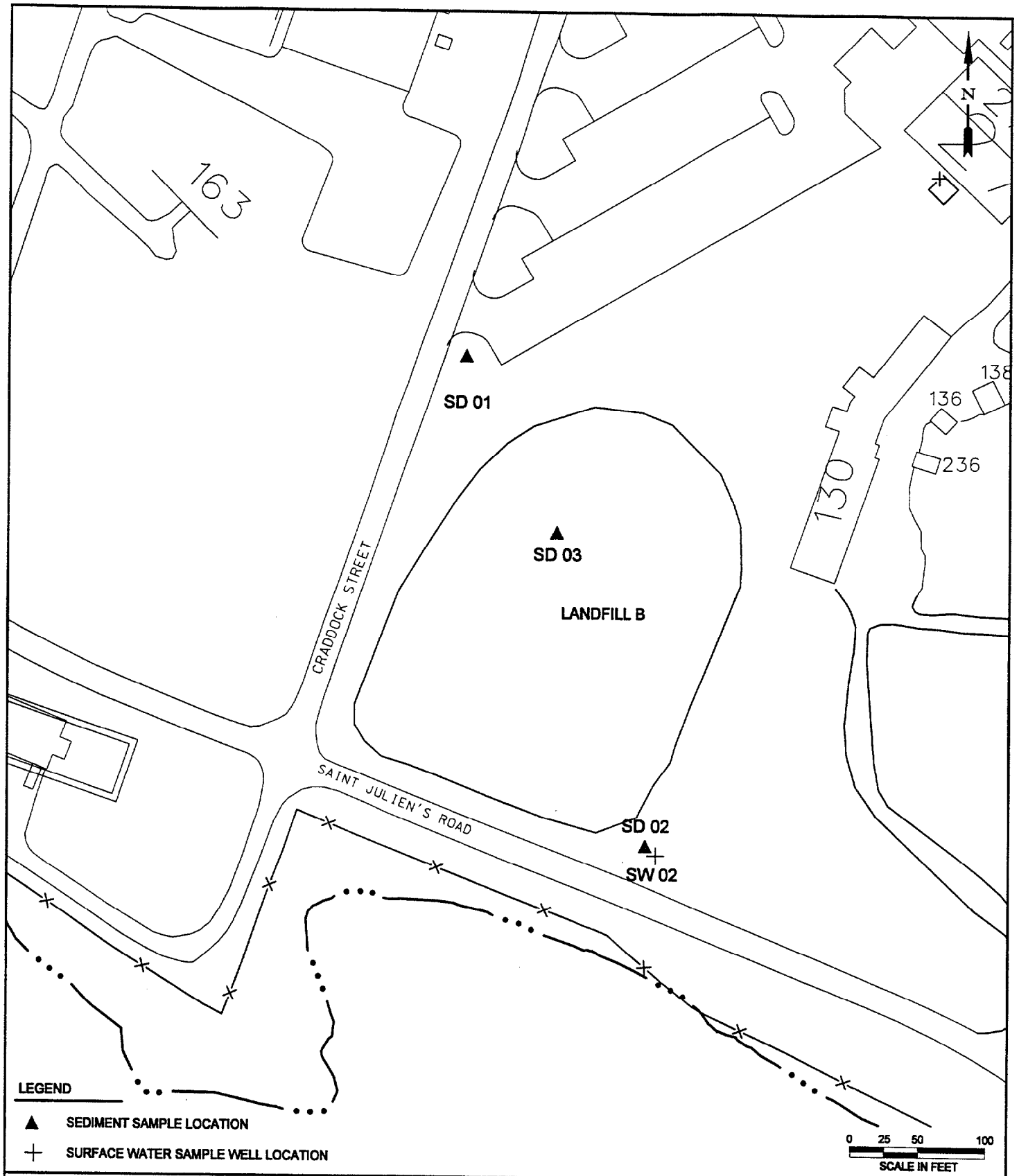


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

ECOLOGICAL SUBSURFACE SOIL SAMPLING LOCATION, SITE 5
SAINT JULIENS CREEK ANNEX

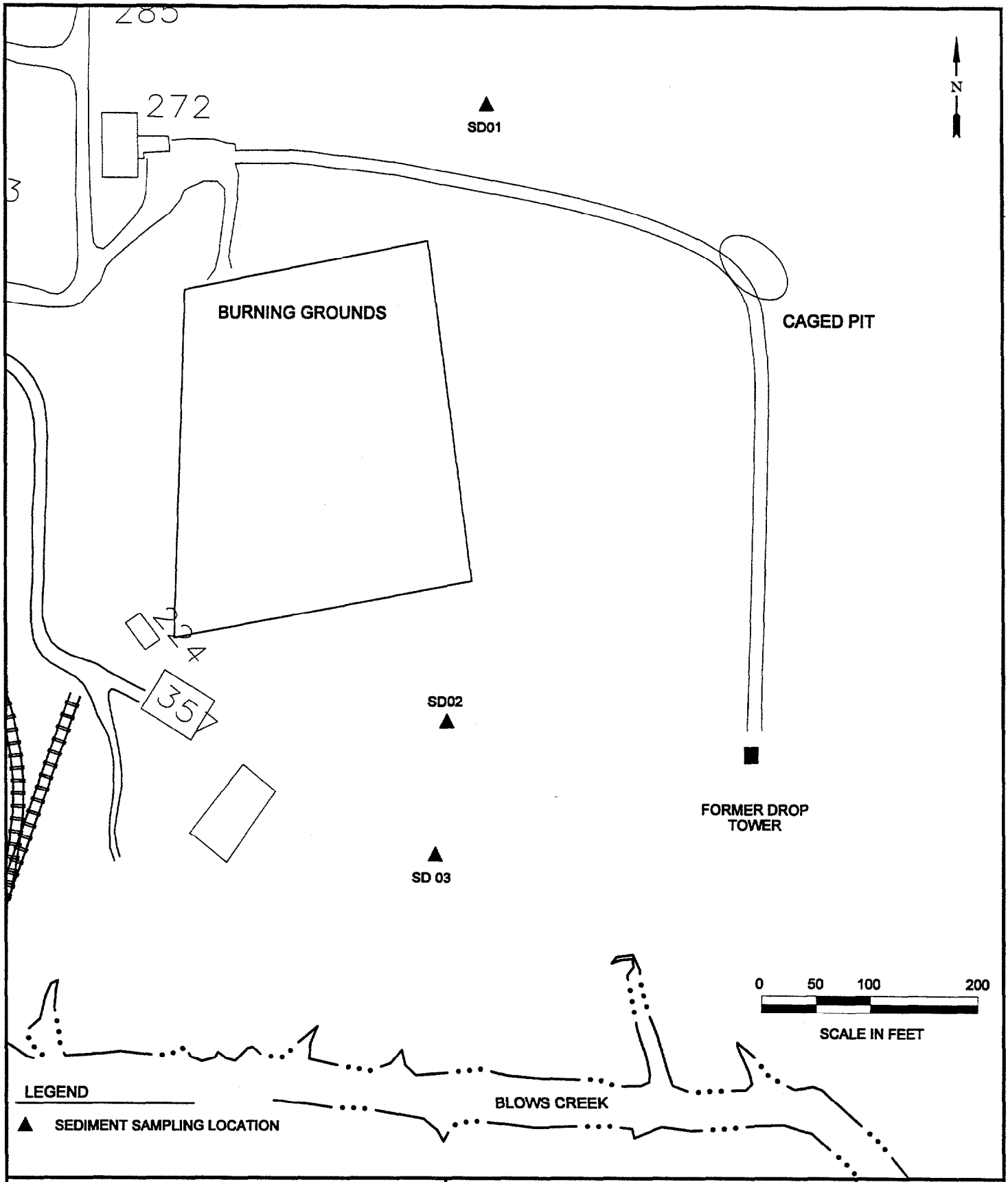
FIGURE 2-6



CDM Federal Programs Corporation
A Subsidiary of Camp Dresser & McKee Inc.

SEDIMENT AND SURFACE WATER SAMPLING LOCATIONS, SITE 2
SAINT JULIENS CREEK ANNEX

FIGURE 2-7

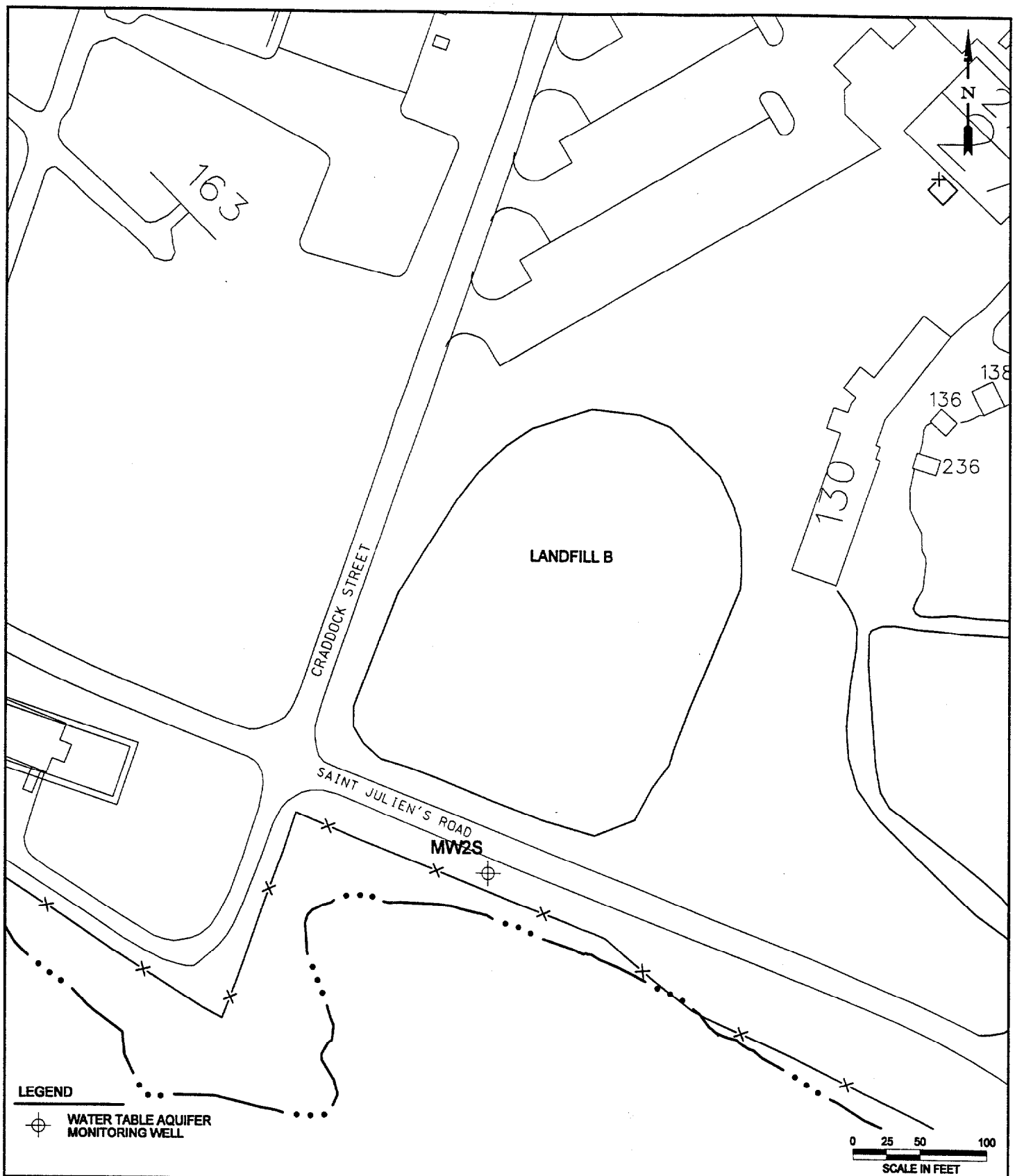


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

SEDIMENT SAMPLING LOCATIONS, SITE 5
SAINT JULIENS CREEK ANNEX

FIGURE 2-8

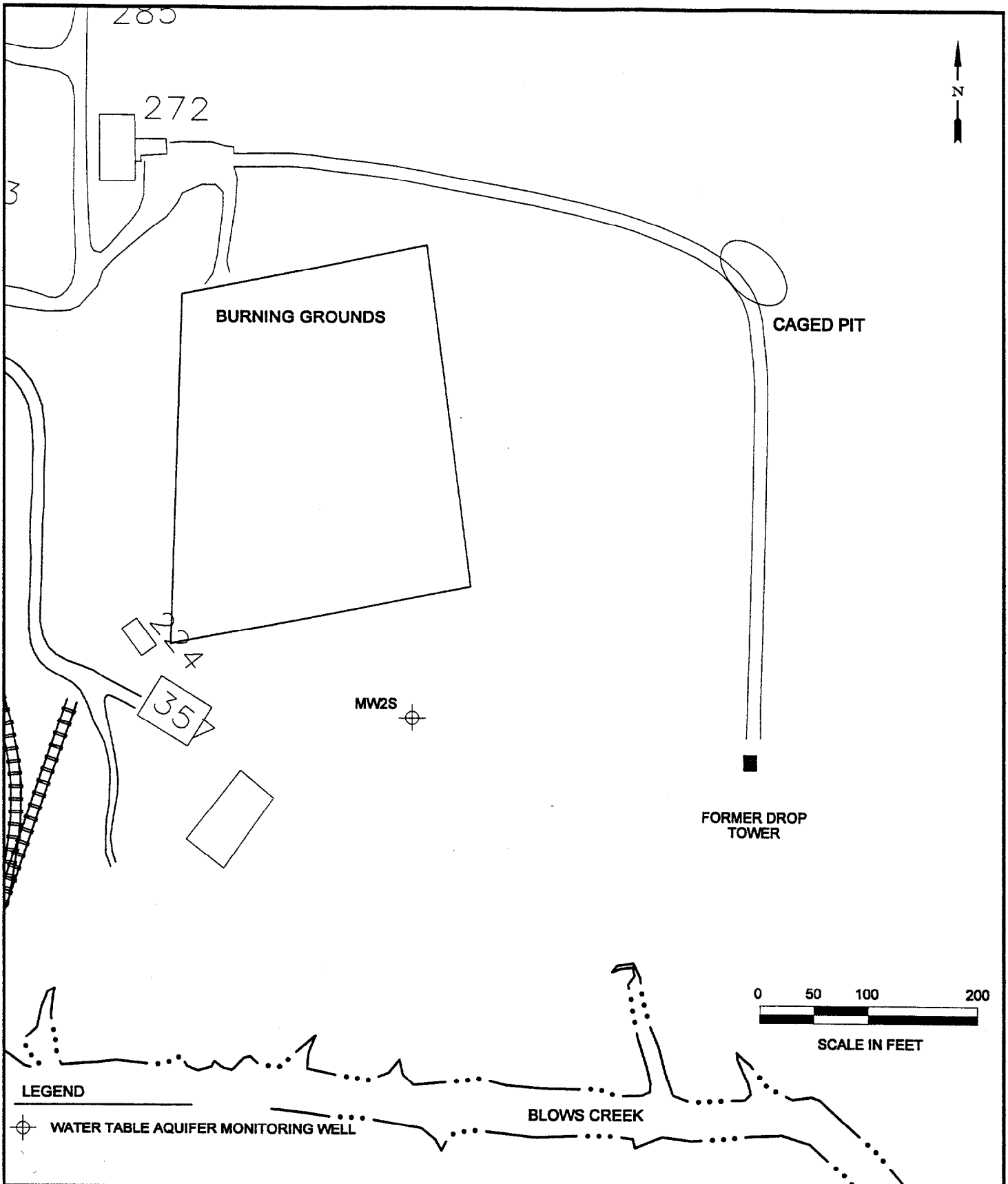


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

MONITORING WELL MOST DOWNGRADIENT OF SITE 2
SAINT JULIENS CREEK ANNEX

FIGURE 2-9

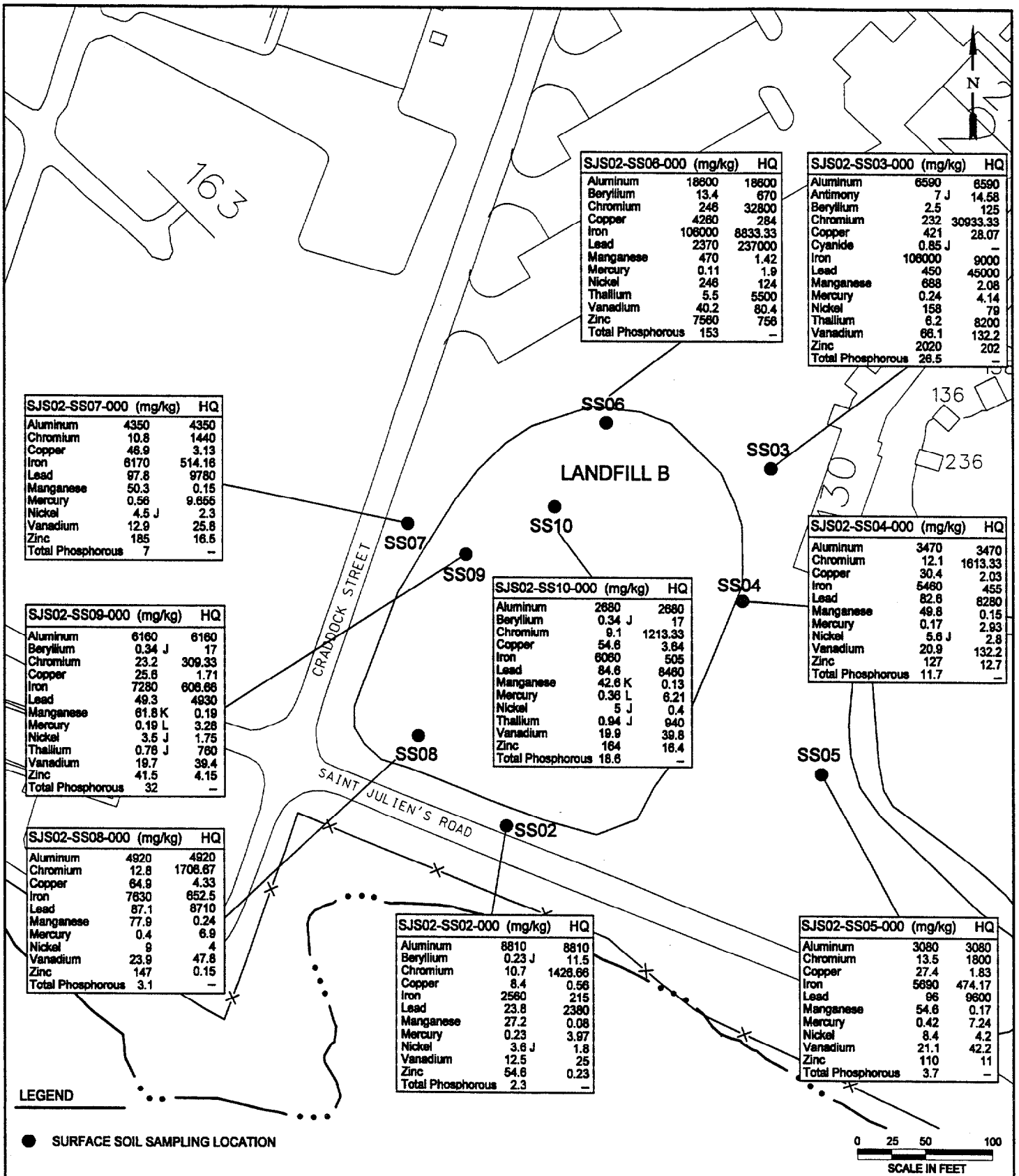


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

MONITORING WELL MOST DOWNGRADIENT OF SITE 5
SAINT JULIENS CREEK ANNEX

FIGURE 2-10



SJS02-SS06-000 (mg/kg)		HQ
Aluminum	18600	18600
Beryllium	13.4	670
Chromium	246	32800
Copper	4260	284
Iron	106000	8833.33
Lead	2370	237000
Manganese	470	1.42
Mercury	0.11	1.9
Nickel	246	124
Thallium	5.5	5500
Vanadium	40.2	80.4
Zinc	7560	756
Total Phosphorous	153	–

SJS02-SS03-000 (mg/kg)		HQ
Aluminum	6590	6590
Antimony	7 J	14.58
Beryllium	2.5	125
Chromium	232	30933.33
Copper	421	28.07
Cyanide	0.85 J	–
Iron	106000	9000
Lead	450	45000
Manganese	688	2.08
Mercury	0.24	4.14
Nickel	158	79
Thallium	6.2	8200
Vanadium	66.1	132.2
Zinc	2020	202
Total Phosphorous	26.5	–

SJS02-SS07-000 (mg/kg)		HQ
Aluminum	4350	4350
Chromium	10.8	1440
Copper	46.9	3.13
Iron	6170	514.16
Lead	97.8	9780
Manganese	50.3	0.15
Mercury	0.56	9.655
Nickel	4.5 J	2.3
Vanadium	12.9	25.8
Zinc	185	16.5
Total Phosphorous	7	–

SJS02-SS04-000 (mg/kg)		HQ
Aluminum	3470	3470
Chromium	12.1	1613.33
Copper	30.4	2.03
Iron	5460	455
Lead	82.6	8280
Manganese	49.8	0.15
Mercury	0.17	2.93
Nickel	5.6 J	2.8
Vanadium	20.9	132.2
Zinc	127	12.7
Total Phosphorous	11.7	–

SJS02-SS10-000 (mg/kg)		HQ
Aluminum	2680	2680
Beryllium	0.34 J	17
Chromium	9.1	1213.33
Copper	54.6	3.64
Iron	6060	505
Lead	84.6	8460
Manganese	42.6 K	0.13
Mercury	0.36 L	6.21
Nickel	5 J	0.4
Thallium	0.94 J	940
Vanadium	19.9	39.8
Zinc	164	16.4
Total Phosphorous	18.6	–

SJS02-SS09-000 (mg/kg)		HQ
Aluminum	6160	6160
Beryllium	0.34 J	17
Chromium	23.2	309.33
Copper	25.6	1.71
Iron	7280	606.66
Lead	49.3	4930
Manganese	61.8 K	0.19
Mercury	0.19 L	3.28
Nickel	3.5 J	1.75
Thallium	0.76 J	760
Vanadium	19.7	39.4
Zinc	41.5	4.15
Total Phosphorous	32	–

SJS02-SS08-000 (mg/kg)		HQ
Aluminum	4920	4920
Chromium	12.8	1706.67
Copper	64.9	4.33
Iron	7630	652.5
Lead	87.1	8710
Manganese	77.9	0.24
Mercury	0.4	6.9
Nickel	9	4
Vanadium	23.9	47.8
Zinc	147	0.15
Total Phosphorous	3.1	–

SJS02-SS02-000 (mg/kg)		HQ
Aluminum	8810	8810
Beryllium	0.23 J	11.5
Chromium	10.7	1426.66
Copper	8.4	0.56
Iron	2560	215
Lead	23.8	2380
Manganese	27.2	0.08
Mercury	0.23	3.97
Nickel	3.6 J	1.8
Vanadium	12.5	25
Zinc	54.6	0.23
Total Phosphorous	2.3	–

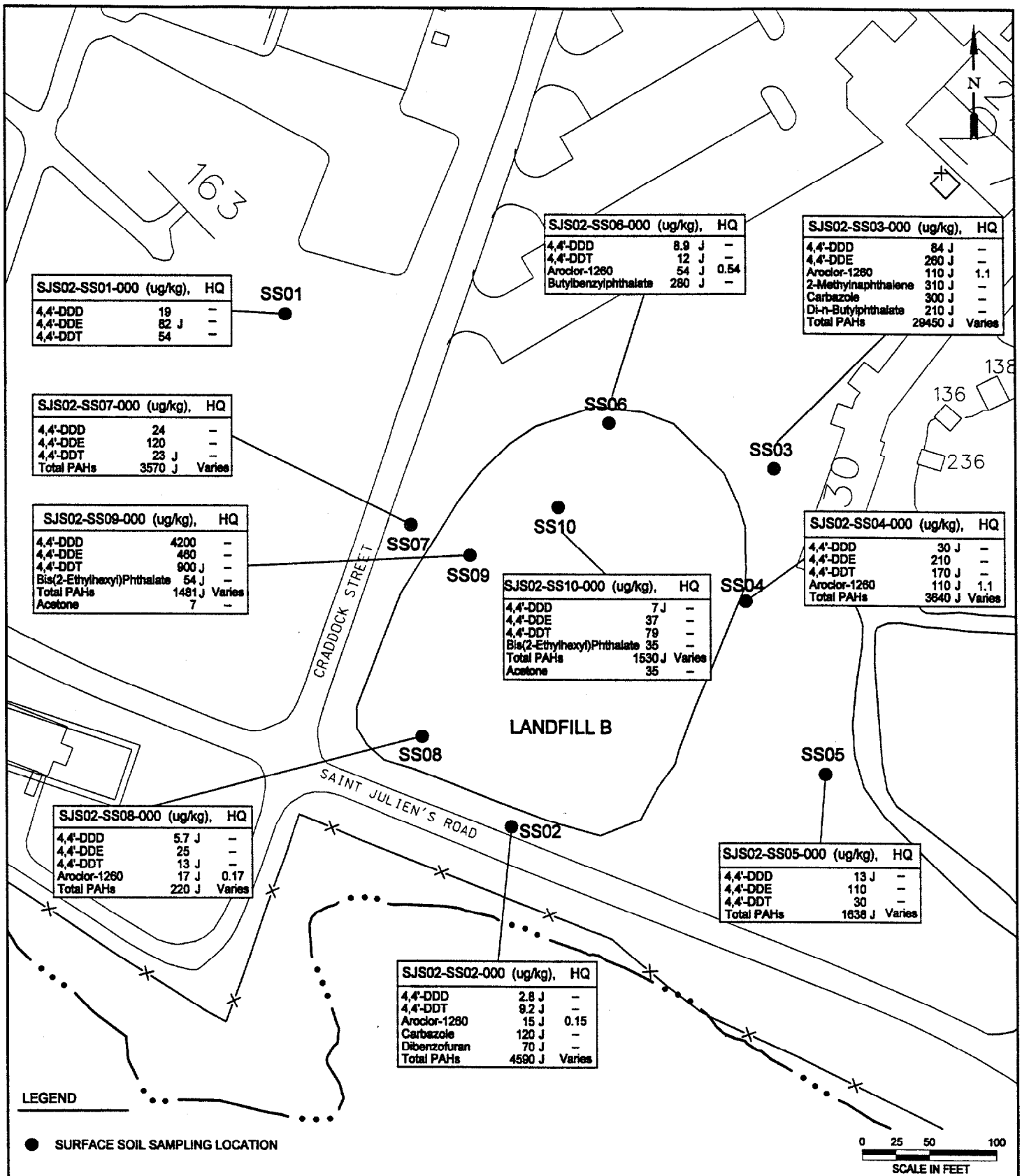
SJS02-SS05-000 (mg/kg)		HQ
Aluminum	3080	3080
Chromium	13.5	1800
Copper	27.4	1.83
Iron	5690	474.17
Lead	96	9600
Manganese	54.6	0.17
Mercury	0.42	7.24
Nickel	8.4	4.2
Vanadium	21.1	42.2
Zinc	110	11
Total Phosphorous	3.7	–

CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF INORGANIC COPCs
SURFACE SOIL, SITE 2
SAINT JULIENS CREEK ANNEX

FIGURE
C-1

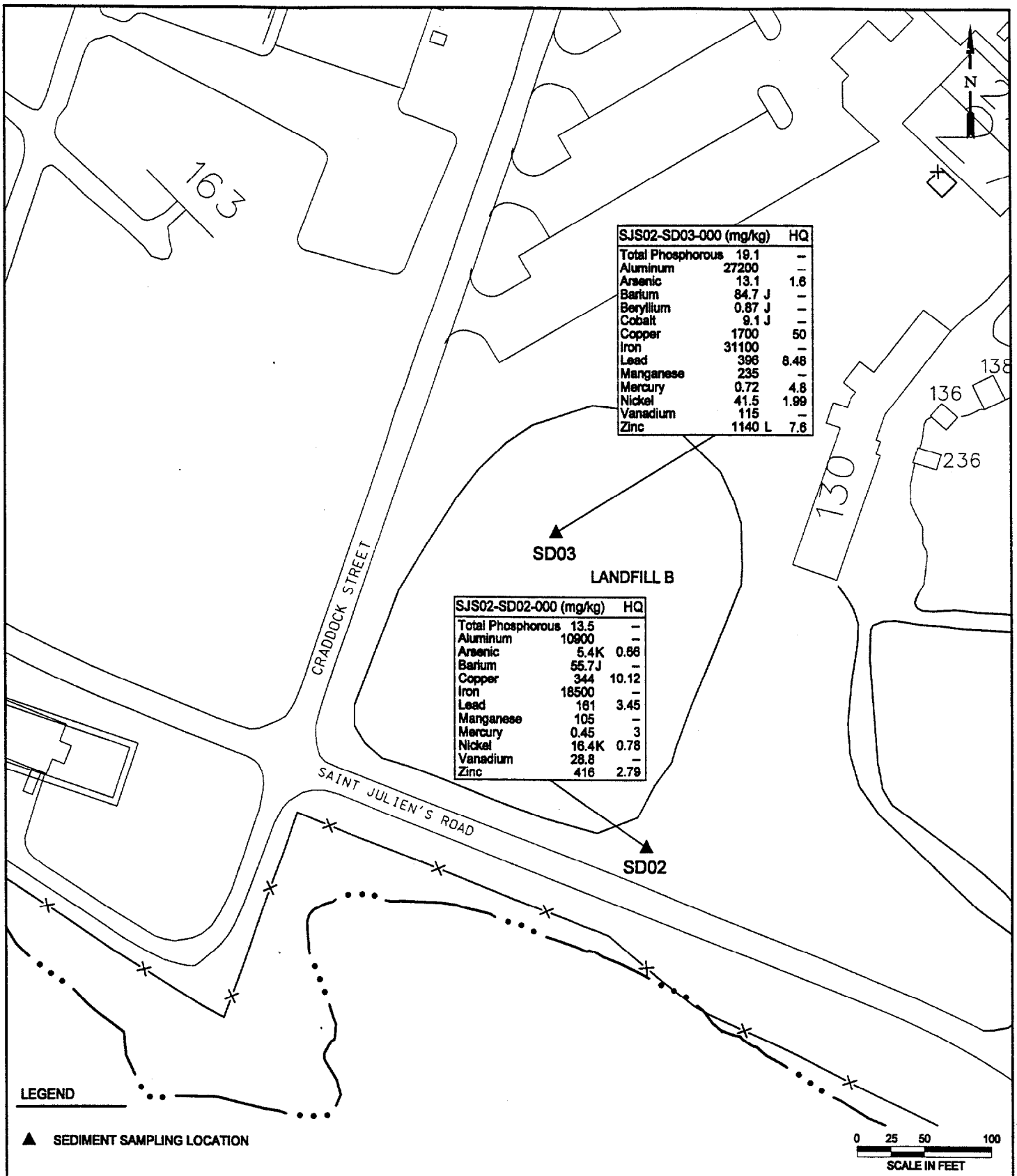


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF ORGANIC COPCs
SURFACE SOIL, SITE 2
SAINT JULIENS CREEK ANNEX

FIGURE
C-2



SJS02-SD03-000 (mg/kg)		HQ
Total Phosphorous	19.1	–
Aluminum	27200	–
Arsenic	13.1	1.6
Barium	84.7 J	–
Beryllium	0.87 J	–
Cobalt	9.1 J	–
Copper	1700	50
Iron	31100	–
Lead	396	8.48
Manganese	235	–
Mercury	0.72	4.8
Nickel	41.5	1.99
Vanadium	115	–
Zinc	1140 L	7.6

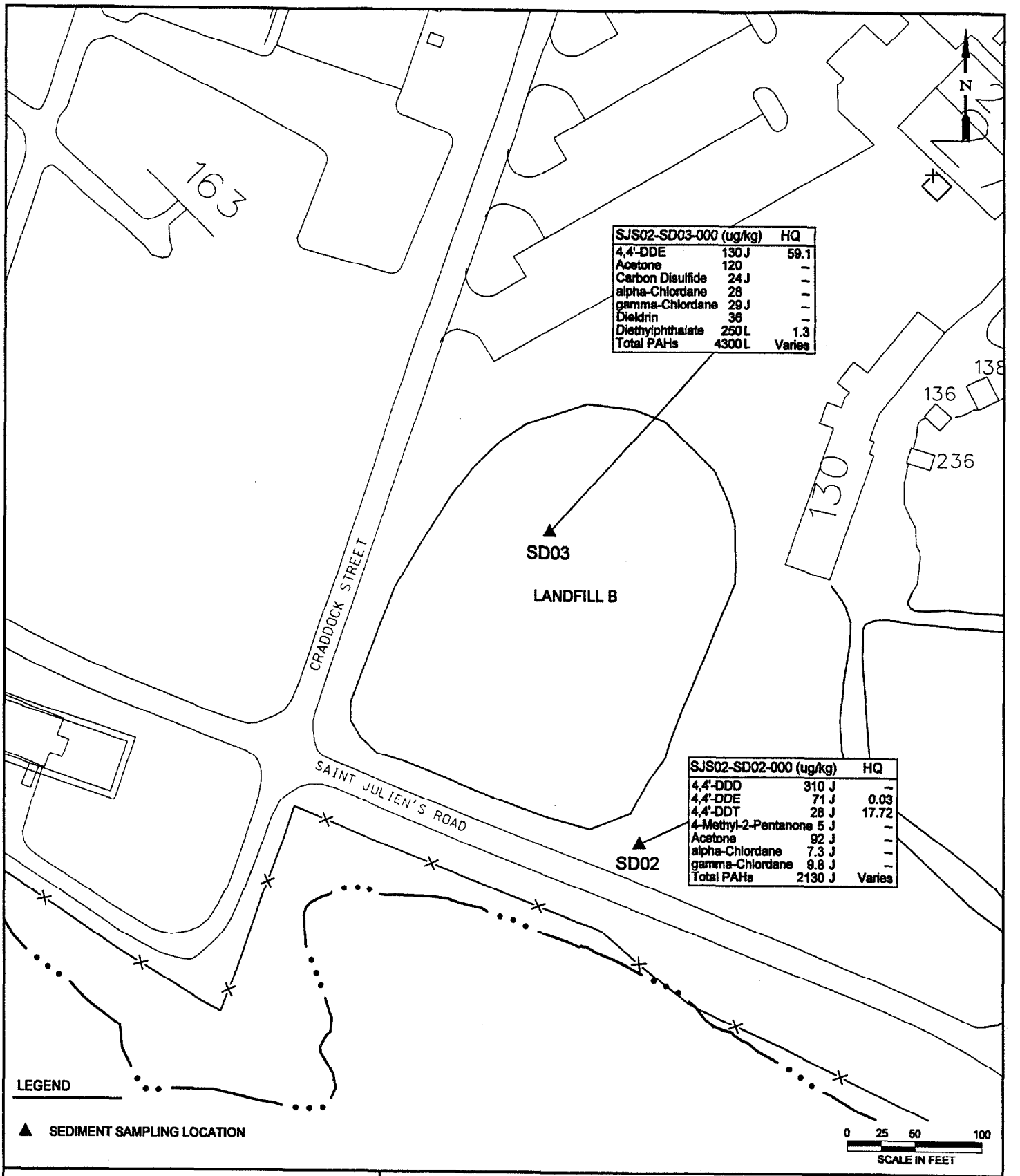
SJS02-SD02-000 (mg/kg)		HQ
Total Phosphorous	13.5	–
Aluminum	10900	–
Arsenic	5.4K	0.66
Barium	55.7J	–
Copper	344	10.12
Iron	18500	–
Lead	161	3.45
Manganese	105	–
Mercury	0.45	3
Nickel	16.4K	0.78
Vanadium	28.8	–
Zinc	416	2.79

CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF INORGANIC COPCs
SEDIMENT, SITE 2
SAINT JULIENS CREEK ANNEX

FIGURE
C-3



SJS02-SD03-000 (ug/kg)		HQ
4,4'-DDE	130 J	59.1
Acetone	120	–
Carbon Disulfide	24 J	–
alpha-Chlordane	28	–
gamma-Chlordane	29 J	–
Dieldrin	36	–
Diethylphthalate	250 L	1.3
Total PAHs	4300 L	Varies

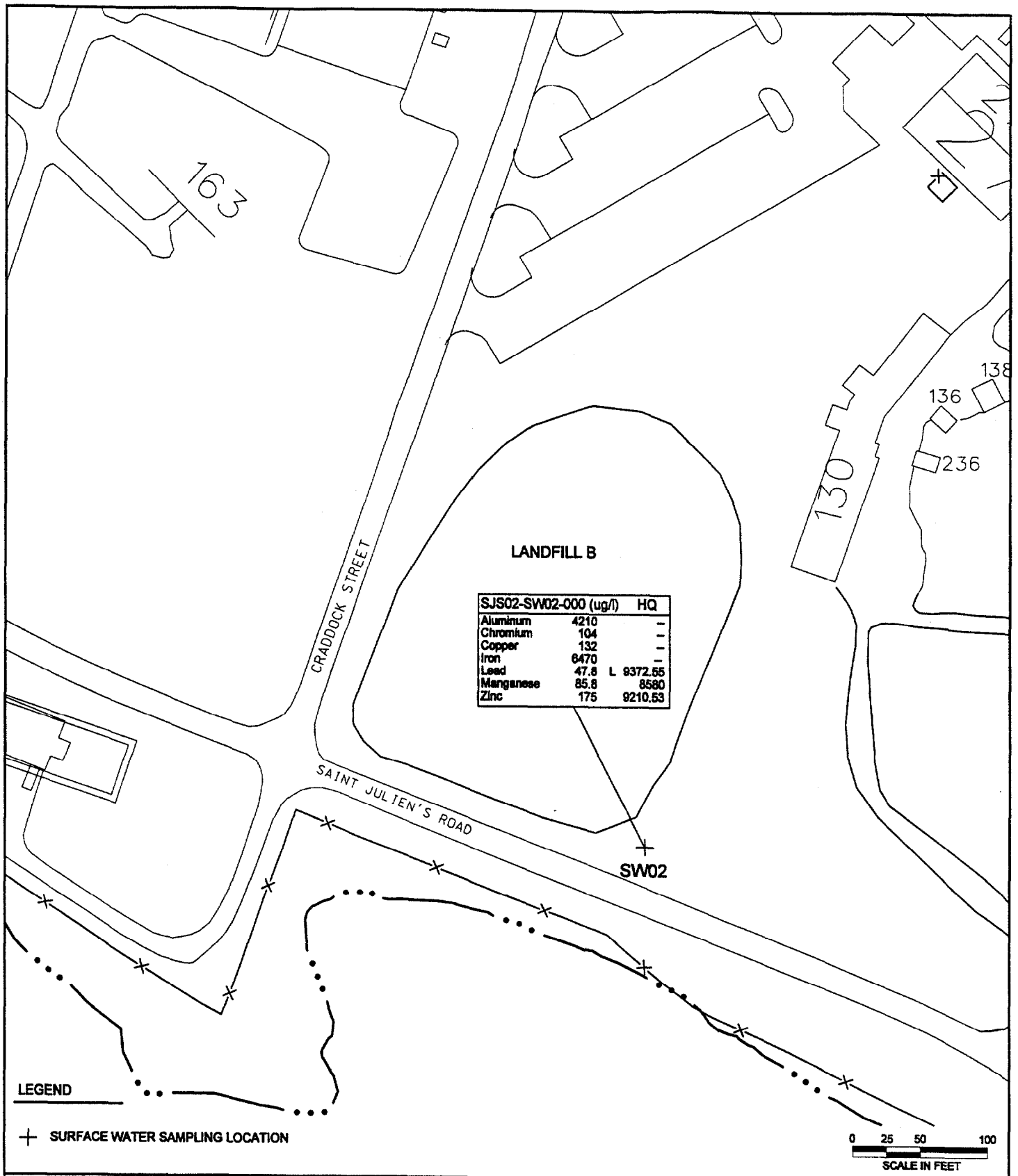
SJS02-SD02-000 (ug/kg)		HQ
4,4'-DDD	310 J	–
4,4'-DDE	71 J	0.03
4,4'-DDT	28 J	17.72
4-Methyl-2-Pentanone	5 J	–
Acetone	92 J	–
alpha-Chlordane	7.3 J	–
gamma-Chlordane	9.8 J	–
Total PAHs	2130 J	Varies

CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF ORGANIC COPCs
SEDIMENT, SITE 2
SAINT JULIENS CREEK ANNEX

FIGURE
C-4

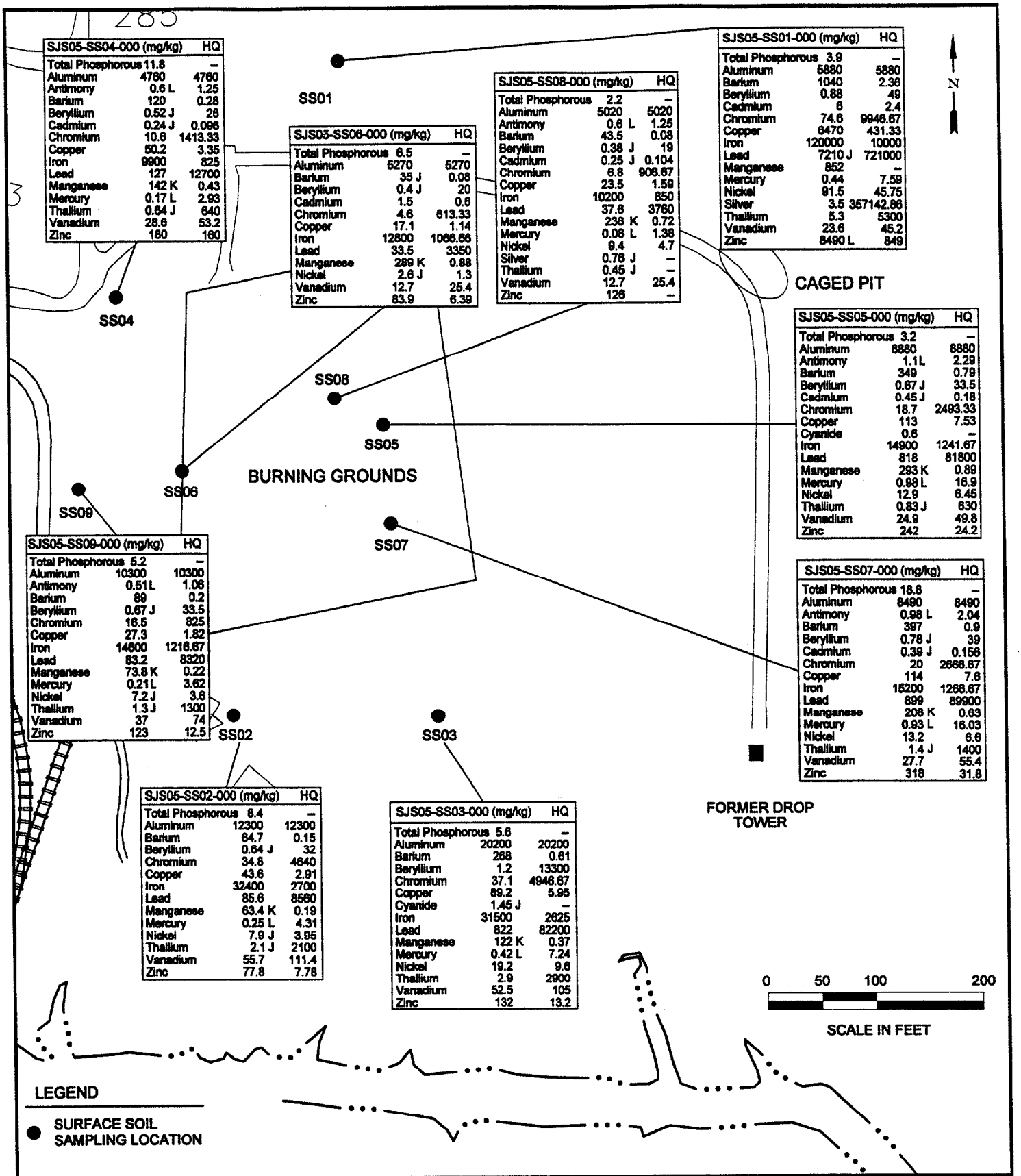


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF COPCs
SURFACE WATER, SITE 2
SAINT JULIENS CREEK ANNEX

FIGURE
C-5



SJS05-SS04-000 (mg/kg)		HQ
Total Phosphorous	11.8	–
Aluminum	4760	4760
Antimony	0.6 L	1.25
Barium	120	0.28
Beryllium	0.52 J	26
Cadmium	0.24 J	0.096
Chromium	10.6	1413.33
Copper	50.2	3.35
Iron	9900	825
Lead	127	12700
Manganese	142 K	0.43
Mercury	0.17 L	2.93
Thallium	0.64 J	640
Vanadium	28.6	53.2
Zinc	180	160

SJS05-SS06-000 (mg/kg)		HQ
Total Phosphorous	6.5	–
Aluminum	5270	5270
Barium	35 J	0.08
Beryllium	0.4 J	20
Cadmium	1.5	0.6
Chromium	4.6	613.33
Copper	17.1	1.14
Iron	12800	1066.66
Lead	33.5	3350
Manganese	289 K	0.88
Nickel	2.6 J	1.3
Vanadium	12.7	25.4
Zinc	83.9	6.39

SJS05-SS08-000 (mg/kg)		HQ
Total Phosphorous	2.2	–
Aluminum	5020	5020
Antimony	0.6 L	1.25
Barium	43.5	0.08
Beryllium	0.38 J	19
Cadmium	0.25 J	0.104
Chromium	6.8	906.67
Copper	23.5	1.59
Iron	10200	850
Lead	37.6	3760
Manganese	236 K	0.72
Mercury	0.08 L	1.38
Nickel	9.4	4.7
Silver	0.76 J	–
Thallium	0.45 J	–
Vanadium	12.7	25.4
Zinc	126	–

SJS05-SS01-000 (mg/kg)		HQ
Total Phosphorous	3.9	–
Aluminum	5880	5880
Barium	1040	2.36
Beryllium	0.88	49
Cadmium	6	2.4
Chromium	74.6	9946.67
Copper	6470	431.33
Iron	120000	10000
Lead	7210 J	721000
Manganese	852	–
Mercury	0.44	7.59
Nickel	91.5	45.75
Silver	3.5	357142.86
Thallium	5.3	5300
Vanadium	23.6	45.2
Zinc	8490 L	849

SJS05-SS05-000 (mg/kg)		HQ
Total Phosphorous	3.2	–
Aluminum	8880	8880
Antimony	1.1 L	2.29
Barium	349	0.79
Beryllium	0.67 J	33.5
Cadmium	0.45 J	0.18
Chromium	18.7	2493.33
Copper	113	7.53
Cyanide	0.6	–
Iron	14900	1241.67
Lead	818	81800
Manganese	293 K	0.89
Mercury	0.98 L	16.9
Nickel	12.9	6.45
Thallium	0.83 J	830
Vanadium	24.9	49.8
Zinc	242	24.2

SJS05-SS09-000 (mg/kg)		HQ
Total Phosphorous	5.2	–
Aluminum	10300	10300
Antimony	0.51 L	1.06
Barium	89	0.2
Beryllium	0.67 J	33.5
Chromium	16.5	825
Copper	27.3	1.82
Iron	14600	1216.67
Lead	83.2	8320
Manganese	73.8 K	0.22
Mercury	0.21 L	3.62
Nickel	7.2 J	3.6
Thallium	1.3 J	1300
Vanadium	37	74
Zinc	123	12.5

SJS05-SS07-000 (mg/kg)		HQ
Total Phosphorous	18.8	–
Aluminum	8490	8490
Antimony	0.98 L	2.04
Barium	397	0.9
Beryllium	0.78 J	39
Cadmium	0.39 J	0.156
Chromium	20	2666.67
Copper	114	7.6
Iron	15200	1266.67
Lead	899	89900
Manganese	208 K	0.63
Mercury	0.93 L	16.03
Nickel	13.2	6.6
Thallium	1.4 J	1400
Vanadium	27.7	55.4
Zinc	318	31.8

SJS05-SS02-000 (mg/kg)		HQ
Total Phosphorous	6.4	–
Aluminum	12300	12300
Barium	64.7	0.15
Beryllium	0.64 J	32
Chromium	34.8	4640
Copper	43.6	2.91
Iron	32400	2700
Lead	85.6	8560
Manganese	63.4 K	0.19
Mercury	0.25 L	4.31
Nickel	7.9 J	3.95
Thallium	2.1 J	2100
Vanadium	55.7	111.4
Zinc	77.8	7.78

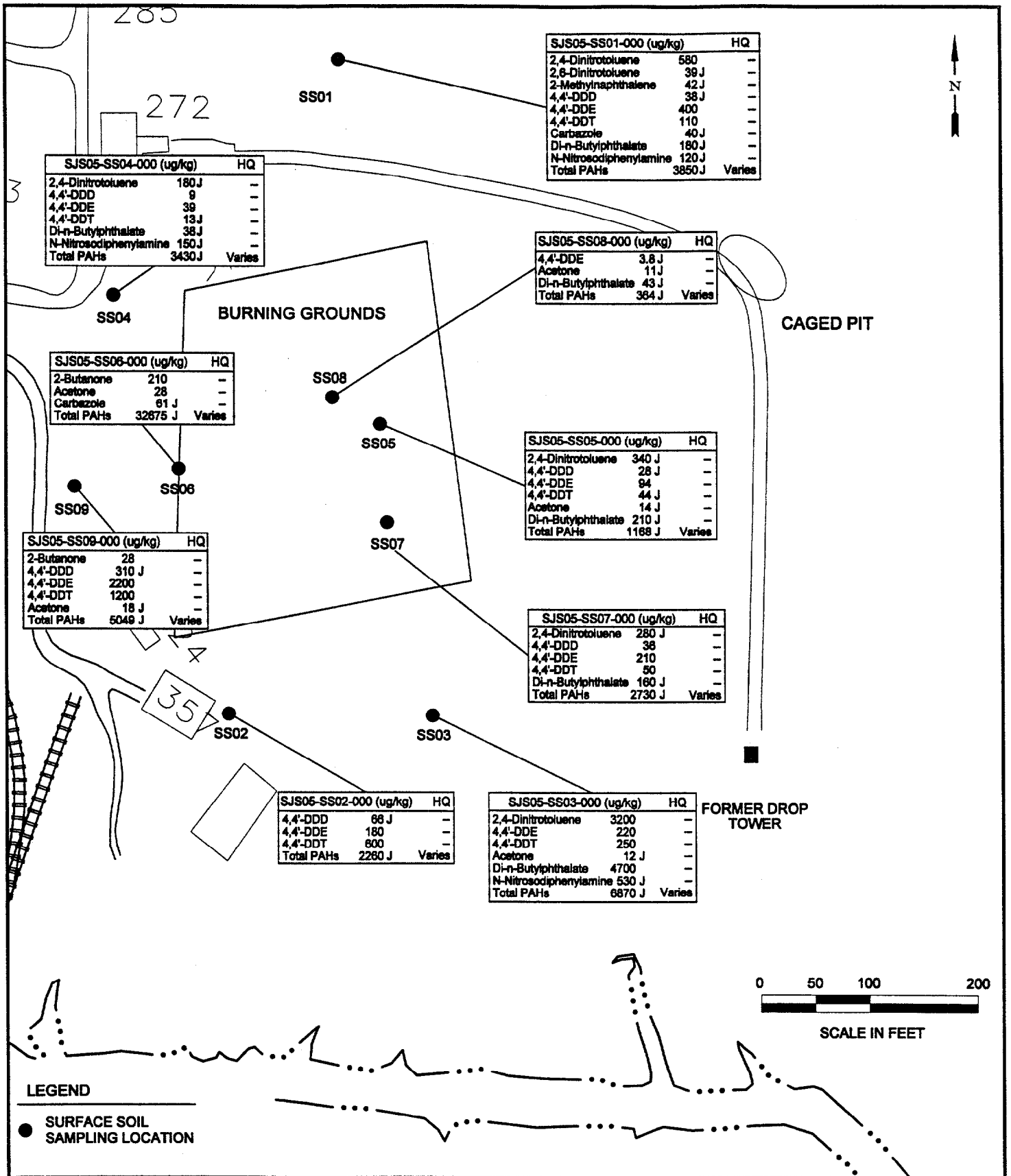
SJS05-SS03-000 (mg/kg)		HQ
Total Phosphorous	5.6	–
Aluminum	20200	20200
Barium	268	0.61
Beryllium	1.2	13300
Chromium	37.1	4946.67
Copper	89.2	5.95
Cyanide	1.45 J	–
Iron	31500	2625
Lead	822	82200
Manganese	122 K	0.37
Mercury	0.42 L	7.24
Nickel	19.2	9.6
Thallium	2.9	2900
Vanadium	52.5	105
Zinc	132	13.2

CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF INORGANIC COPCs SURFACE SOIL, SITE 5
SAINT JULIENS CREEK ANNEX

FIGURE C-6

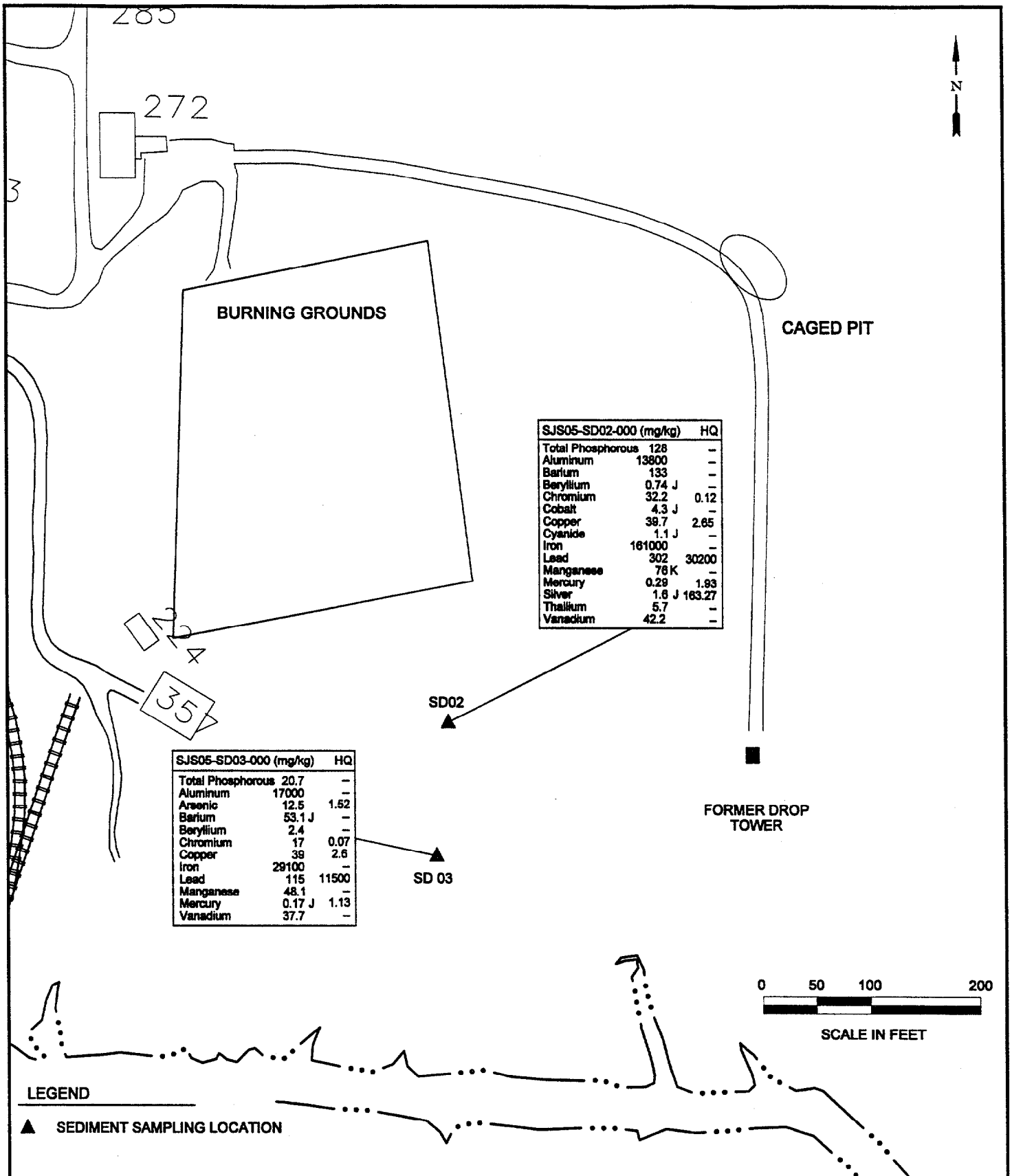


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF ORGANIC COPCs SURFACE SOIL, SITE 5
SAINT JULIENS CREEK ANNEX

FIGURE C-7

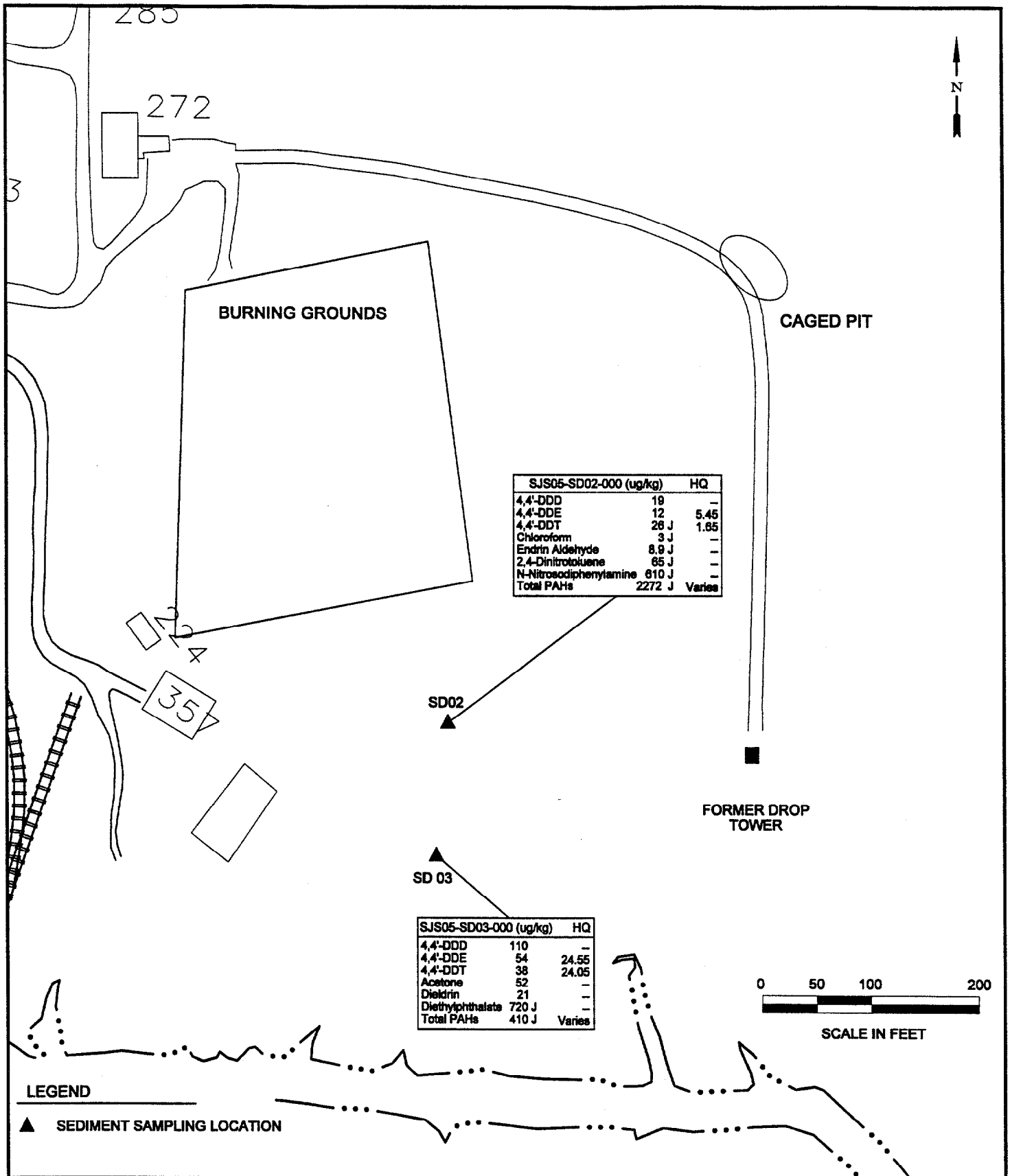


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF INORGANIC COPCs SEDIMENT, SITE 5
SAINT JULIENS CREEK ANNEX

FIGURE C-8



CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF ORGANIC COPCs SEDIMENT, SITE 5
SAINT JULIENS CREEK ANNEX

FIGURE C-9

Table 2 - 1
Ecological Screening Values for Site 2 Surface Soil
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG Hazard Quotient
General Chemistry (mg/kg)	Total Phosphorous	9 / 9	1.3 - 63	153	29.39	--	--
TAL Inorganics (mg/kg)	Aluminum	9 / 9	7.42 - 8.79	18600	6521.11	1	18600.00
	Antimony	1 / 3	0.35 - 0.4	7	2.46	0.48	14.58
	Arsenic	8 / 9	0.51 - 0.6	12	4.55	328	0.04
	Barium	9 / 9	0.34 - 0.4	306	91.30	440	0.70
	Beryllium	5 / 9	0.17 - 0.2	13.4	1.91	0.02	670.00
	Cadmium	6 / 8	0.08 - 0.1	0.68	0.32	2.5	0.27
	Chromium	9 / 9	1.18 - 1.4	246	63.36	0.0075	32800.00
	Cobalt	6 / 9	1.35 - 1.6	62.6	10.37	100	0.63
	Copper	9 / 9	1.01 - 1.2	4260	548.86	15	284.00
	Cyanide	1 / 9	0.5 - 0.53	0.85	0.32	0.005	170.00
	Iron	9 / 9	2.87 - 3.39	106000	28112.22	12	8833.33
	Lead	9 / 9	0.17 - 0.2	2370	371.28	0.01	237000.00
	Manganese	9 / 9	0.34 - 0.4	688	169.69	330	2.08
	Mercury	9 / 9	0.04 - 0.05	0.56	0.30	0.058	9.66
	Nickel	9 / 9	1.18 - 1.4	246	49.66	2	123.00
	Selenium	1 / 9	0.51 - 0.6	1	0.36	1.8	0.56
	Thallium	4 / 9	0.34 - 0.4	6.2	1.59	0.001	6200.00
	Vanadium	9 / 9	1.52 - 1.8	66.1	26.48	0.05	1322.00
	Zinc	9 / 9	0.84 - 1	7560	1157.46	10	756.00
TCL Pesticides/PCBs (ug/kg)	4,4'-DDD	9 / 9	3.3 - 350	4200	486.16	100	42.00
	4,4'-DDE	8 / 9	3.3 - 35	460	138.07	100	4.60
	4,4'-DDT	8 / 8	3.3 - 350	900	154.53	100	9.00
	Aroclor-1260	5 / 9	33 - 350	110	73.61	100	1.10
	Dieldrin	1 / 9	3.3 - 35	3.8	6.65	100	0.04
TCL Semivolatiles (ug/kg)	2-Methylnaphthalene	1 / 9	330 - 1700	310	553.33	--	--
	Acenaphthene	2 / 9	330 - 1700	170	529.44	100	1.70
	Acenaphthylene	3 / 9	330 - 1700	820	585.67	100	8.20
	Anthracene	2 / 9	330 - 1700	590	581.67	100	5.90
	Benzo(a)Anthracene	7 / 9	330 - 1700	2300	615.56	100	23.00
	Benzo(a)Pyrene	7 / 9	330 - 1700	1400	507.78	100	14.00
	Benzo(b)Fluoranthene	7 / 9	330 - 1700	1700	646.67	100	17.00
	Benzo(g,h,i)Perylene	6 / 9	330 - 1700	890	454.89	100	8.90

Table 2 - 1
Ecological Screening Values for Site 2 Surface Soil
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG Hazard Quotient
	Benzo(k)Fluoranthene	7 / 9	330 - 1700	1100	443.00	100	11.00
	Bis(2-Ethylhexyl)Phthal	2 / 7	330 - 1700	54	612.71	--	--
	Butylbenzylphthalate	1 / 9	330 - 1700	280	555.56	--	--
	Carbazole	2 / 9	330 - 1700	300	546.11	--	--
	Chrysene	7 / 9	330 - 1700	2700	677.78	100	27.00
	Di-n-Butylphthalate	1 / 9	330 - 1700	210	542.22	--	--
	Dibenz(a,h)Anthracene	1 / 9	330 - 1700	54	599.89	100	0.54
	Dibenzofuran	1 / 9	330 - 1700	70	601.67	--	--
	Fluoranthene	7 / 9	330 - 1700	5000	1038.89	100	50.00
	Fluorene	2 / 9	330 - 1700	380	553.89	100	3.80
	Indeno(1,2,3-cd)Pyrene	7 / 9	330 - 1700	800	381.56	100	8.00
	Naphthalene	1 / 9	330 - 1700	52	599.67	100	0.52
	Phenanthrene	6 / 9	330 - 1700	4400	916.44	100	44.00
	Pyrene	7 / 9	330 - 1700	7200	1147.22	100	72.00
TCL Volatile (ug/kg)	Acetone	2 / 4	10 - 11	35	13.13	--	--
	Toluene	2 / 9	10 - 11	2	4.39	100	0.02

Sample locations represented: SJS02-SS02-000, SJS02-SS03-000, SJS02-SS04-000, SJS02-SS05-000/000P, SJS02-SS06-000, SJS02-SS07-000, SJS02-SS08-000, SJS02-SS09-000, SJS02-SS10-000.

Table 2 - 2
Ecological Screening Values for Site 5 Surface Soil
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG Hazard Quotient
General Chemistry (mg/kg)	Total Phosphorous	9 / 9	1.2 - 3.5	18.8	6.64	--	--
TAL Inorganics (mg/kg)	Aluminum	9 / 9	6.88 - 9.92	20200	9240.00	1	20200.00
	Antimony	5 / 9	0.36 - 0.4	1.1	0.76	0.48	2.29
	Arsenic	9 / 9	0.47 - 0.68	111	22.79	328	0.34
	Barium	9 / 9	0.31 - 0.45	1040	249.14	440	2.36
	Beryllium	9 / 9	0.16 - 0.23	1.2	0.65	0.02	60.00
	Cadmium	6 / 8	0.08 - 0.11	6	1.00	2.5	2.40
	Chromium	9 / 9	1.09 - 1.58	74.6	24.80	0.0075	9946.67
	Cobalt	9 / 9	1.25 - 1.8	17.7	5.94	100	0.18
	Copper	9 / 9	0.94 - 1.35	6470	697.29	15	431.33
	Cyanide	2 / 9	0.49 - 0.57	1.45	0.42	0.005	290.00
	Iron	9 / 9	2.66 - 3.83	120000	28520.00	12	10000.00
	Lead	9 / 9	0.16 - 0.23	7210	1020.51	0.01	721000
	Manganese	9 / 9	0.31 - 0.45	852	234.77	330	2.58
	Mercury	8 / 8	0.04 - 0.06	0.98	0.41	0.058	16.90
	Nickel	8 / 8	1.09 - 1.58	91.5	19.04	2	45.75
	Silver	2 / 3	0.16 - 0.2	3.5	1.45	9.80E-06	357143
	Thallium	8 / 9	0.31 - -0.45	5.3	1.66	0.001	5300.00
	Vanadium	9 / 9	1.41 - 2.03	55.7	30.71	0.05	1114.00
	Zinc	9 / 9	0.78 - 1.13	8490	983.60	10	849.00
TCL Pesticides/PCBs (ug/kg)	4,4'-DDD	6 / 9	3.3 - 37	310	52.53	100	3.10
	4,4'-DDE	8 / 9	3.3 - 370	2200	365.85	100	22.00
	4,4'-DDT	7 / 9	3.3 - 370	1200	289.03	100	12.00
	alpha-BHC	1 / 9	1.7 - 19	3.5	2.08	100000	0.00
	alpha-Chlordane	1 / 9	1.7 - 19	2.4	1.97	100	0.02
	Aroclor-1260	2 / 9	33 - 370	39	38.75	100	0.39
	Dieldrin	2 / 9	3.3 - 37	6.8	4.37	100	0.07
	gamma-Chlordane	1 / 9	1.7 - 19	2.6	1.99	100	0.03
TCL Semivolatiles (ug/kg)	2,4-Dinitrotoluene	5 / 9	330 - 2000	3200	554.50	--	--
	2,6-Dinitrotoluene	1 / 9	330 - 2000	39	253.90	--	--
	2-Methylnaphthalene	1 / 9	330 - 2000	42	254.20	--	--
	Acenaphthene	1 / 9	330 - 2000	41	254.10	100	0.41
	Acenaphthylene	3 / 9	330 - 2000	47	227.10	100	0.47

Table 2 - 2
Ecological Screening Values for Site 5 Surface Soil
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG Hazard Quotient
	Anthracene	3 / 9	330 - 2000	54	229.90	100	0.54
	Benzo(a)Anthracene	9 / 9	330 - 2000	810	282.20	100	8.10
	Benzo(a)Pyrene	8 / 9	330 - 2000	480	227.00	100	4.80
	Benzo(b)Fluoranthene	9 / 9	330 - 2000	1900	649.20	100	19.00
	Benzo(g,h,i)Perylene	8 / 9	330 - 2000	350	164.30	100	3.50
	Benzo(k)Fluoranthene	8 / 9	330 - 2000	700	230.10	100	7.00
	Carbazole	2 / 9	330 - 2000	61	243.60	--	--
	Chrysene	9 / 9	330 - 2000	1100	403.60	100	11.00
	Di-n-Butylphthalate	6 / 9	330 - 2000	4700	613.10	--	--
	Dibenz(a,h)Anthracene	1 / 9	330 - 2000	61	256.10	100	0.61
	Fluoranthene	8 / 9	330 - 2000	790	425.30	100	7.90
	Indeno(1,2,3-cd)Pyrene	9 / 9	330 - 2000	540	189.60	100	5.40
	N-Nitrosodiphenylamine	3 / 9	330 - 2000	530	212.50	--	--
	Naphthalene	1 / 9	330 - 2000	50	255.00	100	0.50
	Phenanthrene	8 / 9	330 - 2000	330	197.60	100	3.30
	Pyrene	9 / 9	330 - 2000	1200	458.10	100	12.00
TCL Volatile (ug/kg)	1,2-Dichloroethene (total)	1 / 9	330 - 2000	1	5.20	300	0.00
	2-Butanone	2 / 9	330 - 2000	210	28.35	--	--
	Acetone	5 / 9	330 - 2000	28	11.61	--	--
	Methylene Chloride	1 / 1	330 - 2000	120	67.00	300	0.40
	Tetrachloroethene	3 / 9	330 - 2000	4	4.10	300	0.01
	Toluene	4 / 9	330 - 2000	5	4.70	100	0.05
	Total Xylenes	1 / 9	330 - 2000	3	5.35	100	0.03

Sample locations represented: SJS05-SS01-000, SJS05-SS02-000, SJS05-SS03-000, SJS05-SS04-000, SJS05-SS05-000, SJS05-SS06-000, SJS05-SS07,000, SJS05-SS08-000, SJS05-SS09-000.

Table 2-3
Subsurface Soil Screening for Site 2
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Dectection Limit	Maximum Concentration	BTAG Value	BTAG Hazard Quotient
General Chemistry (mg/kg)	Total Phosphorous (as P)	1/1	3.3	11.6	---	---
TAL Inorganics (mg/kg)	Aluminum	1/1	8.33	5510	1	5510.00
	Arsenic	1/1	0.57	4.5	328	0.01
	Barium	1/1	0.38	291	440	0.66
	Beryllium	1/1	0.19	0.35	0.02	17.50
	Cadmium	1/1	0.09	4.4	2.5	1.76
	Chromium	1/1	1.33	30.8	0.0075	4106.67
	Cobalt	1/1	1.51	3.6	100	0.04
	Copper	1/1	1.14	433	15	28.87
	Iron	1/1	3.22	16700	12	1391.67
	Lead	1/1	0.19	885	0.01	88500.00
	Manganese	1/1	0.38	134	330	0.41
	Mercury	1/1	0.05	0.55	0.058	9.48
	Nickel	1/1	1.33	31.8	2	15.90
	Thallium	1/1	0.38	1.1	0.001	1100.00
	Vanadium	1/1	1.7	27.5	0.05	550.00
	Zinc	1/1	0.95	2420	10	242.00
TCL Pesticides/PCBCs (ug/kg)	4,4'-DDD	1/1	3.5	5.6	100	0.06
	4,4'-DDE	1/1	35	110	100	1.10
	4,4'-DDT	1/1	3.5	20	100	0.20
	Aroclor-1260	1/1	35	21	100	0.21
TCL Semivolatiles (ug/kg)	Anthracene	1/1	350	45	100	0.45
	Benzo(a)Anthracene	1/1	350	290	100	2.90
	Benzo(a)Pyrene	1/1	350	290	100	2.90
	Benzo(b)Fluoranthene	1/1	350	530	100	5.30
	Benzo(g,h,i)Perylene	1/1	350	170	100	1.70
	Benzo(k)Fluoranthene	1/1	350	210	100	2.10
	Bis(2-Ethylhexyl)Phthalate	1/1	350	49	---	---
	Chrysene	1/1	350	360	100	3.60
	Dibenz(a,h)Anthracene	1/1	350	55	100	0.55
	Fluoranthene	1/1	350	640	100	6.40
	Indeno(1,2,3-cd)Pyrene	1/1	350	200	100	2.00
	Phenanthrene	1/1	350	410	100	4.10
	Pyrene	1/1	350	590	100	5.90
	Acetone	1/1	11	6	---	---

Table 2-4
Subsurface Soil Screening for Site 5
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limit	Maximum Concentration	BTAG Value	BTAG Hazard Quotient
TAL Inorganics (mg/kg)	Aluminum	1/1	10.76	11300	1	11300.00
	Antimony	1/1	0.49	0.79	0.48	1.65
	Arsenic	1/1	0.73	9	328	0.03
	Barium	1/1	0.49	85.2	440	0.19
	Beryllium	1/1	0.24	0.39	0.02	19.50
	Chromium	1/1	1.71	24.3	0.0075	3240.00
	Cobalt	1/1	1.96	3.9	100	0.04
	Copper	1/1	1.47	25	15	1.67
	Iron	1/1	4.16	23700	12	1975.00
	Lead	1/1	0.24	89.2	0.01	8920.00
	Manganese	1/1	0.49	68.5	330	0.21
	Mercury	1/1	0.07	0.22	0.058	3.79
	Nickel	1/1	1.71	7.5	2	3.75
	Thallium	1/1	0.49	1.5	0.001	1500.00
	Vanadium	1/1	2.2	31.7	0.05	634.00
	Zinc	1/1	1.22	63.3	10	6.33
TCL Pesticides/PCBs (ug/kg)	4,4'-DDD	1/1	5.3	33	100	0.33
	4,4'-DDE	1/1	53	310	100	3.10
	4,4'-DDT	1/1	53	620	100	6.20
TCL Semivolatiles (ug/kg)	Benzo(a)Anthracene	1/1	530	130	100	1.30
	Benzo(a)Pyrene	1/1	530	82	100	0.82
	Benzo(b)Fluoranthene	1/1	530	300	100	3.00
	Benzo(g,h,i)Perylene	1/1	530	85	100	0.85
	Benzo(k)Fluoranthene	1/1	530	120	100	1.20
	Chrysene	1/1	530	230	100	2.30
	Fluoranthene	1/1	530	170	100	1.70
	Indeno(1,2,3-cd)Pyrene	1/1	530	120	100	1.20
	Pyrene	1/1	530	120	100	1.20
TCL Volatiles (ug/kg)	Methylene Chloride	1/1	16	14	300	0.05
	Tetrachloroethene	1/1	16	2	300	0.01

Table 2 - 5
Ecological Screening Values for Site 2 Sediment
St. Juliens Creek Annex
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG Hazard Quotient
General Chemistry (mg/kg)	Total Phosphorous (as P)	2 / 2	3.4 - 5.1	20.2	16.85	---	---
TAL Inorganics (mg/kg)	Aluminum	2 / 2	22.35 - 33.36	27200	19050	---	---
	Antimony	1 / 1	1.48 - 1.48	27.6	27.6	150	0.18
	Arsenic	2 / 2	1.52 - 2.22	19.4	12.4	8.2	2.37
	Barium	2 / 2	1.02 - 1.48	109	82.35	---	---
	Beryllium	1 / 1	0.74 - 0.74	1.1	1.1	---	---
	Cadmium	2 / 2	0.25 - 0.38	4	3.25	1.2	3.33
	Chromium	2 / 2	3.56 - 5.17	2630	1453.5	0.005	526000.00
	Cobalt	1 / 1	4.06 - 5.91	10.7	6.365	---	---
	Copper	2 / 2	3.05 - 4.43	2620	1482	34	77.06
	Iron	2 / 2	8.63 - 12.89	31100	24800	---	---
	Lead	2 / 2	0.51 - 0.74	545	353	46.7	11.67
	Manganese	2 / 2	1.02 - 1.52	235	170	---	---
	Mercury	2 / 2	0.14 - 0.18	0.79	0.62	0.15	5.27
	Nickel	2 / 2	3.56 - 5.31	41.5	28.95	20.9	1.99
	Thallium	1 / 1	1.02 - 1.52	2.2	1.16	---	---
	Vanadium	2 / 2	4.57 - 6.82	115	71.9	---	---
	Zinc	2 / 2	2.54 - 3.7	1400	908	150	9.33
TCL Pesticide/PCBs (ug/kg)	4,4'-DDD	2 / 2	13 - 110	310	260	16	19.38
	4,4'-DDE	2 / 2	11 - 12	130	100.5	2.2	59.09
	4,4'-DDT	2 / 2	11 - 13	28	14.27	1.58	17.72
	alpha-Chlordane	2 / 2	5.4 - 6	28	17.65	---	---
	Aroclor-1260	1 / 1	110 - 130	69	61.33	22.7	3.04
	Dieldrin	1 / 1	11 - 12	36	20.75	---	---
	gamma-Chlordane	2 / 2	5.4 - 6	29	19.4	---	---
TCL Semivolatiles (ug/kg)	Anthracene	1 / 1	1300 - 9100	130	2340	85.3	1.52
	Benzo(a)Anthracene	1 / 1	1300 - 9100	440	2495	261	1.69
	Benzo(a)Pyrene	1 / 1	1300 - 9100	660	2605	430	1.53
	Benzo(b)Fluoranthene	2 / 2	1300 - 9100	1300	1250	3200	0.41
	Benzo(g,h,i)Perylene	1 / 1	1300 - 9100	580	2565	670	0.87
	Benzo(k)fluoranthene	1 / 1	1400 - 9100	470	2510	---	---
	Chrysene	1 / 1	1300 - 9100	680	2615	384	1.77
	Diethylphthalate	1 / 1	1300 - 9100	250	2400	200	1.25
	Fluoranthene	2 / 2	1300 - 9100	930	890	600	1.55
	Indeno(1,2,3-cd)Pyrene	1 / 1	1300 - 9100	530	2540	600	0.88

Table 2 - 5
Ecological Screening Values for Site 2 Sediment
St. Juliens Creek Annex
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG Hazard Quotient
	Phenanthrene	1 / 1	1300 - 9100	190	2370	240	0.79
	Pyrene	2 / 2	1300 - 9100	1200	1150	665	1.80
TCL Volatile (ug/kg)	1,2-Dichloroethene (total)	1 / 1	31 - 37	9	13.5	---	---
	4-Methyl-2-Pentanone	1 / 1	31 - 32	5	10.5	---	---
	Acetone	2 / 2	31 - 37	450	271	---	---
	Carbon Disulfide	1 / 1	31 - 37	81	48.25	---	---

Sample locations represented: SJS02-SD02-000, SJS02-SD03-000/000P.

Table 2 - 6
Ecological Screening Values for Site 5 Sediment
St. Juliens Creek Annex
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG Hazard Quotient
General Chemistry (mg/kg)	Total Phosphorous (as P)	2 / 2	2.6 - 30.2	128	74.35	---	---
TAL Inorganics (mg/kg)	Aluminum	2 / 2	12.61 - 18.1	17000	15400	---	---
	Antimony	1 / 2	0.82 - 0.82	0.94	0.94	150	0.01
	Arsenic	1 / 2	0.86 - 1.23	12.5	6.465	8.2	1.52
	Barium	2 / 2	0.57 - 0.82	133	93.05	---	---
	Beryllium	2 / 2	0.29 - 0.41	2.4	1.57	---	---
	Chromium	2 / 2	2.01 - 2.88	32.2	24.6	0.005	6440.00
	Cobalt	1 / 2	2.29 - 3.29	4.3	2.9725	---	---
	Copper	2 / 2	1.72 - 2.47	39.7	39.35	34	1.17
	Cyanide	1 / 2	0.5 - 1.1	1.1	0.825	---	---
	Iron	2 / 2	4.87 - 6.99	161000	95050	---	---
	Lead	2 / 2	0.29 - 0.41	302	208.5	46.7	6.47
	Manganese	2 / 2	0.57 - 0.82	76	62.05	---	---
	Mercury	2 / 2	0.09 - 0.1	0.29	0.23	0.15	1.93
	Nickel	1 / 1	2.88 - 2.88	7	7	20.9	0.33
	Silver	1 / 2	0.29 - 0.41	1.6	0.9025	1	1.60
	Thallium	1 / 2	0.57 - 0.82	5.7	3.055	---	---
	Vanadium	2 / 2	2.58 - 3.7	42.2	39.95	---	---
	Zinc	2 / 2	1.43 - 2.06	149	136.5	150	0.99
TCL Pesticides/PCBs (ug/kg)	4,4'-DDD	2 / 2	6.2 - 71	110	64.5	16	6.88
	4,4'-DDE	2 / 2	6.2 - 7.1	54	33	2.2	24.55
	4,4'-DDT	2 / 2	6.2 - 7.1	38	32	1.58	24.05
	Dieldrin	1 / 2	6.2 - 7.1	21	12.05	---	---
	Endrin Aldehyde	1 / 2	6.2 - 7.1	8.9	6.225	---	---
TCL Semivolatiles (ug/kg)	2,4-Dinitrotoluene	1 / 2	620 - 3600	65	932.5	---	---
	Acenaphthene	1 / 2	620 - 3600	65	932.5	16	4.06
	Anthracene	1 / 2	620 - 3600	99	949.5	85.3	1.16
	Benzo(a)Anthracene	1 / 2	620 - 3600	300	1050	261	1.15
	Benzo(a)Pyrene	1 / 2	620 - 3600	220	1010	430	0.51
	Benzo(b)Fluoranthene	1 / 2	620 - 3600	460	1130	3200	0.14
	Benzo(g,h,i)Perylene	1 / 2	620 - 3600	170	985	670	0.25
	Benzo(k)fluoranthene	1 / 2	620 - 3600	160	980	---	---
	Chrysene	2 / 2	620 - 3600	450	430	384	1.17
	Diethylphthalate	1 / 2	620 - 3600	720	515	200	3.60
	Fluorene	1 / 2	620 - 3600	63	931.5	19	3.32
	Indeno(1,2,3-cd)Pyrene	1 / 2	620 - 3600	170	985	600	0.28
	N-Nitrosodiphenylamine	1 / 2	620 - 3600	610	1205	28	21.79
	Naphthalene	1 / 2	620 - 3600	80	940	160	0.50
	Phenanthrene	1 / 2	620 - 3600	520	1160	240	2.17
	Pyrene	1 / 2	620 - 3600	680	1240	665	1.02

Table 2 - 6
Ecological Screening Values for Site 5 Sediment
St. Juliens Creek Annex
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG Hazard Quotient
TCL Volatile (ug/kg)	Acetone	1 / 2	17 - 21	52	30.25	---	---
	Chloroform	1 / 2	17 - 21	3	6.75	---	---

Sample locations represented: SJS05-SD02-000, SJS05-SD03-000.

Table 2 - 7
Ecological Screening Values for Site 2 Surface Water
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG Hazard Quotient
General Chemistry	Total Phosphorous	1 / 1	0.05 - 0.05	0.202	0.202	0.0001	2020.00
TAL Inorganics (ug/L)	Aluminum	1 / 1	29 - 29	7870	7870	--	--
	Antimony	1 / 1	1 - 1	2	2	500	0.00
	Arsenic	1 / 1	3 - 3	3.1	3.1	--	--
	Barium	1 / 1	1 - 1	70.7	70.7	10000	0.01
	Cadmium	1 / 1	0.3 - 0.3	1.9	1.9	9.3	0.20
	Chromium	1 / 1	4 - 4	166	166	--	--
	Copper	1 / 1	2 - 2	203	203	2.9	70.00
	Iron	1 / 1	5 - 5	10700	10700	--	--
	Lead	1 / 1	1 - 1	77.9	77.9	5.1	15.27
	Manganese	1 / 1	1 - 1	120	120	10	12.00
	Vanadium	1 / 1	4 - 4	32.8	32.8	10000	0.00
	Zinc	1 / 1	3 - 3	268	268	19	14.11
TCL Semivolatiles (ug/L)	Bis(2-Ethylhexyl)Phthalate	1 / 1	10 - 10	3	3	360	0.01

Sample location represented: SJS02-SW02-000/000P.
Note: BTAG screening values are for marine conditions since the surface water collected can be classified as brackish.

Table 2-8
Groundwater Screening for Downgradient Well MW2S of Site 2
St. Juliens Creek Annex Facility
Chesapeake, VA

ROUND 1								
Sample Analysis	Chemical Name	Frequency of Detection	Detection Limit	Maxiumum Concentration	BTAG Value	BTAG Hazard Quotient	AWQC Value (1)	AWQC Hazard Quotient
General Chemistry (mg/L)	Total Phosphorous (as P)	1/1	0.05	0.338	0.0001	3380.00	0.0001	3380.00
TAL Inorganics (ug/L)	Aluminum	1/1	29	35500	---	---	---	---
	Barium	1/1	1	726	10000	0.07	---	---
	Chromium	1/1	4	56.3	---	---	50	1.13
	Iron	1/1	5	377000	---	---	---	---
	Lead	1/1	1	36.7	5.1	7.20	8.5	4.32
	Manganese	1/1	1	797	10	79.70	---	---
	Nickel	1/1	4	9.3	8.3	1.12	8.3	1.12
	Silver	1/1	3	1.5	0.0001	15000.00	0.92	1.63
	Thallium	1/1	2	6.9	2130	0.00	2130	0.00
	Vanadium	1/1	4	79.6	10000	0.01	---	---

ROUND 2								
Sample Analysis	Chemical Name	Frequency of Detection	Detection Limit	Maximum Concentration	BTAG Value	BTAG Hazard Quotient	AWQC Value (1)	AWQC Hazard Quotient
General Chemistry (mg/L)	Total Phosphorous (as P)	1/1	0.05	0.082	0.0001	107.00	0.0001	820.00
TAL Inorganics (ug/L)	Aluminum	1/1	29	1170	---	---	---	---
	Barium	1/1	1	575	10000	0.06	---	---
	Beryllium	1/1	1	0.77	1500	0.00	---	---
	Chromium	1/1	4	14.3	---	---	50	0.29
	Cobalt	1/1	3	15.4	--	---	---	---
	Iron	1/1	5	203000	320	---	---	---
	Lead	1/1	1	8.2	5.1	1.61	8.5	0.96
	Manganese	1/1	1	843	10	84.30	---	---
	Nickel	1/1	4	8.2	8.3	0.99	8.3	0.99
	Vanadium	1/1	4	12.3	10000	0.00	---	---
	Zinc	1/1	3	15.3	19	0.81	86	0.18

Note: BTAG Region III screening values (USEPA, 1995) and USEPA Ambient Water Quality Criteria (AWQC) (USEPA, 1986) are for marine conditions since the groundwater would be discharging to brackish conditions.

(1) Chromium AWQC is for chromium (VI). Silver AWQC is proposed.

Table 2-9
Groundwater Screening for Downgradient Well MW2S of Site 5
St. Juliens Creek Annex Facility
Chesapeake, VA

ROUND 1								
Sample Analysis	Chemical Name	Frequency of Detection	Detection Limit	Maximum Concentration	BTAG Value	BTAG Hazard Quotient	AWQC Value	AWQC Hazard Quotient
General Chemistry (mg/L)	Total Phosphorous (as P)	1/1	0.05	0.309	0.0001	3090.00	0.0001	3090.00
TAL Inorganics (ug/L)	Aluminum	1/1	29	1110	---	---	---	---
	Barium	1/1	1	126	10000	0.01	---	---
	Iron	1/1	5	13500	---	---	---	---
	Lead	1/1	1	1.1	5.1	0.22	8.5	0.13
	Manganese	1/1	1	992	10	99.20	---	---
	Nickel	1/1	4	14.1	8.3	1.70	8.3	1.70

ROUND 2								
Sample Analysis	Chemical Name	Frequency of Detection	Detection Limit	Maximum Concentration	BTAG Value	BTAG Hazard Quotient	AWQC Value (1)	AWQC Hazard Quotient
General Chemistry (mg/L)	Total Phosphorous (as P)	1/1	0.05	0.14	0.0001	1360.00	0.0001	1360.00
TAL Inorganics (ug/L)	Aluminum	1/1	29	87400.00	---	---	---	---
	Arsenic	1/1	3	12.00	---	---	---	---
	Beryllium	1/1	1	18.30	1500	0.01	---	---
	Cadmium	1/1	0.3	9.00	9.3	0.97	9.3	0.97
	Cobalt	1/1	3	257.00	---	---	---	---
	Copper	1/1	2	124.00	2.9	42.76	2.9	42.76
	Iron	1/1	5	40800.00	---	---	---	---
	Lead	1/1	1	16.20	5.1	3.18	8.5	1.91
	Manganese	1/1	1	4320.00	10	432.00	---	---
	Nickel	1/1	4	360.00	8.3	43.37	8.3	43.37
	Silver	1/1	3	2.80	0.0001	28000.00	0.92	3.04
	Vanadium	1/1	4	9.90	10000	0.00	---	---
	Zinc	1/1	3	2020.00	19	106.32	86	23.49
Low Conc. Volatiles (ug/L)	Carbon Disulfide	1/1	1	0.80	2	0.40	---	---

Note: BTAG Region III (USEPA, 1995) and USEPA Ambient Water Quality Criteria (AWQC) (USEPA, 1986) screening values are for marine conditions since the groundwater would be discharging to brackish conditions.

(1) Silver AWQC is proposed.

Table 2-10
Contaminant of Potential Concern Summary for Site 2
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Soil	Sediment	Surface Water
General Chemistry	Total Phosphorous (as P)	X	X	X
TCL Inorganics	Aluminum	X	X	X
	Antimony	X		
	Arsenic		X	X
	Barium		X	
	Beryllium	X	X	
	Chromium	X		X
	Cobalt		X	
	Copper	X	X	X
	Cyanide	X		
	Iron	X	X	X
	Lead	X	X	X
	Manganese	X	X	X
	Mercury	X	X	
	Nickel	X	X	
	Thallium	X	X	
	Vanadium	X	X	
	Zinc	X	X	X
TCL Pesticides/PCBs	4,4'-DDD	X	X	
	4,4'-DDE	X	X	
	4,4'-DDT	X	X	
	alpha-Chlordane		X	
	Aroclor-1260	X	X	
	Dieldrin		X	
	gamma-Chlordane		X	
TCL Semivolatiles	2-Methylnaphthalene	X		
	Acenaphthene	X		
	Acenaphthylene	X		
	Anthracene	X	X	
	Benzo(a)Anthracene	X	X	
	Benzo(a)Pyrene	X	X	
	Benzo(b)Fluoranthene	X		
	Benzo(g,h,i)Perylene	X		
	Benzo(k)Fluoranthene	X	X	
	Bis(2-Ethylhexyl)Phthalate	X		
	Butylbenzylphthalate	X		
	Carbazole	X		
	Chrysene	X	X	
	Di-n-Butylphthalate	X		
	Dibenzofuran	X		
	Diethylphthalate		X	
	Fluoranthene	X	X	
	Fluorene	X		
	Indeno(1,2,3-cd)Pyrene	X		
	Phenanthrene	X		
	Pyrene	X	X	
TCL Volatiles	1,2-Dichloroethene (total)		X	
	4-Methyl-2-Pentanone		X	
	Acetone	X	X	
	Carbon Disulfide		X	

Table 2-11
Contaminants of Potential Concern Summary for Site 5
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Soil COPC	Sediment COPC
General Chemistry	Total Phosphorous (as P)	X	X
TAL Inorganics	Aluminum	X	X
	Antimony	X	
	Arsenic		X
	Barium	X	X
	Beryllium	X	X
	Cadmium	X	
	Chromium	X	X
	Cobalt		X
	Copper	X	X
	Cyanide	X	X
	Iron	X	X
	Lead	X	X
	Manganese	X	X
	Mercury	X	X
	Nickel	X	
	Silver	X	X
	Thallium	X	X
	Vanadium	X	X
	Zinc	X	
TCL Pesticides/PCBs	4,4'-DDD	X	X
	4,4'-DDE	X	X
	4,4'-DDT	X	X
	Dieldrin		X
	Endrin Aldehyde		X
TCL Semivolatiles	2,4-Dinitrotoluene	X	X
	2,6-Dinitrotoluene	X	
	2-Methylnaphthalene	X	
	Acenaphthene		X
	Anthracene		X
	Benzo(a)Anthracene	X	X
	Benzo(a)Pyrene	X	
	Benzo(b)Fluoranthene	X	
	Benzo(g,h,i)Perylene	X	
	Benzo(k)Fluoranthene	X	X
	Carbazole	X	
	Chrysene	X	X
	Diethylphthalate		X
	Di-n-Butylphthalate	X	
	Fluoranthene	X	
	Fluorene		X
	Indeno(1,2,3-cd)Pyrene	X	
	N-Nitrosodiphenylamine	X	X
	Phenanthrene	X	X
	Pyrene	X	X
TCL Volatiles	2-Butanone	X	
	Acetone	X	X
	Chloroform		X

Table 4-1
Site 2 Maximum and Mean Values Used in Receptor exposure Models
St. Juliens Creek Annex Facility
Chesapeake, VA

Chemical	Surface Soil Mean (mg/kg)	Surface Soil Maximum (mg/kg)	Surface Water Mean (mg/L)	Surface Water Maximum (mg/L)	Sediment Mean (mg/kg)	Sediment Maximum (mg/kg)
Total Phosphorous (as P)	29.39	153	0.202	0.202	16.85	20.2
Aluminum	6521.11	18600	7.87	7.87	19050	27200
Antimony	2.46	7	NA	NA	NA	NA
Arsenic	NA	NA	0.0031	0.0031	12.4	19.4
Barium	NA	NA	NA	NA	82.35	109
Beryllium	1.91	13.4	NA	NA	1.1	1.1
Chromium	63.36	246	0.17	0.17	NA	NA
Cobalt	NA	NA	NA	NA	6.365	10.7
Copper	548.86	4260	0.2	0.2	1482	2620
Cyanide	0.32	0.85	NA	NA	NA	NA
Iron	28112.22	106000	10.7	10.7	24800	31100
Lead	371.28	2370	0.078	0.078	353	545
Manganese	169.69	688	0.12	0.12	170	235
Mercury	0.30	0.56	NA	NA	0.62	0.79
Nickel	49.66	246	NA	NA	28.95	41.5
Thallium	1.59	6.2	NA	NA	1.16	2.2
Vanadium	26.48	66.1	NA	NA	71.9	115
Zinc	1157.46	7560	0.27	0.27	908	1400
4,4'-DDD	0.49	4.2	NA	NA	0.26	0.31
4,4'-DDE	0.14	0.46	NA	NA	0.1	0.13
4,4'-DDT	0.15	0.9	NA	NA	0.014	0.028
alpha-Chlordane	NA	NA	NA	NA	0.018	0.028
Aroclor-1260	0.07	0.11	NA	NA	0.061	0.069
Dieldrin	NA	NA	NA	NA	0.021	0.036
gamma-Chlordane	NA	NA	NA	NA	0.019	0.029
2-Methylnaphthalene	0.31	0.31	NA	NA	NA	NA
Acenaphthene	0.17	0.17	NA	NA	NA	NA
Acenaphthylene	0.59	0.82	NA	NA	NA	NA
Anthracene	0.58	0.59	NA	NA	0.13	0.13
Benzo(a)anthracene	0.62	2.3	NA	NA	0.44	0.44
Benzo(a)pyrene	0.51	1.4	NA	NA	0.66	0.66
Benzo(b)fluoranthene	0.65	1.7	NA	NA	NA	NA
Benzo(g,h,i)perylene	0.45	0.89	NA	NA	NA	NA
Benzo(k)fluoranthene	0.44	1.1	NA	NA	0.47	0.47
Bis(2-ethylhexyl)phthalate	0.054	0.054	NA	NA	NA	NA
Butylbenzylphthalate	0.28	0.28	NA	NA	NA	NA
Carbazole	0.3	0.3	NA	NA	NA	NA
Chrysene	0.68	2.7	NA	NA	0.68	0.68
Di-n-butylphthalate	0.21	0.21	NA	NA	NA	NA
Dibenzofuran	0.07	0.07	NA	NA	NA	NA
Diethylphthalate	NA	NA	NA	NA	0.25	0.25
Fluoranthene	1.04	5	NA	NA	0.89	0.93
Fluorene	0.38	0.38	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.38	0.8	NA	NA	NA	NA
Phenanthrene	0.92	4.4	NA	NA	NA	NA
Pyrene	1.15	7.2	NA	NA	1.15	1.2
1,2-Dichloroethene (total)	NA	NA	NA	NA	0.009	0.009
4-Methyl-2-Pentanone	NA	NA	NA	NA	0.005	0.005
Acetone	0.01	0.035	NA	NA	0.27	0.45
Carbon Disulfide	NA	NA	NA	NA	0.048	0.081

Notes: NA means that parameter is not being addressed as a COPC for that media. It does not mean that it was not detected in that media.

Table 4-2
Site 5 Maximum and Mean Values Used in Receptor Exposure Models
St. Juliens Creek Annex Facility
Chesapeake, VA

Chemical	Surface Soil Mean (mg/kg)	Surface Soil Maximum (mg/kg)	Surface Water Mean (mg/L)	Surface Water Maximum (mg/L)	Sediment Mean (mg/kg)	Sediment Maximum (mg/kg)
Total Phosphorous	6.64	18.8	NA	NA	74.35	128
Aluminum	9240.00	20200	NA	NA	15400	17000
Antimony	0.76	1.1	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA	6.465	12.5
Barium	249.14	1040	NA	NA	93.05	133
Beryllium	0.65	1.2	NA	NA	1.57	2.4
Cadmium	1.00	6	NA	NA	NA	NA
Chromium	24.80	74.6	NA	NA	24.6	32.2
Cobalt	NA	NA	NA	NA	2.9725	4.3
Copper	697.29	6470	NA	NA	39.35	39.7
Cyanide	0.42	1.45	NA	NA	0.825	1.1
Iron	28520.00	120000	NA	NA	95050	161000
Lead	1020.51	7210	NA	NA	208.5	302
Manganese	234.77	852	NA	NA	62.05	76
Mercury	0.41	0.98	NA	NA	0.23	0.29
Nickel	19.04	91.5	NA	NA	NA	NA
Silver	1.45	3.5	NA	NA	0.9025	1.6
Thallium	1.66	5.3	NA	NA	3.055	5.7
Vanadium	30.71	55.7	NA	NA	39.95	42.2
Zinc	983.60	8490	NA	NA	NA	NA
4,4'-DDD	0.05	0.31	NA	NA	0.065	0.11
4,4'-DDE	0.37	2.2	NA	NA	0.033	0.054
4,4'-DDT	0.29	1.2	NA	NA	0.032	0.038
Dieldrin	NA	NA	NA	NA	0.012	0.021
Endrin Aldehyde	NA	NA	NA	NA	0.0062	0.0089
2,4-Dinitrotoluene	0.55	3.2	NA	NA	0.065	0.065
2,6-Dinitrotoluene	0.039	0.039	NA	NA	NA	NA
2-Methylnaphthalene	0.042	0.042	NA	NA	NA	NA
Acenaphthene	NA	NA	NA	NA	0.065	0.065
Anthracene	NA	NA	NA	NA	0.099	0.099
Benzo(a)anthracene	0.28	0.81	NA	NA	0.3	0.3
Benzo(a)pyrene	0.23	0.48	NA	NA	NA	NA
Benzo(b)fluoranthene	0.65	1.9	NA	NA	NA	NA
Benzo(g,h,i)perylene	0.16	0.35	NA	NA	NA	NA
Benzo(k)fluoranthene	0.23	0.7	NA	NA	0.16	0.16
Carbazole	0.061	0.061	NA	NA	NA	NA
Chrysene	0.40	1.1	NA	NA	0.43	0.45
Diethylphthalate	NA	NA	NA	NA	0.52	0.72
Di-n-Butylphthalate	0.61	4.7	NA	NA	NA	NA
Fluoranthene	0.43	0.79	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA	0.063	0.063
Indeno(1,2,3-cd)pyrene	0.19	0.54	NA	NA	NA	NA
N-Nitrosodiphenylamine	0.21	0.53	NA	NA	0.061	0.061
Phenanthrene	0.20	0.33	NA	NA	0.52	0.52
Pyrene	0.46	1.2	NA	NA	0.68	0.68
2-Butanone	0.21	0.21	NA	NA	NA	NA
Acetone	0.01	0.028	NA	NA	0.03	0.052
Chloroform	NA	NA	NA	NA	0.003	0.003

Notes: NA means that parameter is not being addressed as a COPC for that media. It does not mean that it was not detected in that media.

TABLE 4-3
NO OBSERVED ADVERSE EFFECT LEVELS AND LOWEST OBSERVED EFFECT LEVELS FOR SITES 2 AND 5
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	Muskrat		Shrew		Robin		Heron		Hawk		Bass		Woodcock	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Total Phosphorous	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aluminum	1.93	19.3	2.295	22.952	109.7	44.5	109.7	44.5	109.7	44.5	NA	NA	109.7	44.5
Antimony	0.125	1.25	0.149	1.487	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.126	1.26	0.15	1.5	5.1	12.8	5.1	12.8	5.1	12.8	NA	NA	5.1	12.8
Barium	5.1	19.8	11.8	43.5	20.8	41.7	20.8	41.7	20.8	41.7	NA	NA	20.8	41.7
Beryllium	0.66	6.6	1.45	14.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	1	10	2.12	21.2	1.45	20	1.45	20	1.45	20	NA	NA	1.45	20
Chromium	11.7	15.4	33.4	44	1	5	1	5	1	5	0.012	0.12	1	5
Cobalt	1	10	1	10	1	10	1	10	1	10	NA	NA	1	10
Copper	11.7	15.4	33.4	44	47	61.7	47	61.7	47	61.7	NA	NA	47	61.7
Cyanide	68.7	687	141.9	1419	4.5	45	4.5	45	4.5	45	NA	NA	4.5	45
Iron	50	500	50	500	100	1000	100	1000	100	1000	NA	NA	100	1000
Lead	8	80	17.58	175.83	1.13	11.3	1.13	11.3	1.13	11.3	NA	NA	1.13	11.3
Manganese	88	284	193	624	997	9970	997	9970	997	9970	NA	NA	997	9970
Mercury	13.2	132	15.7	157	0.45	0.9	0.45	0.9	0.45	0.9	0.094	0.94	0.45	0.9
Nickel	40	80	87.91	175.83	77.4	107	77.4	107	77.4	107	NA	NA	77.4	107
Silver	181.2	1812	181.2	1812	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	0.0074	0.074	0.016	0.164	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.21	2.1	0.428	4.285	11.4	114	11.4	114	11.4	114	NA	NA	11.4	114
Zinc	160	320	351.7	703.3	14.5	131	14.5	131	14.5	131	NA	NA	14.5	131
4,4'-DDD	0.8	4	1.76	8.79	0.003	0.028	0.003	0.028	0.003	0.028	NA	NA	0.003	0.028
4,4'-DDE	0.8	4	1.76	8.79	0.003	0.028	0.003	0.028	0.003	0.028	NA	NA	0.003	0.028
4,4'-DDT	0.8	4	1.76	8.79	0.003	0.028	0.003	0.028	0.003	0.028	NA	NA	0.003	0.028
alpha-Chlordane	4.6	9.2	5.5	10.9	2.1	10.7	2.1	10.7	2.1	10.7	NA	NA	2.1	10.7
Aroclor 1260	0.39	3.9	0.39	3.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	0.02	0.2	0.044	0.44	0.077	0.77	0.077	0.77	0.077	0.77	NA	NA	0.077	0.77
gamma-Chlordane	4.6	9.2	5.5	10.9	2.1	10.7	2.1	10.7	2.1	10.7	NA	NA	2.1	10.7
Endrin Aldehyde	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	0.2	1.5	0.2	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100
Acenaphthene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100
Acenaphthylene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100
Anthracene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100
Benzo(a)anthracene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100

TABLE 4-3
NO OBSERVED ADVERSE EFFECT LEVELS AND LOWEST OBSERVED EFFECT LEVELS FOR SITES 2 AND 5
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	Raccoon		Fox		Mouse		Frog	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Total Phosphorous	NA	NA	NA	NA	NA	NA	NA	NA
Aluminum	1.93	19.3	0.551	5.515	1.93	19.3	NA	NA
Antimony	0.125	1.25	0.036	0.357	0.125	1.25	NA	NA
Arsenic	0.126	1.26	0.036	0.36	0.126	1.26	NA	NA
Barium	5.1	19.8	2.8	10.5	5.1	19.8	NA	NA
Beryllium	0.66	6.6	0.35	3.5	0.66	6.6	NA	NA
Cadmium	1	10	0.509	5.09	1	10	NA	NA
Chromium	11.7	15.4	8	10.6	11.7	15.4	0.012	0.12
Cobalt	1	10	1	10	1	10	NA	NA
Copper	11.7	15.4	8	10.6	11.7	15.4	NA	NA
Cyanide	68.7	687	34.1	341	68.7	687	NA	NA
Iron	50	500	50	500	50	500	NA	NA
Lead	8	80	4.22	42.25	8	80	NA	NA
Manganese	88	284	46	150	88	284	NA	NA
Mercury	13.2	132	3.77	37.7	13.2	132	0.094	0.94
Nickel	40	80	21.12	42.25	40	80	NA	NA
Silver	181.2	1812	181.2	1812	181.2	1812	NA	NA
Thallium	0.0074	0.074	0.004	0.039	0.0074	0.074	NA	NA
Vanadium	0.21	2.1	0.103	1.03	0.21	2.1	NA	NA
Zinc	160	320	84.5	169	160	320	NA	NA
4,4'-DDD	0.8	4	0.42	2.11	0.8	4	NA	NA
4,4'-DDE	0.8	4	0.42	2.11	0.8	4	NA	NA
4,4'-DDT	0.8	4	0.42	2.11	0.8	4	NA	NA
alpha-Chlordane	4.6	9.2	1.3	2.6	4.6	9.2	NA	NA
Aroclor 1260	0.39	3.9	0.39	3.9	0.39	3.9	NA	NA
Dieldrin	0.02	0.2	0.011	0.106	0.02	0.2	NA	NA
gamma-Chlordane	4.6	9.2	1.3	2.6	4.6	9.2	NA	NA
Endrin Aldehyde	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	0.2	1.5	0.2	1.5	0.2	1.5	NA	NA
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3
Acenaphthene	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3
Acenaphthylene	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3
Anthracene	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3
Benzo(a)anthracene	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3

TABLE 4-3
NO OBSERVED ADVERSE EFFECT LEVELS AND LOWEST OBSERVED EFFECT LEVELS FOR SITES 2 AND 5
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	Muskrat		Shrew		Robin		Heron		Hawk		Bass		Woodcock	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Benzo(a)pyrene	1	10	1.19	11.89	10	100	10	100	10	100	0.3	3	10	100
Benzo(b)fluoranthene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100
Benzo(g,h,i)perylene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100
Benzo(k)fluoranthene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100
bis-(2-Ethylhexyl)phthalate	18.3	183	21.8	218	1.1	11	1.1	11	1.1	11	NA	NA	1.1	11
Butylbenzylphthalate	159	1590	159	1590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100
Chrysene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100
Dibenz(a,h)anthracene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	4583	45830	5450	54500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	550	1833	654	2180	0.11	1.1	0.11	1.1	0.11	1.1	NA	NA	0.11	1.1
Fluoranthene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100
Fluorene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100
Indeno(1,2,3-cd)pyrene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100
N-Nitrosodiphenylamine	1.65	16.5	1.65	16.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100
Pyrene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	0.3	3	10	100
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	25	250	54.9	549	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	10	50	22	109.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	15	41	33	90	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA--Not Available

TABLE 4-3
NO OBSERVED ADVERSE EFFECT LEVELS AND LOWEST OBSERVED EFFECT LEVELS FOR SITES 2 AND 5
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	Raccoon		Fox		Mouse		Frog	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Benzo(a)pyrene	1	10	0.29	2.86	1	10	NA	NA
Benzo(b)fluoranthene	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3
Benzo(g,h,i)perylene	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3
Benzo(k)fluoranthene	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3
bis-(2-Ethylhexyl)phthalate	18.3	183	5.2	52	18.3	183	NA	NA
Butylbenzylphthalate	159	1590	159	1590	159	1590	NA	NA
Carbazole	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3
Chrysene	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3
Dibenz(a,h)anthracene	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	4583	45830	1310	13100	4583	45830	NA	NA
Di-n-Butylphthalate	550	1833	157	524	550	1833	NA	NA
Fluoranthene	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3
Fluorene	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3
Indeno(1,2,3-cd)pyrene	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3
N-Nitrosodiphenylamine	1.65	16.5	1.65	16.5	1.65	16.5	NA	NA
Phenanthrene	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3
Pyrene	1.3	2.6	1.3	2.6	1.3	2.6	0.3	3
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-Pentanone	25	250	13.2	132	25	250	NA	NA
Acetone	10	50	5.3	26.4	10	50	NA	NA
Chloroform	15	41	7.9	22	15	41	NA	NA
Carbon Disulfide	NA	NA	NA	NA	NA	NA	NA	NA

NA--Not Available

TABLE 4-3
NO OBSERVED ADVERSE EFFECT LEVELS AND LOWEST OBSERVED EFFECT LEVELS FOR SITES 2 AND 5
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

	REFERENCES FOR VALUES USED													
Ecological Contaminant	Muskrat		Shrew		Robin		Heron		Hawk		Bass		Woodcock	
of Concern	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Total Phosphorous	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Aluminum	(1)	(1)	(1)	(1)	---	---	---	---	---	---	---	---	---	---
Antimony	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	---	---	(1)	(1)
Arsenic	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	---	---	(1)	(1)
Barium	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	---	---	(1)	(1)
Beryllium	(1)	(2)	(1)	(2)	---	---	---	---	---	---	---	---	---	---
Cadmium	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	---	---	(1)	(1)
Chromium	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(3)	(3)	(1)	(1)
Cobalt	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	---	---	(4)	(4)
Copper	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	---	---	(1)	(1)
Cyanide	(1)	(2)	(1)	(2)	(5)	(5)	(5)	(5)	(5)	(5)	---	---	(5)	(5)
Iron	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	---	---	(5)	(5)
Lead	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	---	---	(1)	(1)
Manganese	(1)	(1)	(1)	(1)	(1)	(2)	(1)	(2)	(1)	(2)	---	---	(1)	(2)
Mercury	(1)	(2)	(1)	(2)	(1)	(1)	(1)	(1)	(1)	(1)	(6)	(6)	(1)	(1)
Nickel	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	---	---	(1)	(1)
Silver	(7)	(2)	(7)	(2)	---	---	---	---	---	---	---	---	---	---
Thallium	(1)	(1)	(1)	(1)	---	---	---	---	---	---	---	---	---	---
Vanadium	(1)	(1)	(1)	(1)	(1)	(2)	(1)	(2)	(1)	(2)	---	---	(1)	(2)
Zinc	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	---	---	(1)	(1)
4,4'-DDD	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	---	---	(1)	(1)
4,4'-DDE	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	---	---	(1)	(1)
4,4'-DDT	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	---	---	(1)	(1)
alpha-Chlordane	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	---	---	(1)	(1)
Aroclor 1260	(8)	(2)	(8)	(2)	---	---	---	---	---	---	---	---	---	---
Dieldrin	(1)	(1)	(1)	(1)	(1)	(2)	(1)	(2)	(1)	(2)	---	---	(1)	(2)
gamma-Chlordane	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	---	---	(1)	(1)
Endrin Aldehyde	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrotoluene	(4)	(4)	(4)	(4)	---	---	---	---	---	---	---	---	---	---
2,6-Dinitrotoluene	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Methylnaphthalene	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
Acenaphthene	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)

TABLE 4-3
NO OBSERVED ADVERSE EFFECT LEVELS AND LOWEST OBSERVED EFFECT LEVELS FOR SITES 2 AND 5
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	REFERENCES FOR VALUES USED							
	Raccoon		Fox		Mouse		Frog	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Total Phosphorous	---	---	---	---	---	---	---	---
Aluminum	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Antimony	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Arsenic	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Barium	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Beryllium	(1)	(2)	(1)	(2)	(1)	(2)	---	---
Cadmium	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Chromium	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Cobalt	(4)	(4)	(4)	(4)	(4)	(4)	---	---
Copper	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Cyanide	(1)	(2)	(1)	(2)	(1)	(2)	---	---
Iron	(5)	(5)	(5)	(5)	(5)	(5)	---	---
Lead	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Manganese	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Mercury	(1)	(2)	(1)	(2)	(1)	(2)	(6)	(6)
Nickel	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Silver	(7)	(2)	(7)	(2)	(7)	(2)	---	---
Thallium	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Vanadium	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Zinc	(1)	(1)	(1)	(1)	(1)	(1)	---	---
4,4'-DDD	(1)	(1)	(1)	(1)	(1)	(1)	---	---
4,4'-DDE	(1)	(1)	(1)	(1)	(1)	(1)	---	---
4,4'-DDT	(1)	(1)	(1)	(1)	(1)	(1)	---	---
alpha-Chlordane	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Aroclor 1260	(8)	(2)	(8)	(2)	(8)	(2)	---	---
Dieldrin	(1)	(1)	(1)	(1)	(1)	(1)	---	---
gamma-Chlordane	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Endrin Aldehyde	---	---	---	---	---	---	---	---
2,4-Dinitrotoluene	(4)	(4)	(4)	(4)	(4)	(4)	---	---
2,6-Dinitrotoluene	---	---	---	---	---	---	---	---
2-Methylnaphthalene	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)
Acenaphthene	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)

TABLE 4-3
NO OBSERVED ADVERSE EFFECT LEVELS AND LOWEST OBSERVED EFFECT LEVELS FOR SITES 2 AND 5
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	REFERENCES FOR VALUES USED													
	Muskrat		Shrew		Robin		Heron		Hawk		Bass		Woodcock	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Acenaphthylene	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
Anthracene	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
Benzo(a)anthracene	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
Benzo(a)pyrene	(1)	(1)	(1)	(1)	(10)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
Benzo(b)fluoranthene	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
Benzo(g,h,i)perylene	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
Benzo(k)fluoranthene	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
bis-(2-Ethylhexyl)phthalate	(1)	(1)	(1)	(1)	(1)	(2)	(1)	(2)	(1)	(2)	---	---	(1)	(2)
Butylbenzylphthalate	(4)	(4)	(4)	(4)	---	---	---	---	---	---	---	---	---	---
Carbazole	(9)	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
Chrysene	(9)	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
Dibenz(a,h)anthracene	(9)	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
Dibenzofuran	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Diethylphthalate	(1)	(2)	(1)	(2)	---	---	---	---	---	---	---	---	---	---
Di-n-Butylphthalate	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	---	---	(1)	(1)
Fluoranthene	(9)	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
Fluorene	(9)	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
Indeno(1,2,3-cd)pyrene	(9)	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
N-Nitrosodiphenylamine	(12)	(12)	(12)	(12)	---	---	---	---	---	---	---	---	---	---
Phenanthrene	(9)	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
Pyrene	(9)	(9)	(9)	(9)	(9)	(10)	(10)	(10)	(10)	(10)	(11)	(11)	(10)	(10)
2-Butanone	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dichloroethene (total)	---	---	---	---	---	---	---	---	---	---	---	---	---	---
4-Methyl-2-Pentanone	(1)	(2)	(1)	(2)	---	---	---	---	---	---	---	---	---	---
Acetone	(1)	(1)	(1)	(1)	---	---	---	---	---	---	---	---	---	---
Chloroform	(1)	(1)	(1)	(1)	---	---	---	---	---	---	---	---	---	---
Carbon Disulfide	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 4-3
NO OBSERVED ADVERSE EFFECT LEVELS AND LOWEST OBSERVED EFFECT LEVELS FOR SITES 2 AND 5
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	REFERENCES FOR VALUES USED							
	Raccoon		Fox		Mouse		Frog	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Acenaphthylene	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)
Anthracene	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)
Benzo(a)anthracene	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)
Benzo(a)pyrene	(1)	(1)	(1)	(1)	(1)	(1)	(11)	(11)
Benzo(b)fluoranthene	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)
Benzo(g,h,i)perylene	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)
Benzo(k)fluoranthene	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)
bis-(2-Ethylhexyl)phthalate	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Butylbenzylphthalate	(4)	(4)	(4)	(4)	(4)	(4)	---	---
Carbazole	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)
Chrysene	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)
Dibenz(a,h)anthracene	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)
Dibenzofuran	---	---	---	---	---	---	---	---
Diethylphthalate	(1)	(2)	(1)	(2)	(1)	(2)	---	---
Di-n-Butylphthalate	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Fluoranthene	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)
Fluorene	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)
Indeno(1,2,3-cd)pyrene	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)
N-Nitrosodiphenylamine	(12)	(12)	(12)	(12)	(12)	(12)	---	---
Phenanthrene	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)
Pyrene	(9)	(9)	(9)	(9)	(9)	(9)	(11)	(11)
2-Butanone	---	---	---	---	---	---	---	---
1,2-Dichloroethene (total)	---	---	---	---	---	---	---	---
4-Methyl-2-Pentanone	(1)	(2)	(1)	(2)	(1)	(2)	---	---
Acetone	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Chloroform	(1)	(1)	(1)	(1)	(1)	(1)	---	---
Carbon Disulfide	---	---	---	---	---	---	---	---

(1) USDOE, 1996
(2) 10 x NOAEL = LOAEL
(3) Charters et al., 1996
(4) CH2MHILL, 1997
(5) Baker Corp., 1997
(6) Matida et al., 1988. Frog values are those reported for fish.
(7) CIC, 1990
(8) RTI, 1995
(9) Neal and Rigdon, 1967
(10) Trust et al., 1993
(11) Martin, 1980
(12) Converted from LD50 reported in Lewis, Sr., 1992.

Table 4-4
Site 2 Sediment Comparison With Sediment Quality Criteria
St. Juliens Creek Annex
Chesapeake, VA

Sample Analysis	Chemical Name	Maximum Concentration	Average Concentration	Conservative Sediment Quality Criteria	Reference	Hazard Quotient (Maximum)	Hazard Quotient (Average)
General Chemistry (mg/kg)	Total Phosphorous (as P)	20.2	16.85	--	--	--	--
TAL Inorganics (mg/kg)	Aluminum	27200	19050	--	--	--	--
	Arsenic	19.4	12.4	8.2	ER-L, (2)	2.37	1.51
	Barium	109	82.35	--	--	--	--
	Beryllium	1.1	1.1	0.36	AET, (3)	3.06	3.06
	Cobalt	10.7	6.365	--	--	--	--
	Copper	2620	1482	34	ER-L, (2)	77.06	43.59
	Iron	31100	24800	27,000	AET, (3)	1.15	0.92
	Lead	545	353	35	ER-L, (1)	15.57	10.09
	Manganese	235	170	230	AET, (3)	1.02	0.74
	Mercury	0.79	0.62	0.15	ER-L, (1)(2)	5.27	4.13
	Nickel	41.5	28.95	20.9	ER-L, (2)	1.99	1.39
	Thallium	2.2	1.16	0.24	AET, (3)	9.17	4.83
	Vanadium	115	71.9	--	--	--	--
	Zinc	1400	908	120	ER-L, (1)	11.67	7.57
TCL Pesticides/PCBs (ug/kg)	4,4'-DDD	310	260	2	ER-L, (1)	155.00	130.00
	4,4'-DDE	130	100.5	2	ER-L, (1)	65.00	50.25
	4,4'-DDT	28	14.27	1	ER-L, (1)	28.00	14.27
	alpha-Chlordane	28	17.65	0.5	ER-L, (1)	56.00	35.30
	Aroclor-1260	69	61.33	22.7	ER-L, (2)	3.04	2.70
	Dieldrin	36	20.75	0.02	ER-L, (1)	1800.00	1037.50
	gamma-Chlordane	29	19.4	0.5	ER-L, (1)	58.00	38.80
TCL Semivolatiles (ug/kg)	Anthracene	130	130	85	ER-L, (1)	1.53	1.53
	Benzo(a)Anthracene	440	440	230	ER-L, (1)	1.91	1.91
	Benzo(a)Pyrene	660	660	400	ER-L, (1)	1.65	1.65
	Benzo(k)fluoranthene	470	470	--	--	--	--
	Chrysene	680	680	384	ER-L, (2)	1.77	1.77
	Diethylphthalate	250	250	97	AET, (3)	2.58	2.58
	Fluoranthene	930	890	600	AET, (3)	1.55	1.48

Table 4-4
Site 2 Sediment Comparison With Sediment Quality Criteria
St. Juliens Creek Annex
Chesapeake, VA

	Pyrene	1200	1150	350	AET, (3)	3.43	3.29
TCL Volatiles (ug/kg)	1,2-Dichloroethene (total)	9	9	--	--	--	--
	4-Methyl-2-Pentanone	5	5	--	--	--	--
	Acetone	450	271	--	--	--	--
	Carbon Disulfide	81	48.25	--	--	--	--

(1) Long, E. R. and L. E. Morgan. 1990. The Potential for Biological Effects of Sediment-sorbed Contaminants Tested in the National Status and Trends Program. National Oceanic and Atmospheric Administration (NOAA), Seattle, Washington.

(2) Long, E. R., et al. 1995. Incidence of Adverse Biological Effects Within Ranges of Chemical Concentrations in Marine and Estuarine Sediments. Environmental Management 19 (1): 81-97.

(3) Tetra Tech (1986) as reported in Fitchko, J. 1989. Criteria for Contaminated Soil/Sediment Cleanup. Pudvan Publishing Co., Northbrook, IL.

Table 4-5
Site 2 Surface Water Comparison With Water Quality Criteria
St. Juliens Creek Annex
Chesapeake, VA

Sample Analysis	Chemical Name	Maximum Concentration	Average Concentration	Conservative Surface Water Quality Criteria (1)	Hazard Quotient (Maximum)	Hazard Quotient (Average)
General Chemistry (mg/L)	Total Phosphorous (as P)	0.202	0.202	0.0001	2020.00	2020.00
TAL Inorganics (ug/L)	Aluminum	7870	7870	--	--	--
	Arsenic	3.1	3.1	36	0.09	0.09
	Chromium (2)	166	166	50	3.32	3.32
	Copper	203	203	2.9	70.00	70.00
	Iron	10700	10700	--	--	--
	Lead	77.9	77.9	8.5	9.16	9.16
	Manganese	120	120	--	--	--
	Zinc	268	268	86	3.12	3.12

(1) Federal Ambient Water Quality Criteria (AWQC) for the marine aquatic environment. (USEPA, 1986).
(2) AWQC as chromium (VI).

TABLE 5-1
MAXIMUM CONCENTRATION HAZARD QUOTIENT VALUES
SITE 2, LANDFILL B
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Picks up # 1 wrong

Ecological Contaminant of Concern	Muskrat		Bullfrog		Shrew		Robin		Heron		Hawk		Bass		Woodcock		Raccoon		Fox		Mouse	
	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00E+00	NA	NA
Aluminum	5.28E+03	5.28E+02	NA	NA	5.55E+03	5.55E+02	3.35E+02	8.26E+02	5.27E+01	1.30E+02	1.98E+01	4.88E+01	NA	NA	1.99E+02	4.91E+02	1.93E+01	2.85E+03	1.43E+00	0.00E+00	4.38E+03	4.38E+02
Antimony	NC	NC	NC	NC	3.22E+01	3.22E+00	NA	NA	NC	NC	NA	NA	NC	NC	NA	NA	1.25E+00	6.71E+00	2.32E+00	0.00E+00	2.55E+01	2.55E+00
Arsenic	5.77E+01	5.77E+00	NA	NA	4.61E-03	4.61E-04	8.49E-05	3.38E-05	8.09E-01	3.22E-01	4.06E-05	1.62E-05	NA	NA	9.07E-05	3.61E-05	1.26E+00	1.85E+01	8.31E-04	0.00E+00	4.67E-03	4.67E-04
Barium	8.01E+00	2.06E+00	NA	NA	NC	NC	NC	NC	1.11E+00	5.56E-01	NC	NC	NA	NA	NC	NC	1.98E+01	2.56E+00	NC	NC	NC	NC
Beryllium	6.24E-01	6.24E-02	NA	NA	6.33E+00	6.33E-01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.60E+00	2.63E+00	4.53E-01	0.00E+00	9.23E+00	9.23E-01
Chromium	1.42E-02	1.08E-02	0.00E+00	0.00E+00	5.04E+00	3.83E+00	4.86E+02	9.72E+01	8.07E-03	1.61E-03	2.87E+01	5.75E+00	0.00E+00	0.00E+00	2.89E+02	5.78E+01	1.54E+01	2.52E+00	2.75E+00	0.00E+00	9.56E+00	7.27E+00
Cobalt	4.01E+00	4.01E-01	NA	NA	NC	NC	NC	NC	2.28E+00	2.28E-01	NC	NC	NA	NA	NC	NC	1.00E+01	1.28E+00	NC	NC	NC	NC
Copper	8.39E+01	6.37E+01	NA	NA	8.73E+01	6.63E+01	1.79E+02	1.36E+02	1.19E+01	9.03E+00	1.06E+01	8.07E+00	NA	NA	1.07E+02	8.12E+01	1.54E+01	7.05E+01	4.76E+01	0.00E+00	1.66E+02	1.26E+02
Cyanide	NC	NC	NC	NC	4.10E-03	4.10E-04	3.73E-01	3.73E-02	NC	NC	2.21E-02	2.21E-03	NC	NC	2.22E-01	2.22E-02	6.87E+02	1.48E-03	2.95E-04	0.00E+00	5.63E-03	5.63E-04
Iron	2.33E+02	2.33E+01	NA	NA	1.45E+03	1.45E+02	2.09E+03	2.09E+02	6.61E+01	6.61E+00	1.24E+02	1.24E+01	NA	NA	1.25E+03	1.25E+02	5.00E+02	3.29E+02	2.51E+01	0.00E+00	9.64E+02	9.64E+01
Lead	2.55E+01	2.55E+00	NA	NA	9.23E+01	9.23E+00	4.14E+03	4.14E+02	1.03E+02	1.03E+01	2.45E+02	2.45E+01	NA	NA	2.47E+03	2.47E+02	8.00E+01	4.37E+01	6.64E+00	0.00E+00	1.35E+02	1.35E+01
Manganese	1.00E+00	3.10E-01	NA	NA	2.44E+00	7.55E-01	1.36E+00	1.36E-01	5.01E-02	5.01E-03	8.06E-02	8.06E-03	NA	NA	8.11E-01	8.11E-02	2.84E+02	1.26E+00	5.43E-01	0.00E+00	3.56E+00	1.10E+00
Mercury	2.24E-02	2.24E-03	6.32E-01	6.32E-02	2.44E-02	2.44E-03	2.46E+00	1.23E+00	3.73E-01	1.87E-01	1.45E-01	7.27E-02	1.02E+00	1.02E-01	1.46E+00	7.31E-01	1.32E+02	1.23E-02	1.76E-03	0.00E+00	1.93E-02	1.93E-03
Nickel	3.89E-01	1.94E-01	NA	NA	1.92E+00	9.58E-01	6.28E+00	4.54E+00	1.14E-01	8.25E-02	3.71E-01	2.69E-01	NA	NA	3.74E+00	2.70E+00	8.00E+01	8.62E-01	6.89E-01	0.00E+00	2.80E+00	1.40E+00
Thallium	1.11E+02	1.11E+01	NA	NA	2.65E+02	2.59E+01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.40E-02	1.36E+02	1.88E+01	0.00E+00	3.81E+02	3.81E+01
Vanadium	2.05E+02	2.05E+01	NA	NA	1.06E+02	1.06E+01	1.15E+01	1.15E+00	2.15E+00	2.15E-01	6.77E-01	6.77E-02	NA	NA	6.82E+00	6.82E-01	2.10E+00	1.03E+02	7.60E+00	0.00E+00	1.43E+02	1.43E+01
Zinc	3.28E+00	1.64E+00	NA	NA	1.47E+01	7.36E+00	1.03E+03	1.14E+02	2.05E+01	2.27E+00	6.09E+01	6.74E+00	NA	NA	6.13E+02	6.78E+01	3.20E+02	6.71E+00	5.30E+00	0.00E+00	2.15E+01	1.07E+01
4,4'-DDD	1.45E-01	2.90E-02	NA	NA	1.63E+00	3.27E-01	2.77E+03	2.96E+02	2.20E+01	2.35E+00	1.64E+02	1.75E+01	NA	NA	1.65E+03	1.76E+02	4.00E+00	6.76E-01	2.36E-01	0.00E+00	2.39E+00	4.77E-01
4,4'-DDE	6.09E-02	1.22E-02	NA	NA	1.79E-01	3.58E-02	3.03E+02	3.25E+01	9.21E+00	9.87E-01	1.79E+01	1.92E+00	NA	NA	1.80E+02	1.93E+01	4.00E+00	8.84E-02	2.58E-02	0.00E+00	2.61E-01	5.23E-02
4,4'-DDT	1.31E-02	2.62E-03	NA	NA	3.50E-01	7.01E-02	5.93E+02	6.35E+01	1.98E+00	2.13E-01	3.50E+01	3.76E+00	NA	NA	3.53E+02	3.78E+01	4.00E+00	1.39E-01	5.05E-02	0.00E+00	5.12E-01	1.02E-01
alpha-Chlordane	2.28E-03	1.14E-03	NA	NA	NC	NC	NC	NC	2.84E-03	5.56E-04	NC	NC	NA	NA	NC	NC	9.20E+00	7.30E-04	NC	NC	NC	NC
Aroclor-1260	6.63E-02	6.63E-03	NA	NA	1.93E-01	1.93E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.90E+00	5.50E-02	3.34E-03	0.00E+00	1.28E-01	1.28E-02
Dieldrin	6.74E-01	6.74E-02	NA	NA	NC	NC	NC	NC	9.94E-02	9.94E-03	NC	NC	NA	NA	NC	NC	2.00E-01	2.16E-01	NC	NC	NC	NC
gamma-Chlordane	2.36E-03	1.18E-03	NA	NA	NC	NC	NC	NC	2.94E-03	5.76E-04	NC	NC	NA	NA	NC	NC	9.20E+00	7.56E-04	NC	NC	NC	NC
2-Methylnaphthalene	NC	NC	NC	NC	1.63E-01	8.16E-02	6.13E-02	6.13E-03	NC	NC	3.62E-03	3.62E-04	NC	NC	3.64E-02	3.64E-03	2.60E+00	2.86E-02	1.41E-02	0.00E+00	1.08E-01	5.42E-02
Acenaphthene	NC	NC	NC	NC	8.95E-02	4.48E-02	3.36E-02	3.36E-03	NC	NC	1.99E-03	1.99E-04	NC	NC	2.00E-02	2.00E-03	2.60E+00	1.57E-02	7.74E-03	0.00E+00	5.95E-02	2.97E-02
Acenaphthylene	NC	NC	NC	NC	4.32E-01	2.16E-01	1.62E-01	1.62E-02	NC	NC	9.58E-03	9.58E-04	NC	NC	9.64E-02	9.64E-03	2.60E+00	7.56E-02	3.73E-02	0.00E+00	2.87E-01	1.43E-01
Anthracene	3.75E-02	1.87E-02	3.26E-02	3.26E-03	3.11E-01	1.55E-01	1.17E-01	1.17E-02	2.76E-03	2.76E-04	6.89E-03	6.89E-04	5.24E-02	5.24E-03	6.93E-02	6.93E-03	2.60E+00	6.64E-02	2.69E-02	0.00E+00	2.06E-01	1.03E-01
Benzo(a)anthracene	1.27E-01	6.34E-02	1.10E-01	1.10E-02	1.21E+00	6.06E-01	4.54E-01	4.54E-02	9.36E-03	9.36E-04	2.69E-02	2.69E-03	1.77E-01	1.77E-02	2.70E-01	2.70E-02	2.60E+00	2.53E-01	1.05E-01	0.00E+00	8.05E-01	4.02E-01
Benzo(a)pyrene	2.47E-01	2.47E-02	NA	NA	8.05E-01	8.06E-02	2.77E-01	2.77E-02	1.40E-02	1.40E-03	1.64E-02	1.64E-03	2.66E-01	2.66E-02	1.65E-01	1.65E-02	1.00E+01	2.47E-01	5.80E-02	0.00E+00	6.37E-01	6.37E-02
Benzo(b)fluoranthene	NC	NC	NC	NC	8.95E-01	4.48E-01	3.36E-01	3.36E-02	NC	NC	1.99E-02	1.99E-03	NC	NC	2.00E-01	2.00E-02	2.60E+00	1.57E-01	7.74E-02	0.00E+00	5.95E-01	2.97E-01
Benzo(g,h,i)perylene	NC	NC	NC	NC	4.69E-01	2.34E-01	1.76E-01	1.76E-02	NC	NC	1.04E-02	1.04E-03	NC	NC	1.05E-01	1.05E-02	2.60E+00	8.21E-02	4.05E-02	0.00E+00	3.11E-01	1.56E-01
Benzo(k)fluoranthene	1.35E-01	6.77E-02	1.18E-01	1.18E-02	5.79E-01	2.90E-01	2.17E-01	2.17E-02	9.99E-03	9.99E-04	1.29E-02	1.29E-03	1.89E-01	1.89E-02	1.29E-01	1.29E-02	2.60E+00	1.45E-01	5.01E-02	0.00E+00	3.85E-01	1.92E-01
Bis(2-ethylhexyl)phthalate	NC	NC	NC	NC	1.70E-03	1.70E-04	9.70E-02	9.70E-03	NC	NC	5.73E-03	5.73E-04	NC	NC	5.77E-02	5.77E-03	1.83E+02	3.54E-04	1.23E-04	0.00E+00	1.34E-03	1.34E-04
Butylbenzylphthalate	NC	NC	NC	NC	1.21E-03	1.21E-04	NA	NA	NC	NC	NA	NA	NC	NC	NA	NA	1.59E+03	2.11E-04	2.09E-05	0.00E+00	8.01E-04	8.01E-05
Carbazole	NC	NC	NC	NC	1.58E-01	7.90E-02	5.93E-02	5.93E-03	NC	NC	3.50E-03	3.50E-04	NC	NC	3.53E-02	3.53E-03	2.60E+00	2.77E-02	1.37E-02	0.00E+00	1.05E-01	5.25E-02
Chrysene	1.96E-01	9.80E-02	1.70E-01	1.70E-02	1.42E+00	7.11E-01	5.34E-01	5.34E-02	1.45E-02	#REF!	3.15E-02	3.15E-03	2.74E-01	2.74E-02	3.17E-01	3.17E-02	2.60E+00	3.12E-01	1.23E-01	0.00E+00	9.44E-01	4.72E-01
Di-n-Butylbenzylphthalate	NC	NC	NC	NC	2.20E-04	6.59E-05	3.77E+00	3.77E-01	NC	NC	2.23E-01	2.23E-02	NC	NC	2.24E+00	2.24E-01	1.83E+03	4.58E-05	4.75E-05	0.00E+00	1.74E-04	5.21E-05
Dibenzofuran	NC	NC	NC	NC	NA	NA	NA	NA	NC	NC	NA	NA	NC	NC	NA	NA	NA	NA	NA	0.00E+00	NA	NA
Diethylphthalate	2.04E-05	2.04E-06	NA	NA	NC	NC	NC	NC	NA	NA	NC	NC	NA	NA	NC	NC	4.58E+04	6.54E-06	NC	NC	NC	NC
Fluoranthene	2.68E-01	1.34E-01	2.33E-01	2.33E-02	2.63E+00	1.32E+00	9.88E-01	9.88E-02	1.98E-02	1.98E-03	5.84E-02	5.84E-03	3.75E-01	3.75E-02	5.88E-01	5.88E-02	2.60E+00	5.47E-01	2.28E-01	0.00E+00	1.75E+00	8.74E-01
Fluorene	NC	NC	NC	NC	2.00E-01	1.00E-01	7.51E-02	7.51E-03	NC	NC	4.44E-03	4.44E-04	NC	NC	4.47E-02	4.47E-03	2.60E+00	3.50E-02	1.73E-02	0.00E+00	1.33E-01	6.65E-02
Indeno(1,2,3-cd)pyrene	NC	NC	NC	NC	4.21E-01	2.11E-01	1.58E-01	1.58E-02	NC	NC	9.35E-03	9.35E-04	NC	NC	9.40E-02	9.40E-03	2.60E+00	7.38E-02	3.64E-02	0.00E+00	2.80E-01	1.40E-01
Phenanthrene	NC	NC	NC	NC	2.32E+00	1.16E+00	8.69E-01	8.69E-02	NC	NC	5.14E-02	5.14E-03	NC	NC	5.17E-01	5.17E-02	2.60E+00	4.06E-01	2.00E-01	0.00E+00	1.54E+00	7.70E-01
Pyrene	3.46E-01	1.73E-01	3.01E-01	3.01E-02	3.79E+00	1.90E+00	1.42E+00	1.42E-01	2.55E-02	2.55E-03	8.41E-02	8.41E-03	4.84E-01	4.84E-02	8.46E-01	8.46E-02	2.60E+00	7.75E-01	3.28E-01	0.00E+00	2.52E+00	1.26E+00
1,2-Dichloroethane (total)	NA	NA	NA	NA	NC	NC	NC	NC	NA	NA	NC	NC	NA	NA	NC	NC	NA	NA	NC	NC	NC	NC
4-Methyl-2-pentanone	7.49E-05	7.49E-06	NA	NA	NC	NC	NC	NC	NA	NA	NC	NC	NA	NA	NC	NC	2.50E+02	2.40E-05	NC	NC	NC	NC
Acetone	1.69E-02	3.37E-03	NA	NA	1.09E-03	2.18E-04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.00E+01	5.81E-03	1.57E-04	0.00E+00	1.59E-03	3.18E-04
Carbon Disulfide	NA	NA	NA	NA	NC	NC	NC	NC	NA	NA	NC	NC	NA	NA	NC	NC	NA	NA	NC	NC	NC	NC

NA denotes that benchmark values (NOAEL and LOAEL) were unavailable.

NC denotes not a contaminant of concern.

TABLE 5-2
MEAN CONCENTRATION HAZARD QUOTIENT VALUES
SITE 2, LANDFILL B
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	Muskrat		Bullfrog		Shrew		Robin		Heron		Hawk		Bass		Woodcock		Raccoon		Fox		Mouse	
	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aluminum	3.70E+03	3.70E+02	NA	NA	1.95E+03	1.95E+02	1.17E+02	2.90E+02	3.69E+01	9.10E+01	6.95E+00	1.71E+01	NA	NA	6.99E+01	1.72E+02	1.59E+03	1.59E+02	1.40E+03	1.40E+02	1.54E+03	1.54E+02
Antimony	NC	NC	NC	NC	1.13E+01	1.13E+00	NA	NA	NC	NC	NA	NA	NC	NC	NA	NA	2.36E+00	2.36E-01	8.09E+00	8.15E-01	8.94E+00	8.94E-01
Arsenic	3.69E+01	3.69E+00	NA	NA	4.61E-03	4.61E-04	8.49E-05	3.38E-05	5.17E-01	2.06E-01	4.06E-05	1.62E-05	NA	NA	9.07E-05	3.61E-05	1.18E+01	1.18E+00	8.31E-03	8.31E-04	4.67E-03	4.67E-04
Barium	6.05E+00	1.56E+00	NA	NA	NC	NC	NC	NC	8.42E-01	4.20E-01	NC	NC	NA	NA	NC	NC	1.94E+00	4.99E-01	NC	NC	NC	NC
Beryllium	6.24E-01	6.24E-02	NA	NA	9.02E-01	9.02E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.47E-01	5.47E-02	6.46E-01	6.46E-02	1.32E+00	1.32E-01
Chromium	1.42E-02	1.08E-02	0.00E+00	0.00E+00	1.30E+00	9.86E-01	1.25E+02	2.50E+01	8.07E-03	1.61E-03	7.41E+00	1.48E+00	0.00E+00	0.00E+00	7.45E+01	1.49E+01	6.50E-01	4.94E-01	9.40E-01	7.09E-01	2.47E+00	1.87E+00
Cobalt	2.38E+00	2.38E-01	NA	NA	NC	NC	NC	NC	1.35E+00	1.35E-01	NC	NC	NA	NA	NC	NC	7.63E-01	7.63E-02	NC	NC	NC	NC
Copper	4.75E+01	3.61E+01	NA	NA	1.12E+01	8.54E+00	2.31E+01	1.76E+01	6.71E+00	5.11E+00	1.36E+00	1.04E+00	NA	NA	1.37E+01	1.05E+01	2.08E+01	1.58E+01	8.13E+00	6.13E+00	2.13E+01	1.62E+01
Cyanide	NC	NC	NC	NC	1.56E-03	1.56E-04	1.42E-01	1.42E-02	NC	NC	8.39E-03	8.39E-04	NC	NC	8.45E-02	8.45E-03	5.64E-04	5.64E-05	1.12E-03	1.12E-04	2.14E-03	2.14E-04
Iron	1.86E+02	1.86E+01	NA	NA	3.85E+02	3.85E+01	5.56E+02	5.56E+01	5.27E+01	5.27E+00	3.28E+01	3.28E+00	NA	NA	3.30E+02	3.30E+01	1.27E+02	1.27E+01	6.66E+01	6.66E+00	2.56E+02	2.56E+01
Lead	1.65E+01	1.65E+00	NA	NA	1.45E+01	1.45E+00	6.49E+02	6.49E+01	6.64E+01	6.64E+00	3.84E+01	3.84E+00	NA	NA	3.86E+02	3.86E+01	1.09E+01	1.09E+00	1.04E+01	1.04E+00	2.11E+01	2.11E+00
Manganese	7.25E-01	2.25E-01	NA	NA	6.02E-01	1.86E-01	3.36E-01	3.36E-02	3.63E-02	3.63E-03	1.99E-02	1.99E-03	NA	NA	2.00E-01	2.00E-02	4.63E-01	1.43E-01	4.37E-01	1.34E-01	8.77E-01	2.72E-01
Mercury	1.76E-02	1.76E-03	4.96E-01	4.96E-02	1.30E-02	1.30E-03	1.31E+00	6.54E-01	2.93E-01	1.46E-01	7.73E-02	3.87E-02	7.97E-01	7.97E-02	7.78E-01	3.89E-01	8.34E-03	8.34E-04	9.35E-03	9.35E-04	1.03E-02	1.03E-03
Nickel	2.71E-01	1.36E-01	NA	NA	3.87E-01	1.93E-01	1.27E+00	9.17E-01	7.95E-02	5.75E-02	7.49E-02	5.42E-02	NA	#VALUE!	7.54E-01	5.45E-01	2.36E-01	1.18E-01	2.78E-01	1.39E-01	5.64E-01	2.82E-01
Thallium	5.87E+01	5.87E+00	NA	NA	6.81E+01	6.65E+00	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.46E+01	4.46E+00	4.71E+01	4.83E+00	9.78E+01	9.78E+00
Vanadium	1.28E+02	1.28E+01	NA	NA	4.23E+01	4.23E+00	4.59E+00	4.59E-01	1.34E+00	1.34E-01	2.71E-01	2.71E-02	NA	NA	2.73E+00	2.73E-01	5.62E+01	5.62E+00	3.04E+01	3.04E+00	5.73E+01	5.73E+00
Zinc	2.13E+00	1.06E+00	NA	NA	2.25E+00	1.13E+00	1.58E+02	1.75E+01	1.33E+01	1.47E+00	9.33E+00	1.03E+00	NA	NA	9.38E+01	1.04E+01	1.55E+00	7.74E-01	1.62E+00	8.11E-01	3.29E+00	1.64E+00
4,4'-DDD	1.22E-01	2.43E-02	NA	NA	1.91E-01	3.82E-02	3.23E+02	3.46E+01	1.84E+01	1.97E+00	1.91E+01	2.04E+00	NA	NA	1.92E+02	2.06E+01	1.12E-01	2.25E-02	1.38E-01	2.75E-02	2.79E-01	5.57E-02
4,4'-DDE	4.68E-02	9.36E-03	NA	NA	5.44E-02	1.09E-02	9.22E+01	9.88E+00	7.09E+00	7.59E-01	5.45E+00	5.84E-01	NA	NA	5.49E+01	5.88E+00	3.60E-02	7.19E-03	3.95E-02	7.86E-03	7.96E-02	1.59E-02
4,4'-DDT	6.55E-03	1.31E-03	NA	NA	5.83E-02	1.17E-02	9.88E+01	1.06E+01	9.92E-01	1.06E-01	5.84E+00	6.26E-01	NA	NA	5.88E+01	6.30E+00	2.46E-02	4.92E-03	4.23E-02	8.42E-03	8.53E-02	1.71E-02
alpha-Chlordane	1.47E-03	7.33E-04	NA	NA	NC	NC	NC	NC	1.82E-03	3.58E-04	NC	NC	NA	NA	NC	NC	4.69E-04	2.35E-04	NC	NC	NC	NC
Aroclor-1260	5.86E-02	5.86E-03	NA	NA	1.30E-01	1.30E-02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.15E-02	4.15E-03	2.25E-02	2.25E-03	8.63E-02	8.63E-03
Dieldrin	3.93E-01	3.93E-02	NA	NA	NC	NC	NC	NC	5.80E-02	5.80E-03	NC	NC	NA	NA	NC	NC	1.26E-01	1.26E-02	NC	NC	NC	NC
gamma-Chlordane	1.55E-03	7.74E-04	NA	NA	NC	NC	NC	NC	1.92E-03	3.78E-04	NC	NC	NA	NA	NC	NC	4.95E-04	2.48E-04	NC	NC	NC	NC
2-Methylnaphthalene	NC	NC	NC	NC	1.63E-01	8.16E-02	6.13E-02	6.13E-03	NC	NC	3.62E-03	3.62E-04	NC	NC	3.64E-02	3.64E-03	2.86E-02	1.43E-02	2.82E-02	1.41E-02	1.08E-01	5.42E-02
Acenaphthene	NC	NC	NC	NC	8.95E-02	4.48E-02	3.36E-02	3.36E-03	NC	NC	1.99E-03	1.99E-04	NC	NC	2.00E-02	2.00E-03	1.57E-02	7.84E-03	1.55E-02	7.74E-03	5.95E-02	2.97E-02
Acenaphthylene	NC	NC	NC	NC	3.11E-01	1.55E-01	1.17E-01	1.17E-02	NC	NC	6.89E-03	6.89E-04	NC	NC	6.93E-02	6.93E-03	5.44E-02	2.72E-02	5.37E-02	2.69E-02	2.06E-01	1.03E-01
Anthracene	3.75E-02	1.87E-02	3.26E-02	3.26E-03	3.05E-01	1.53E-01	1.15E-01	1.15E-02	2.76E-03	2.76E-04	6.78E-03	6.78E-04	5.24E-02	5.24E-03	6.82E-02	6.82E-03	6.55E-02	3.27E-02	5.28E-02	2.64E-02	2.03E-01	1.01E-01
Benzo(a)anthracene	1.27E-01	6.34E-02	1.10E-01	1.10E-02	3.26E-01	1.63E-01	1.23E-01	1.23E-02	9.36E-03	9.36E-04	7.24E-03	7.24E-04	1.77E-01	1.77E-02	7.29E-02	7.29E-03	9.78E-02	4.89E-02	5.65E-02	2.82E-02	2.17E-01	1.08E-01
Benzo(a)pyrene	2.47E-01	2.47E-02	NA	NA	2.93E-01	2.94E-02	1.01E-01	1.01E-02	1.40E-02	1.40E-03	5.96E-03	5.96E-04	2.66E-01	2.66E-02	5.99E-02	5.99E-03	1.40E-01	1.40E-02	2.08E-01	2.11E-02	2.32E-01	2.32E-02
Benzo(b)fluoranthene	NC	NC	NC	NC	3.42E-01	1.71E-01	1.28E-01	1.28E-02	NC	NC	7.59E-03	7.59E-04	NC	NC	7.64E-02	7.64E-03	5.99E-02	3.00E-02	5.92E-02	2.96E-02	2.27E-01	1.14E-01
Benzo(g,h,i)perylene	NC	NC	NC	NC	2.37E-01	1.18E-01	8.89E-02	8.89E-03	NC	NC	5.26E-03	5.26E-04	NC	NC	5.29E-02	5.29E-03	4.15E-02	2.08E-02	4.10E-02	2.05E-02	1.57E-01	7.87E-02
Benzo(k)fluoranthene	1.35E-01	6.77E-02	1.18E-01	1.18E-02	2.32E-01	1.16E-01	8.69E-02	8.69E-03	9.99E-03	9.99E-04	5.14E-03	5.14E-04	1.89E-01	1.89E-02	5.17E-02	5.17E-03	8.39E-02	4.20E-02	4.01E-02	2.00E-02	1.54E-01	7.70E-02
Bis(2-ethylhexyl)phthalate	NC	NC	NC	NC	1.70E-03	1.70E-04	9.70E-02	9.70E-03	NC	NC	5.73E-03	5.73E-04	NC	NC	5.77E-02	5.77E-03	3.54E-04	3.54E-05	1.23E-03	1.23E-04	1.34E-03	1.34E-04
Butylbenzylphthalate	NC	NC	NC	NC	1.21E-03	1.21E-04	NA	NA	NC	NC	NA	NA	NC	NC	NA	NA	2.11E-04	2.11E-05	2.09E-04	2.09E-05	8.01E-04	8.01E-05
Carbazole	NC	NC	NC	NC	1.58E-01	7.90E-02	5.93E-02	5.93E-03	NC	NC	3.50E-03	3.50E-04	NC	NC	3.53E-02	3.53E-03	2.77E-02	1.38E-02	2.73E-02	1.37E-02	1.05E-01	5.25E-02
Chrysene	1.96E-01	9.80E-02	1.70E-01	1.70E-02	3.58E-01	1.79E-01	1.34E-01	1.34E-02	1.45E-02	1.45E-03	7.94E-03	7.94E-04	2.74E-01	2.74E-02	7.99E-02	7.99E-03	1.25E-01	6.27E-02	6.19E-02	3.10E-02	2.38E-01	1.19E-01
Di-n-Butylbenzylphthalate	NC	NC	NC	NC	2.20E-04	6.59E-05	3.77E+00	3.77E-01	NC	NC	2.23E-01	2.23E-02	NC	NC	2.24E+00	2.24E-01	4.58E-05	1.37E-05	1.58E-04	4.75E-05	1.74E-04	5.21E-05
Dibenzofuran	NC	NC	NC	NC	NA	NA	NA	NA	NC	NC	NA	NA	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	2.04E-05	2.04E-06	NA	NA	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	NC	NC	6.54E-06	6.54E-07	NC	NC	NC	NC
Fluoranthene	2.56E-01	1.28E-01	2.23E-01	2.23E-02	5.48E-01	2.74E-01	2.06E-01	2.06E-02	1.89E-02	1.89E-03	1.21E-02	1.21E-03	3.59E-01	3.59E-02	1.22E-01	1.22E-02	1.78E-01	8.90E-02	9.47E-02	4.74E-02	3.64E-01	1.82E-01
Fluorene	NC	NC	NC	NC	2.00E-01	1.00E-01	7.51E-02	7.51E-03	NC	NC	4.44E-03	4.44E-04	NC	NC	4.47E-02	4.47E-03	3.50E-02	1.75E-02	3.46E-02	1.73E-02	1.33E-01	6.65E-02
Indeno(1,2,3-cd)pyrene	NC	NC	NC	NC	2.00E-01	1.00E-01	7.51E-02	7.51E-03	NC	NC	4.44E-03	4.44E-04	NC	NC	4.47E-02	4.47E-03	3.50E-02	1.75E-02	3.46E-02	1.73E-02	1.33E-01	6.65E-02
Phenanthrene	NC	NC	NC	NC	4.84E-01	2.42E-01	1.82E-01	1.82E-02	NC	NC	1.07E-02	1.07E-03	NC	NC	1.08E-01	1.08E-02	8.48E-02	4.24E-02	8.38E-02	4.19E-02	3.22E-01	1.61E-01
Pyrene	3.31E-01	1.66E-01	2.88E-01	2.88E-02	6.06E-01	3.03E-01	2.27E-01	2.27E-02	2.45E-02	2.45E-03	1.34E-02	1.34E-03	4.63E-01	4.63E-02	1.35E-01	1.35E-02	2.12E-01	1.06E-01	1.05E-01	5.24E-02	4.02E-01	2.01E-01
1,2-Dichloroethane (total)	NA	NA	NA	NA	NC	NC	NC	NC	NA	NA	NC	NC	NA	NA	NC	NC	NA	NA	NC	NC	NC	NC
4-Methyl-2-pentanone	7.49E-05	7.49E-06	NA	NA	NC	NC	NC	NC	NA	NA	NC	NC	NA	NA	NC	NC	2.40E-05	2.40E-06	NC	NC	NC	NC
Acetone	1.01E-02	2.02E-03	NA	NA	4.04E-04	8.10E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.39E-03	6.79E-04	2.90E-04	5.83E-05	5.91E-04	1.18E-04
Carbon Disulfide	NA	NA	NA	NA	NC	NC	NC	NC	NA	NA	NC	NC	NA	NA	NC	NC	NA	NA	NC	NC	NC	NC

NA denotes that benchmark values (NOAEL and LOAEL) were unavailable.
NC denotes not a contaminant of concern.

TABLE 5-3
MAXIMUM CONCENTRATION HAZARD QUOTIENT VALUES
SITE 5, BURNING GROUNDS
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	Shrew		Robin		Hawk		Woodcock		Raccoon		Fox		Mouse	
	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	NA	NA	NA	NA	NA	NA	NA	#REF!	NA	NA	NA	NA	NA	NA
Aluminum	6.02E+03	6.02E+02	3.64E+02	8.97E+02	2.15E+01	4.45E+01	2.16E+02	#REF!	2.31E+03	2.31E+02	4.34E+03	4.34E+02	4.76E+03	4.76E+02
Antimony	5.05E+00	5.06E-01	NA	NA	NA	NA	NA	#REF!	1.06E+00	1.06E-01	3.62E+00	3.65E-01	4.00E+00	4.00E-01
Arsenic	NC	NC	NC	NC	NC	NC	NC	NC	1.19E+01	1.19E+00	NC	NC	NC	NC
Barium	6.03E+01	1.64E+01	9.88E+01	4.93E+01	5.84E+00	2.91E+00	5.88E+01	2.93E+01	2.76E+01	7.10E+00	4.40E+01	1.17E+01	9.27E+01	2.39E+01
Beryllium	5.66E-01	5.66E-02	NA	NA	NA	NA	NA	NA	6.54E-01	6.54E-02	4.06E-01	4.06E-02	8.27E-01	8.27E-02
Cadmium	1.94E+00	1.94E-01	8.18E+00	5.93E-01	4.83E-01	3.50E-02	4.86E+00	3.53E-01	7.19E-01	7.19E-02	1.40E+00	1.40E-01	2.73E+00	2.73E-01
Chromium	1.53E+00	1.16E+00	1.47E+02	2.95E+01	8.72E+00	1.74E+00	8.77E+01	1.75E+01	1.09E+00	8.31E-01	1.10E+00	8.33E-01	2.90E+00	2.20E+00
Cobalt	NC	NC	NC	NC	NC	NC	NC	NC	5.16E-01	5.16E-02	NC	NC	NC	NC
Copper	1.33E+02	1.01E+02	2.72E+02	2.07E+02	1.61E+01	1.23E+01	1.62E+02	1.23E+02	6.67E+01	5.07E+01	9.58E+01	7.23E+01	2.51E+02	1.91E+02
Cyanide	6.99E-03	6.99E-04	6.37E-01	6.37E-02	3.76E-02	3.76E-03	3.79E-01	3.79E-02	4.45E-03	4.45E-04	5.03E-03	5.03E-04	9.60E-03	9.60E-04
Iron	1.64E+03	1.64E+02	2.37E+03	2.37E+02	1.40E+02	1.40E+01	1.41E+03	1.41E+02	6.74E+02	6.74E+01	2.84E+02	2.84E+01	1.09E+03	1.09E+02
Lead	2.81E+02	2.81E+01	1.26E+04	1.26E+03	7.45E+02	7.45E+01	7.50E+03	7.50E+02	1.13E+02	1.13E+01	2.02E+02	2.02E+01	4.10E+02	4.10E+01
Manganese	3.02E+00	9.35E-01	1.69E+00	1.69E-01	9.98E-02	9.98E-03	1.00E+00	1.00E-01	1.26E+00	3.92E-01	2.19E+00	6.73E-01	4.40E+00	1.36E+00
Mercury	4.27E-02	4.27E-03	4.30E+00	2.15E+00	2.54E-01	1.27E-01	2.56E+00	1.28E+00	1.15E-02	1.15E-03	3.08E-02	3.08E-03	3.38E-02	3.38E-03
Nickel	7.12E-01	3.56E-01	2.34E+00	1.69E+00	1.38E-01	9.99E-02	1.39E+00	1.01E+00	2.74E-01	1.37E-01	5.13E-01	2.56E-01	1.04E+00	5.20E-01
Silver	1.32E-02	1.32E-03	NA	NA	NA	NA	NA	NA	3.37E-03	3.37E-04	2.29E-03	2.29E-04	8.78E-03	8.78E-04
Thallium	2.27E+02	2.21E+01	NA	NA	NA	NA	NA	NA	1.78E+02	1.78E+01	1.57E+02	1.61E+01	3.26E+02	3.26E+01
Vanadium	8.91E+01	8.90E+00	9.65E+00	9.65E-01	5.71E-01	5.71E-02	5.74E+00	5.74E-01	5.59E+01	5.59E+00	6.40E+01	6.40E+00	1.21E+02	1.21E+01
Zinc	1.65E+01	8.26E+00	1.16E+03	1.28E+02	6.84E+01	7.57E+00	6.88E+02	7.62E+01	6.36E+00	3.18E+00	1.19E+01	5.95E+00	2.41E+01	1.21E+01
4,4'-DDD	1.21E-01	2.41E-02	2.04E+02	2.19E+01	1.21E+01	1.29E+00	1.21E+02	1.30E+01	6.29E-02	1.26E-02	8.74E-02	1.74E-02	1.76E-01	3.52E-02
4,4'-DDE	8.56E-01	1.71E-01	1.45E+03	1.55E+02	8.57E+01	9.18E+00	8.62E+02	9.24E+01	3.38E-01	6.76E-02	6.20E-01	1.23E-01	1.25E+00	2.50E-01
4,4'-DDT	4.67E-01	9.34E-02	7.90E+02	8.47E+01	4.67E+01	5.01E+00	4.70E+02	5.04E+01	1.86E-01	3.71E-02	3.38E-01	6.73E-02	6.82E-01	1.36E-01
Dieldrin	NC	NC	NC	NC	NC	NC	NC	NC	1.26E-01	1.26E-02	NC	NC	NC	NC
Endrin Aldehyde	NC	NC	NC	NC	NC	NC	NC	NC	NA	NA	NC	NC	NC	NC
2,4-Dinitrotoluene	1.10E+01	1.46E+00	NA	NA	NA	NA	NA	NA	1.96E+00	2.61E-01	1.89E+00	2.53E-01	7.28E+00	9.70E-01
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	2.21E-02	1.11E-02	8.30E-03	8.30E-04	4.91E-04	4.91E-05	4.94E-03	4.94E-04	3.87E-03	1.94E-03	3.83E-03	1.91E-03	1.47E-02	7.35E-03
Acenaphthene	NC	NC	NC	NC	NC	NC	NC	NC	5.99E-03	3.00E-03	NC	NC	NC	NC
Anthracene	NC	NC	NC	NC	NC	NC	NC	NC	9.13E-03	4.57E-03	NC	NC	NC	NC
Benzo(a)anthracene	4.26E-01	2.13E-01	1.60E-01	1.60E-02	9.46E-03	9.46E-04	9.52E-02	9.52E-03	1.02E-01	5.12E-02	7.38E-02	3.69E-02	2.83E-01	1.42E-01
Benzo(a)pyrene	2.76E-01	2.76E-02	9.49E-02	9.49E-03	5.61E-03	5.61E-04	5.64E-02	5.64E-03	5.75E-02	5.75E-03	1.96E-01	1.99E-02	2.18E-01	2.18E-02
Benzo(b)fluoranthene	1.00E+00	5.00E-01	3.75E-01	3.75E-02	2.22E-02	2.22E-03	2.23E-01	2.23E-02	1.75E-01	8.76E-02	1.73E-01	8.65E-02	6.65E-01	3.32E-01
Benzo(g,h,i)perylene	1.84E-01	9.21E-02	6.92E-02	6.92E-03	4.09E-03	4.09E-04	4.11E-02	4.11E-03	3.23E-02	1.61E-02	3.19E-02	1.59E-02	1.22E-01	6.12E-02
Benzo(k)fluoranthene	3.69E-01	1.84E-01	1.38E-01	1.38E-02	8.18E-03	8.18E-04	8.23E-02	8.23E-03	7.93E-02	3.97E-02	6.38E-02	3.19E-02	2.45E-01	1.22E-01
Carbazole	3.21E-02	1.61E-02	1.21E-02	1.21E-03	7.13E-04	7.13E-05	7.17E-03	7.17E-04	5.63E-03	2.81E-03	5.56E-03	2.78E-03	2.13E-02	1.07E-02
Chrysene	5.79E-01	2.90E-01	2.17E-01	2.17E-02	1.29E-02	1.29E-03	1.29E-01	1.29E-02	1.43E-01	7.15E-02	1.00E-01	5.01E-02	3.85E-01	1.92E-01
Diethylphthalate	NC	NC	NC	NC	NC	NC	NC	NC	1.88E-05	1.88E-06	NC	NC	NC	NC
Di-n-Butylphthalate	4.92E-03	1.48E-03	8.44E+01	8.44E+00	9.23E-03	9.23E-04	5.02E+01	5.02E+00	1.02E-03	3.07E-04	3.54E-03	1.06E-03	3.89E-03	1.17E-03
Fluoranthene	4.16E-01	2.08E-01	1.56E-01	1.56E-02	6.31E-03	6.31E-04	9.29E-02	9.29E-03	7.29E-02	3.64E-02	7.20E-02	3.60E-02	2.76E-01	1.38E-01
Fluorene	NC	NC	NC	NC	NC	NC	NC	NC	5.81E-03	2.91E-03	NC	NC	NC	NC
Indeno(1,2,3-cd)pyrene	2.84E-01	1.42E-01	1.07E-01	1.07E-02	NA	NA	6.35E-02	6.35E-03	4.98E-02	2.49E-02	4.92E-02	2.46E-02	1.89E-01	9.44E-02
N-Nitrosodiphenylamine	2.20E-01	2.20E-02	NA	NA	3.86E-03	3.86E-04	NA	NA	4.29E-02	4.29E-03	3.80E-02	3.80E-03	1.46E-01	1.46E-02
Phenanthrene	1.74E-01	8.69E-02	6.52E-02	6.52E-03	1.40E-02	1.40E-03	3.88E-02	3.88E-03	7.84E-02	3.92E-02	3.01E-02	1.50E-02	1.15E-01	5.77E-02
Pyrene	6.32E-01	3.16E-01	2.37E-01	2.37E-02	NA	NA	1.41E-01	1.41E-02	1.73E-01	8.67E-02	1.09E-01	5.46E-02	4.20E-01	2.10E-01
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	8.71E-04	1.74E-04	NA	NA	0.00E+00	0.00E+00	NA	NA	9.59E-04	1.92E-04	6.26E-04	1.26E-04	1.27E-03	2.55E-04
Chloroform	NC	NC	NC	NC	NC	NC	NC	NC	2.40E-05	8.77E-06	NC	NC	NC	NC

NA denotes that benchmark values (NOAEL and LOAEL) were unavailable.
NC denotes not a contaminant of concern.

TABLE 5-4
MEAN CONCENTRATION HAZARD QUOTIENT VALUES
SITE 5, BURNING GROUNDS
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	Shrew		Robin		Hawk		Woodcock		Raccoon		Fox		Mouse	
	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aluminum	2.76E+03	2.76E+02	1.66E+02	4.10E+02	9.84E+00	2.43E+01	9.90E+01	2.44E+02	1.53E+03	1.53E+02	1.99E+03	1.98E+02	2.18E+03	2.18E+02
Antimony	3.51E+00	3.51E-01	NA	NA	NA	NA	NA	NA	7.32E-01	7.32E-02	2.51E+00	2.53E-01	2.78E+00	2.78E-01
Arsenic	NC	NC	NC	NC	NC	NC	NC	NC	6.15E+00	6.15E-01	NC	NC	NC	NC
Barium	1.45E+01	3.92E+00	2.37E+01	1.18E+01	1.40E+00	6.98E-01	1.41E+01	7.02E+00	8.04E+00	2.07E+00	1.05E+01	2.81E+00	2.22E+01	5.72E+00
Beryllium	3.08E-01	3.08E-02	NA	NA	NA	NA	NA	NA	4.04E-01	4.04E-02	2.21E-01	2.21E-02	4.50E-01	4.50E-02
Cadmium	3.23E-01	3.23E-02	1.36E+00	9.87E-02	8.05E-02	5.84E-03	8.10E-01	5.87E-02	1.20E-01	1.20E-02	2.32E-01	2.32E-02	4.54E-01	4.54E-02
Chromium	5.08E-01	3.86E-01	4.90E+01	9.80E+00	2.90E+00	5.79E-01	2.91E+01	5.83E+00	5.06E-01	3.85E-01	3.67E-01	2.77E-01	9.64E-01	7.32E-01
Cobalt	NC	NC	NC	NC	NC	NC	NC	NC	3.56E-01	3.56E-02	NC	NC	NC	NC
Copper	1.43E+01	1.08E+01	2.93E+01	2.23E+01	1.73E+00	1.32E+00	1.74E+01	1.33E+01	7.55E+00	5.73E+00	1.03E+01	7.79E+00	2.71E+01	2.06E+01
Cyanide	2.05E-03	2.05E-04	1.86E-01	1.86E-02	1.10E-02	1.10E-03	1.11E-01	1.11E-02	2.18E-03	2.18E-04	1.47E-03	1.47E-04	2.81E-03	2.81E-04
Iron	3.90E+02	3.90E+01	5.64E+02	5.64E+01	3.33E+01	3.33E+00	3.35E+02	3.35E+01	2.96E+02	2.96E+01	6.75E+01	6.75E+00	2.59E+02	2.59E+01
Lead	3.97E+01	3.97E+00	1.78E+03	1.78E+02	1.06E+02	1.06E+01	1.06E+03	1.06E+02	1.84E+01	1.84E+00	2.86E+01	2.86E+00	5.80E+01	5.80E+00
Manganese	8.33E-01	2.58E-01	4.65E-01	4.65E-02	2.75E-02	2.75E-03	2.77E-01	2.77E-02	4.04E-01	1.25E-01	6.04E-01	1.85E-01	1.21E+00	3.76E-01
Mercury	1.79E-02	1.79E-03	1.81E+00	9.03E-01	1.07E-01	5.34E-02	1.07E+00	5.37E-01	5.82E-03	5.82E-04	1.29E-02	1.29E-03	1.42E-02	1.42E-03
Nickel	1.48E-01	7.41E-02	4.86E-01	3.52E-01	2.87E-02	2.08E-02	2.89E-01	2.09E-01	5.71E-02	2.85E-02	1.07E-01	5.34E-02	2.17E-01	1.08E-01
Silver	5.49E-03	5.49E-04	NA	NA	NA	NA	NA	NA	1.56E-03	1.56E-04	9.50E-04	9.50E-05	3.65E-03	3.65E-04
Thallium	7.10E+01	6.93E+00	NA	NA	NA	NA	NA	NA	7.64E+01	7.64E+00	4.92E+01	5.04E+00	1.02E+02	1.02E+01
Vanadium	4.91E+01	4.91E+00	5.32E+00	5.32E-01	3.15E-01	3.15E-02	3.17E+00	3.17E-01	4.03E+01	4.03E+00	3.53E+01	3.53E+00	6.65E+01	6.65E+00
Zinc	1.91E+00	9.57E-01	1.34E+02	1.48E+01	7.92E+00	8.77E-01	7.97E+01	8.83E+00	7.37E-01	3.69E-01	1.38E+00	6.89E-01	2.80E+00	1.40E+00
4,4'-DDD	2.06E-02	4.13E-03	3.49E+01	3.74E+00	2.06E+00	2.21E-01	2.08E+01	2.22E+00	1.77E-02	3.54E-03	1.49E-02	2.97E-03	3.01E-02	6.03E-03
4,4'-DDE	1.44E-01	2.88E-02	2.44E+02	2.61E+01	1.44E+01	1.54E+00	1.45E+02	1.55E+01	6.04E-02	1.21E-02	1.04E-01	2.08E-02	2.10E-01	4.21E-02
4,4'-DDT	1.13E-01	2.26E-02	1.91E+02	2.05E+01	1.13E+01	1.21E+00	1.14E+02	1.22E+01	4.83E-02	9.65E-03	8.18E-02	1.63E-02	1.65E-01	3.30E-02
Dieldrin	NC	NC	NC	NC	NC	NC	NC	NC	7.19E-02	7.19E-03	NC	NC	NC	NC
Endrin Aldehyde	NC	NC	NC	NC	NC	NC	NC	NC	NA	NA	NC	NC	NC	NC
2,4-Dinitrotoluene	1.88E+00	2.51E-01	NA	NA	NA	NA	NA	NA	3.69E-01	4.92E-02	3.26E-01	4.34E-02	1.25E+00	1.67E-01
2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	2.21E-02	1.11E-02	8.30E-03	8.30E-04	4.91E-04	4.91E-05	4.94E-03	4.94E-04	3.87E-03	1.94E-03	3.83E-03	1.91E-03	1.47E-02	7.35E-03
Acenaphthene	NC	NC	NC	NC	NC	NC	NC	NC	5.99E-03	3.00E-03	NC	NC	NC	NC
Anthracene	NC	NC	NC	NC	NC	NC	NC	NC	9.13E-03	4.57E-03	NC	NC	NC	NC
Benzo(a)anthracene	1.47E-01	7.37E-02	5.53E-02	5.53E-03	3.27E-03	3.27E-04	3.29E-02	3.29E-03	5.35E-02	2.67E-02	2.55E-02	1.28E-02	9.79E-02	4.90E-02
Benzo(a)pyrene	1.32E-01	#DIV/0!	4.54E-02	4.54E-03	2.69E-03	2.69E-04	2.70E-02	2.70E-03	2.76E-02	2.76E-03	9.39E-02	9.52E-03	1.05E-01	1.05E-02
Benzo(b)fluoranthene	3.42E-01	1.71E-01	1.28E-01	1.28E-02	7.59E-03	7.59E-04	7.64E-02	7.64E-03	5.99E-02	3.00E-02	5.92E-02	2.96E-02	2.27E-01	1.14E-01
Benzo(g,h,i)perylene	8.42E-02	4.21E-02	3.16E-02	3.16E-03	1.87E-03	1.87E-04	1.88E-02	1.88E-03	1.48E-02	7.38E-03	1.46E-02	7.29E-03	5.60E-02	2.80E-02
Benzo(k)fluoranthene	1.21E-01	6.06E-02	4.54E-02	4.54E-03	2.69E-03	2.69E-04	2.70E-02	2.70E-03	3.60E-02	1.80E-02	2.09E-02	1.05E-02	8.05E-02	4.02E-02
Carbazole	3.21E-02	1.61E-02	1.21E-02	1.21E-03	7.13E-04	7.13E-05	7.17E-03	7.17E-04	5.63E-03	2.81E-03	5.56E-03	2.78E-03	2.13E-02	1.07E-02
Chrysene	2.11E-01	1.05E-01	7.90E-02	7.90E-03	4.67E-03	4.67E-04	4.70E-02	4.70E-03	7.65E-02	3.83E-02	3.64E-02	1.82E-02	1.40E-01	7.00E-02
Diethylphthalate	NC	NC	NC	NC	NC	NC	NC	NC	1.36E-05	1.36E-06	NC	NC	NC	NC
Di-n-Butylphthalate	6.38E-04	1.92E-04	1.10E+01	1.10E+00	6.48E-01	6.48E-02	6.52E+00	6.52E-01	1.33E-04	3.99E-05	4.60E-04	1.38E-04	5.04E-04	1.51E-04
Fluoranthene	2.26E-01	1.13E-01	8.50E-02	8.50E-03	5.02E-03	5.02E-04	5.05E-02	5.05E-03	3.97E-02	1.98E-02	3.92E-02	1.96E-02	1.50E-01	7.52E-02
Fluorene	NC	NC	NC	NC	NC	NC	NC	NC	5.81E-03	2.91E-03	NC	NC	NC	NC
Indeno(1,2,3-cd)pyrene	1.00E-01	5.00E-02	3.75E-02	3.75E-03	2.22E-03	2.22E-04	2.23E-02	2.23E-03	1.75E-02	8.76E-03	1.73E-02	8.65E-03	6.65E-02	3.32E-02
N-Nitrosodiphenylamine	8.71E-02	8.71E-03	NA	NA	NA	NA	NA	NA	1.97E-02	1.97E-03	1.51E-02	1.51E-03	5.79E-02	5.79E-03
Phenanthrene	1.05E-01	5.27E-02	3.95E-02	3.95E-03	2.34E-03	2.34E-04	2.35E-02	2.35E-03	6.64E-02	3.32E-02	1.82E-02	9.11E-03	7.00E-02	3.50E-02
Pyrene	2.42E-01	1.21E-01	9.09E-02	9.09E-03	5.37E-03	5.37E-04	5.41E-02	5.41E-03	1.05E-01	5.26E-02	4.19E-02	2.09E-02	1.61E-01	8.05E-02
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	3.73E-04	7.47E-05	NA	NA	NA	NA	NA	NA	5.04E-04	1.01E-04	2.68E-04	5.38E-05	5.46E-04	1.09E-04
Chloroform	NC	NC	NC	NC	NC	NC	NC	NC	2.40E-05	8.77E-06	NC	NC	NC	NC

NA denotes that benchmark values (NOAEL and LOAEL) were unavailable.
NC denotes not a contaminant of concern.

Table 6 - 1
Hazard Quotient Determination for Earthworm - Site 2
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Maximum Detected Concentration in Surface Soil	Average Detected Concentration in Surface Soil	BTAG Value for Soil Fauna	BTAG Hazard Quotient (Using Maximum)	Hazard Quotient (Using Average)
General Chemistry (mg/kg)	Total Phosphorous	153	29.39	--	--	--
TAL Inorganics (mg/kg)	Aluminum	18600	6521.11	--	--	--
	Antimony	7	2.46	--	--	--
	Beryllium	13.4	1.91	--	--	--
	Chromium	246	63.36	0.0075	32800.00	8447.41
	Copper	4260	548.86	--	--	--
	Cyanide	0.85	0.32	0.005	170.00	64.67
	Iron	106000	28112.22	12	8833.33	2342.69
	Lead	2370	371.28	0.01	237000.00	37127.78
	Manganese	688	169.69	330	2.08	0.51
	Mercury	0.56	0.30	0.058	9.66	5.13
	Nickel	246	49.66	--	--	--
	Thallium	6.2	1.59	--	--	--
	Vanadium	66.1	26.48	58	1.14	0.46
	Zinc	7560	1157.46	--	--	--
TCL Pesticides/PCBs (ug/kg)	4,4'-DDD	4200	486.16	100	42.00	4.86
	4,4'-DDE	460	138.07	100	4.60	1.38
	4,4'-DDT	900	154.53	100	9.00	1.55
	Aroclor-1260	110	73.61	--	--	--
TCL Semivolatiles (ug/kg)	2-Methylnaphthalene	310	310.00	--	--	--
	Acenaphthene	170	170.00	100	1.70	1.70
	Acenaphthylene	820	585.67	100	8.20	5.86
	Anthracene	590	581.67	100	5.90	5.82
	Benzo(a)Anthracene	2300	615.56	100	23.00	6.16
	Benzo(a)Pyrene	1400	507.78	100	14.00	5.08
	Benzo(b)Fluoranthene	1700	646.67	100	17.00	6.47
	Benzo(g,h,i)Perylene	890	454.89	100	8.90	4.55
	Benzo(k)Fluoranthene	1100	443.00	100	11.00	4.43
	Bis(2-Ethylhexyl)Phthal	54	54.00	--	--	--
	Butylbenzylphthalate	280	280.00	--	--	--
	Carbazole	300	300.00	--	--	--
	Chrysene	2700	677.78	100	27.00	6.78
	Di-n-Butylphthalate	210	210.00	--	--	--

Table 6 - 1
Hazard Quotient Determination for Earthworm - Site 2
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Maximum Detected Concentration in Surface Soil	Average Detected Concentration in Surface Soil	BTAG Value for Soil Fauna	BTAG Hazard Quotient (Using Maximum)	Hazard Quotient (Using Average)
	Dibenzofuran	70	70.00	--	--	--
	Fluoranthene	5000	1038.89	100	50.00	10.39
	Fluorene	380	380.00	100	3.80	3.80
	Indeno(1,2,3-cd)Pyrene	800	381.56	100	8.00	3.82
	Phenanthrene	4400	916.44	100	44.00	9.16
	Pyrene	7200	1147.22	100	72.00	11.47
TCL Volatile (ug/kg)	Acetone	35	13.13	--	--	--

Table 6 - 2
Hazard Quotient Determination for Earthworm - Site 5
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Maximum Detected Concentration in Surface Soil	Average Detected Concentration in Surface Soil	BTAG Value for Soil Fauna	BTAG Hazard Quotient (Using Maximum)	Hazard Quotient (Using Average)
General Chemistry (mg/kg)	Total Phosphorous	18.8	6.64	--	--	---
TAL Inorganics (mg/kg)	Aluminum	20200	9240.00	---	---	---
	Antimony	1.1	0.76	---	---	---
	Barium	1040	249.14	440	2.36	0.57
	Beryllium	1.2	0.65	---	---	---
	Cadmium	6	1.00	---	---	---
	Chromium	74.6	24.80	0.0075	9946.67	3306.67
	Copper	6470	697.29	---	---	---
	Cyanide	1.45	0.42	0.005	290.00	84.80
	Iron	120000	28520.00	12	10000.00	2376.67
	Lead	7210	1020.51	0.01	721000	102051.00
	Manganese	852	234.77	330	2.58	0.71
	Mercury	0.98	0.41	0.058	16.90	7.09
	Nickel	91.5	19.04	---	---	---
	Silver	3.5	1.45	---	---	---
	Thallium	5.3	1.66	---	---	---
	Vanadium	55.7	30.71	58	0.96	0.53
	Zinc	8490	983.60	---	---	---
TCL Pesticides/PCBs (ug/kg)	4,4'-DDD	310	52.53	100	3.10	0.53
	4,4'-DDE	2200	365.85	100	22.00	3.66
	4,4'-DDT	1200	289.03	100	12.00	2.89
TCL Semivolatiles (ug/kg)	2,4-Dinitrotoluene	3200	554.50	--	--	---
	2,6-Dinitrotoluene	39	39.00	--	--	---
	2-Methylnaphthalene	42	42.00	--	--	---
	Benzo(a)Anthracene	810	282.20	100	8.10	2.82
	Benzo(a)Pyrene	480	227.00	100	4.80	2.27
	Benzo(b)Fluoranthene	1900	649.20	100	19.00	6.49
	Benzo(g,h,i)Perylene	350	164.30	100	3.50	1.64
	Benzo(k)Fluoranthene	700	230.10	100	7.00	2.30
	Carbazole	61	61.00	--	--	---
	Chrysene	1100	403.60	100	11.00	4.04
	Di-n-Butylphthalate	4700	613.10	--	--	--
	Fluoranthene	790	425.30	100	7.90	4.25

Table 6 - 2
Hazard Quotient Determination for Earthworm - Site 5
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Maximum Detected Concentration in Surface Soil	Average Detected Concentration in Surface Soil	BTAG Value for Soil Fauna	BTAG Hazard Quotient (Using Maximum)	Hazard Quotient (Using Average)
	Indeno(1,2,3-cd)Pyrene	540	189.60	100	5.40	1.90
	N-Nitrosodiphenylamine	530	212.50	--	--	--
	Phenanthrene	330	197.60	100	3.30	1.98
	Pyrene	1200	458.10	100	12.00	4.58
TCL Volatiles (ug/kg)	2-Butanone	210	28.35	--	--	--
	Acetone	28	11.61	--	--	--

TABLE D-1
HAZARD QUOTIENT CALCULATIONS FOR SHORT-TAILED SHREW

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Short-Tailed Shrew
(Conservative Inputs)

Body Weight	0.0150000 kg	(USEPA, 1993)
Food Ingestion Rate	0.0093000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0033450 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0009672 kg/day	(Beyer, 1994)

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	29.39	0.202	29.38889	20.16115343	NA	NA	NA	NA
Aluminum	6521.11	7.87	6521.111	4465.325067	2.30E+00	2.30E+01	1.95E+03	1.95E+02
Antimony	2.46	0	2.458333	1.682679772	1.49E-01	1.49E+00	1.13E+01	1.13E+00
Arsenic	0	0.0031	0	0.0006913	1.50E-01	1.50E+00	4.61E-03	4.61E-04
Beryllium	1.91	0	1.91	1.3073568	1.45E+00	1.45E+01	9.02E-01	9.02E-02
Chromium	63.36	0.17	63.35556	43.40352371	3.34E+01	4.40E+01	1.30E+00	9.86E-01
Copper	548.86	0.2	548.8556	375.7252811	3.34E+01	4.40E+01	1.12E+01	8.54E+00
Cyanide	0.32	0	0.323333	0.221314972	1.42E+02	1.42E+03	1.56E-03	1.56E-04
Iron	28112.22	10.7	28112.22	19244.63845	5.00E+01	5.00E+02	3.85E+02	3.85E+01
Lead	371.28	0.078	371.2778	254.1496225	1.76E+01	1.76E+02	1.45E+01	1.45E+00
Manganese	169.69	0.12	169.6889	116.1754183	1.93E+02	6.24E+02	6.02E-01	1.86E-01
Mercury	0.30	0	0.297778	0.203823085	1.57E+01	1.57E+02	1.30E-02	1.30E-03
Nickel	49.66	0	49.65556	33.98823771	8.79E+01	1.76E+02	3.87E-01	1.93E-01
Thallium	1.59	0	1.592222	1.089844115	1.60E-02	1.64E-01	6.81E+01	6.65E+00
Vanadium	26.48	0	26.47778	18.12351085	4.28E-01	4.29E+00	4.23E+01	4.23E+00
Zinc	1157.46	0.27	1157.456	792.3156929	3.52E+02	7.03E+02	2.25E+00	1.13E+00
4,4'-DDD	0.49	0	0.49	0.3353952	1.76E+00	8.79E+00	1.91E-01	3.82E-02
4,4'-DDE	0.14	0	0.14	0.0958272	1.76E+00	8.79E+00	5.44E-02	1.09E-02
4,4'-DDT	0.15	0	0.15	0.102672	1.76E+00	8.79E+00	5.83E-02	1.17E-02
Aroclor-1260	0.07	0	0.074	0.05065152	3.90E-01	3.90E+00	1.30E-01	1.30E-02
2-Methylnaphthalene	0.31	0	0.31	0.2121888	1.30E+00	2.60E+00	1.63E-01	8.16E-02
Acenaphthene	0.17	0	0.17	0.1163616	1.30E+00	2.60E+00	8.95E-02	4.48E-02
Acenaphthylene	0.59	0	0.59	0.4038432	1.30E+00	2.60E+00	3.11E-01	1.55E-01
Anthracene	0.58	0	0.58	0.3969984	1.30E+00	2.60E+00	3.05E-01	1.53E-01
Benzo(a)anthracene	0.62	0	0.62	0.4243776	1.30E+00	2.60E+00	3.26E-01	1.63E-01
Benzo(a)pyrene	0.51	0	0.51	0.3490848	1.19E+00	1.19E+01	2.93E-01	2.94E-02
Benzo(b)fluoranthene	0.65	0	0.65	0.444912	1.30E+00	2.60E+00	3.42E-01	1.71E-01
Benzo(g,h,i)perylene	0.45	0	0.45	0.308016	1.30E+00	2.60E+00	2.37E-01	1.18E-01
Benzo(k)fluoranthene	0.44	0	0.44	0.3011712	1.30E+00	2.60E+00	2.32E-01	1.16E-01
Bis(2-ethylhexyl)phthalate	0.054	0	0.054	0.03696192	2.18E+01	2.18E+02	1.70E-03	1.70E-04
Butylbenzylphthalate	0.28	0	0.28	0.1916544	1.59E+02	1.59E+03	1.21E-03	1.21E-04
Carbazole	0.3	0	0.3	0.205344	1.30E+00	2.60E+00	1.58E-01	7.90E-02
Chrysene	0.68	0	0.68	0.4654464	1.30E+00	2.60E+00	3.58E-01	1.79E-01
Di-n-Butylphthalate	0.21	0	0.21	0.1437408	6.54E+02	2.18E+03	2.20E-04	6.59E-05
Dibenzofuran	0.07	0	0.07	0.0479136	NA	NA	NA	NA
Fluoranthene	1.04	0	1.04	0.7118592	1.30E+00	2.60E+00	5.48E-01	2.74E-01
Fluorene	0.38	0	0.38	0.2601024	1.30E+00	2.60E+00	2.00E-01	1.00E-01
Indeno(1,2,3-cd)pyrene	0.38	0	0.38	0.2601024	1.30E+00	2.60E+00	2.00E-01	1.00E-01
Phenanthrene	0.92	0	0.92	0.6297216	1.30E+00	2.60E+00	4.84E-01	2.42E-01
Pyrene	1.15	0	1.15	0.787152	1.30E+00	2.60E+00	6.06E-01	3.03E-01
Acetone	0.01	0	0.013	0.00889824	2.20E+01	1.10E+02	4.04E-04	8.10E-05

NA - Not Available

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Short-Tailed Shrew
(Conservative Inputs)

Body Weight	0.0150000 kg	(USEPA, 1993)
Food Ingestion Rate	0.0093000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0033450 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0009672 kg/day	(Beyer, 1994)

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	153	0.202	153	104.770486	NA	NA	NA	NA
Aluminum	18600	7.87	18600	12733.08301	2.30E+00	2.30E+01	5.55E+03	5.55E+02
Antimony	7	0	7	4.79136	1.49E-01	1.49E+00	3.22E+01	3.22E+00
Arsenic	0	0.0031	0	0.0006913	1.50E-01	1.50E+00	4.61E-03	4.61E-04
Beryllium	13.4	0	13.4	9.172032	1.45E+00	1.45E+01	6.33E+00	6.33E-01
Chromium	246	0.17	246	168.41999	3.34E+01	4.40E+01	5.04E+00	3.83E+00
Copper	4260	0.2	4260	2915.9294	3.34E+01	4.40E+01	8.73E+01	6.63E+01
Cyanide	0.85	0	0.85	0.581808	1.42E+02	1.42E+03	4.10E-03	4.10E-04
Iron	106000	10.7	106000	72557.2661	5.00E+01	5.00E+02	1.45E+03	1.45E+02
Lead	2370	0.078	2370	1622.234994	1.76E+01	1.76E+02	9.23E+01	9.23E+00
Manganese	688	0.12	688	470.949	1.93E+02	6.24E+02	2.44E+00	7.55E-01
Mercury	0.56	0	0.56	0.3833088	1.57E+01	1.57E+02	2.44E-02	2.44E-03
Nickel	246	0	246	168.38208	8.79E+01	1.76E+02	1.92E+00	9.58E-01
Thallium	6.2	0	6.2	4.243776	1.60E-02	1.64E-01	2.65E+02	2.59E+01
Vanadium	66.1	0	66.1	45.244128	4.28E-01	4.29E+00	1.06E+02	1.06E+01
Zinc	7560	0.27	7560	5174.72901	3.52E+02	7.03E+02	1.47E+01	7.36E+00
4,4'-DDD	4.2	0	4.2	2.874816	1.76E+00	8.79E+00	1.63E+00	3.27E-01
4,4'-DDE	0.46	0	0.46	0.3148608	1.76E+00	8.79E+00	1.79E-01	3.58E-02
4,4'-DDT	0.9	0	0.9	0.616032	1.76E+00	8.79E+00	3.50E-01	7.01E-02
Aroclor-1260	0.11	0	0.11	0.0752928	3.90E-01	3.90E+00	1.93E-01	1.93E-02
2-Methylnaphthalene	0.31	0	0.31	0.2121888	1.30E+00	2.60E+00	1.63E-01	8.16E-02
Acenaphthene	0.17	0	0.17	0.1163616	1.30E+00	2.60E+00	8.95E-02	4.48E-02
Acenaphthylene	0.82	0	0.82	0.5612736	1.30E+00	2.60E+00	4.32E-01	2.16E-01
Anthracene	0.59	0	0.59	0.4038432	1.30E+00	2.60E+00	3.11E-01	1.55E-01
Benzo(a)anthracene	2.3	0	2.3	1.574304	1.30E+00	2.60E+00	1.21E+00	6.06E-01
Benzo(a)pyrene	1.4	0	1.4	0.958272	1.19E+00	1.19E+01	8.05E-01	8.06E-02
Benzo(b)fluoranthene	1.7	0	1.7	1.163616	1.30E+00	2.60E+00	8.95E-01	4.48E-01
Benzo(g,h,i)perylene	0.89	0	0.89	0.6091872	1.30E+00	2.60E+00	4.69E-01	2.34E-01
Benzo(k)fluoranthene	1.1	0	1.1	0.752928	1.30E+00	2.60E+00	5.79E-01	2.90E-01
Bis(2-ethylhexyl)phthalate	0.054	0	0.054	0.03696192	2.18E+01	2.18E+02	1.70E-03	1.70E-04
Butylbenzylphthalate	0.28	0	0.28	0.1916544	1.59E+02	1.59E+03	1.21E-03	1.21E-04
Carbazole	0.3	0	0.3	0.205344	1.30E+00	2.60E+00	1.58E-01	7.90E-02
Chrysene	2.7	0	2.7	1.848096	1.30E+00	2.60E+00	1.42E+00	7.11E-01
Di-n-Butylphthalate	0.21	0	0.21	0.1437408	6.54E+02	2.18E+03	2.20E-04	6.59E-05
Dibenzofuran	0.07	0	0.07	0.0479136	NA	NA	NA	NA
Fluoranthene	5	0	5	3.4224	1.30E+00	2.60E+00	2.63E+00	1.32E+00
Fluorene	0.38	0	0.38	0.2601024	1.30E+00	2.60E+00	2.00E-01	1.00E-01
Indeno(1,2,3-cd)pyrene	0.8	0	0.8	0.547584	1.30E+00	2.60E+00	4.21E-01	2.11E-01
Phenanthrene	4.4	0	4.4	3.011712	1.30E+00	2.60E+00	2.32E+00	1.16E+00
Pyrene	7.2	0	7.2	4.928256	1.30E+00	2.60E+00	3.79E+00	1.90E+00
Acetone	0.035	0	0.035	0.0239568	2.20E+01	1.10E+02	1.09E-03	2.18E-04

NA - Not Available

TABLE D-2
HAZARD QUOTIENT CALCULATIONS FOR AMERICAN ROBIN

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Robin
(Conservative Inputs)

Body Weight	0.0773000 kg	(USEPA, 1993)
Food Ingestion Rate	0.1175000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0108000 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0352500 kg/day	(Beyer, 1994)

Mean Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	29.39	0.202	29.38889	58.10264615	NA	NA	NA	NA
Aluminum	6521.11	7.87	6521.111	12887.25357	1.10E+02	4.45E+01	1.17E+02	2.90E+02
Antimony	2.46	0	2.458333	4.857831381	NA	NA	NA	NA
Arsenic	0	0.0031	0	0.000433118	5.10E+00	1.28E+01	8.49E-05	3.38E-05
Beryllium	1.91	0	1.91	3.774288486	NA	NA	NA	NA
Chromium	63.36	0.17	63.35556	125.2186001	1.00E+00	5.00E+00	1.25E+02	2.50E+01
Copper	548.86	0.2	548.8556	1084.60353	4.70E+01	6.17E+01	2.31E+01	1.76E+01
Cyanide	0.32	0	0.323333	0.638927759	4.50E+00	4.50E+01	1.42E-01	1.42E-02
Iron	28112.22	10.7	28112.22	55553.13279	1.00E+02	1.00E+03	5.56E+02	5.56E+01
Lead	371.28	0.078	371.2778	733.6808066	1.13E+00	1.13E+01	6.49E+02	6.49E+01
Manganese	169.69	0.12	169.6889	335.3334473	9.97E+02	9.97E+03	3.36E-01	3.36E-02
Mercury	0.30	0	0.297778	0.58842936	4.50E-01	9.00E-01	1.31E+00	6.54E-01
Nickel	49.66	0	49.65556	98.12272691	7.74E+01	1.07E+02	1.27E+00	9.17E-01
Thallium	1.59	0	1.592222	3.146337781	NA	NA	NA	NA
Vanadium	26.48	0	26.47778	52.32187445	1.14E+01	1.14E+02	4.59E+00	4.59E-01
Zinc	1157.46	0.27	1157.456	2287.248642	1.45E+01	1.31E+02	1.58E+02	1.75E+01
4,4'-DDD	0.49	0	0.49	0.968272962	3.00E-03	2.80E-02	3.23E+02	3.46E+01
4,4'-DDE	0.14	0	0.14	0.276649418	3.00E-03	2.80E-02	9.22E+01	9.88E+00
4,4'-DDT	0.15	0	0.15	0.296410091	3.00E-03	2.80E-02	9.88E+01	1.06E+01
Aroclor-1260	0.07	0	0.074	0.146228978	NA	NA	NA	NA
2-Methylnaphthalene	0.31	0	0.31	0.612580854	1.00E+01	1.00E+02	6.13E-02	6.13E-03
Acenaphthene	0.17	0	0.17	0.335931436	1.00E+01	1.00E+02	3.36E-02	3.36E-03
Acenaphthylene	0.59	0	0.59	1.16587969	1.00E+01	1.00E+02	1.17E-01	1.17E-02
Anthracene	0.58	0	0.58	1.146119017	1.00E+01	1.00E+02	1.15E-01	1.15E-02
Benzo(a)anthracene	0.62	0	0.62	1.225161708	1.00E+01	1.00E+02	1.23E-01	1.23E-02
Benzo(a)pyrene	0.51	0	0.51	1.007794308	1.00E+01	1.00E+02	1.01E-01	1.01E-02
Benzo(b)fluoranthene	0.65	0	0.65	1.284443726	1.00E+01	1.00E+02	1.28E-01	1.28E-02
Benzo(g,h,i)perylene	0.45	0	0.45	0.889230272	1.00E+01	1.00E+02	8.89E-02	8.89E-03
Benzo(k)fluroanthene	0.44	0	0.44	0.869469599	1.00E+01	1.00E+02	8.69E-02	8.69E-03
Bis(2-ethylhexyl)phthalate	0.054	0	0.054	0.106707633	1.10E+00	1.10E+01	9.70E-02	9.70E-03
Butylbenzylphthalate	0.28	0	0.28	0.553298836	NA	NA	NA	NA
Carbazole	0.3	0	0.3	0.592820181	1.00E+01	1.00E+02	5.93E-02	5.93E-03
Chrysene	0.68	0	0.68	1.343725744	1.00E+01	1.00E+02	1.34E-01	1.34E-02
Di-n-Butylphthalate	0.21	0	0.21	0.414974127	1.10E-01	1.10E+00	3.77E+00	3.77E-01
Dibenzofuran	0.07	0	0.07	0.138324709	NA	NA	NA	NA
Fluoranthene	1.04	0	1.04	2.055109961	1.00E+01	1.00E+02	2.06E-01	2.06E-02
Fluorene	0.38	0	0.38	0.750905563	1.00E+01	1.00E+02	7.51E-02	7.51E-03
Indeno(1,2,3-cd)pyrene	0.38	0	0.38	0.750905563	1.00E+01	1.00E+02	7.51E-02	7.51E-03
Phenanthrene	0.92	0	0.92	1.817981889	1.00E+01	1.00E+02	1.82E-01	1.82E-02
Pyrene	1.15	0	1.15	2.272477361	1.00E+01	1.00E+02	2.27E-01	2.27E-02
Acetone	0.01	0	0.013	0.025688875	NA	NA	NA	NA

NA - Not Available

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Robin
(Conservative Inputs)

Body Weight	0.0773000 kg	(USEPA, 1993)
Food Ingestion Rate	0.1175000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0108000 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0352500 kg/day	(Beyer, 1994)

Maximum Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	153	0.202	153	302.3665149	NA	NA	NA	NA
Aluminum	18600	7.87	18600	36755.95079	1.10E+02	4.45E+01	3.35E+02	8.26E+02
Antimony	7	0	7	13.83247089	NA	NA	NA	NA
Arsenic	0	0.0031	0	0.000433118	5.10E+00	1.28E+01	8.49E-05	3.38E-05
Beryllium	13.4	0	13.4	26.47930142	NA	NA	NA	NA
Chromium	246	0.17	246	486.1363001	1.00E+00	5.00E+00	4.86E+02	9.72E+01
Copper	4260	0.2	4260	8418.074515	4.70E+01	6.17E+01	1.79E+02	1.36E+02
Cyanide	0.85	0	0.85	1.67965718	4.50E+00	4.50E+01	3.73E-01	3.73E-02
Iron	106000	10.7	106000	209464.6256	1.00E+02	1.00E+03	2.09E+03	2.09E+02
Lead	2370	0.078	2370	4683.290329	1.13E+00	1.13E+01	4.14E+03	4.14E+02
Manganese	688	0.12	688	1359.551048	9.97E+02	9.97E+03	1.36E+00	1.36E-01
Mercury	0.56	0	0.56	1.106597671	4.50E-01	9.00E-01	2.46E+00	1.23E+00
Nickel	246	0	246	486.1125485	7.74E+01	1.07E+02	6.28E+00	4.54E+00
Thallium	6.2	0	6.2	12.25161708	NA	NA	NA	NA
Vanadium	66.1	0	66.1	130.6180466	1.14E+01	1.14E+02	1.15E+01	1.15E+00
Zinc	7560	0.27	7560	14939.10629	1.45E+01	1.31E+02	1.03E+03	1.14E+02
4,4'-DDD	4.2	0	4.2	8.299482536	3.00E-03	2.80E-02	2.77E+03	2.96E+02
4,4'-DDE	0.46	0	0.46	0.908990944	3.00E-03	2.80E-02	3.03E+02	3.25E+01
4,4'-DDT	0.9	0	0.9	1.778460543	3.00E-03	2.80E-02	5.93E+02	6.35E+01
Aroclor-1260	0.11	0	0.11	0.2173674	NA	NA	NA	NA
2-Methylnaphthalene	0.31	0	0.31	0.612580854	1.00E+01	1.00E+02	6.13E-02	6.13E-03
Acenaphthene	0.17	0	0.17	0.335931436	1.00E+01	1.00E+02	3.36E-02	3.36E-03
Acenaphthylene	0.82	0	0.82	1.620375162	1.00E+01	1.00E+02	1.62E-01	1.62E-02
Anthracene	0.59	0	0.59	1.16587969	1.00E+01	1.00E+02	1.17E-01	1.17E-02
Benzo(a)anthracene	2.3	0	2.3	4.544954722	1.00E+01	1.00E+02	4.54E-01	4.54E-02
Benzo(a)pyrene	1.4	0	1.4	2.766494179	1.00E+01	1.00E+02	2.77E-01	2.77E-02
Benzo(b)fluoranthene	1.7	0	1.7	3.35931436	1.00E+01	1.00E+02	3.36E-01	3.36E-02
Benzo(g,h,i)perylene	0.89	0	0.89	1.758699871	1.00E+01	1.00E+02	1.76E-01	1.76E-02
Benzo(k)fluroanthene	1.1	0	1.1	2.173673997	1.00E+01	1.00E+02	2.17E-01	2.17E-02
Bis(2-ethylhexyl)phthalate	0.054	0	0.054	0.106707633	1.10E+00	1.10E+01	9.70E-02	9.70E-03
Butylbenzylphthalate	0.28	0	0.28	0.553298836	NA	NA	NA	NA
Carbazole	0.3	0	0.3	0.592820181	1.00E+01	1.00E+02	5.93E-02	5.93E-03
Chrysene	2.7	0	2.7	5.33538163	1.00E+01	1.00E+02	5.34E-01	5.34E-02
Di-n-Butylphthalate	0.21	0	0.21	0.414974127	1.10E-01	1.10E+00	3.77E+00	3.77E-01
Dibenzofuran	0.07	0	0.07	0.138324709	NA	NA	NA	NA
Fluoranthene	5	0	5	9.880336352	1.00E+01	1.00E+02	9.88E-01	9.88E-02
Fluorene	0.38	0	0.38	0.750905563	1.00E+01	1.00E+02	7.51E-02	7.51E-03
Indeno(1,2,3-cd)pyrene	0.8	0	0.8	1.580853816	1.00E+01	1.00E+02	1.58E-01	1.58E-02
Phenanthrene	4.4	0	4.4	8.69469599	1.00E+01	1.00E+02	8.69E-01	8.69E-02
Pyrene	7.2	0	7.2	14.22768435	1.00E+01	1.00E+02	1.42E+00	1.42E-01
Acetone	0.035	0	0.035	0.069162354	NA	NA	NA	NA

NA - Not Available

TABLE D-3
HAZARD QUOTIENT CALCULATIONS FOR RED-TAILED HAWK

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red-Tailed Hawk
(Conservative Inputs)

Body Weight	0.9570000 kg	(USEPA, 1993)
Food Ingestion Rate	0.1090000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0640000 L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0028000 kg/day	(USEPA, 1993; life history fact sheet)

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Sm. Mammals Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	29.39	0.202	29.38889	3.446819124	NA	NA	NA	NA
Aluminum	6521.11	7.87	6521.111	762.3447124	1.10E+02	4.45E+01	6.95E+00	1.71E+01
Antimony	2.46	0	2.458333	0.287190835	NA	NA	NA	NA
Arsenic	0	0.0031	0	0.000207315	5.10E+00	1.28E+01	4.06E-05	1.62E-05
Beryllium	1.91	0	1.91	0.223132706	NA	NA	NA	NA
Chromium	63.36	0.17	63.35556	7.4127812	1.00E+00	5.00E+00	7.41E+00	1.48E+00
Copper	548.86	0.2	548.8556	64.13255599	4.70E+01	6.17E+01	1.36E+00	1.04E+00
Cyanide	0.32	0	0.323333	0.037772862	4.50E+00	4.50E+01	8.39E-03	8.39E-04
Iron	28112.22	10.7	28112.22	3284.880874	1.00E+02	1.00E+03	3.28E+01	3.28E+00
Lead	371.28	0.078	371.2778	43.37915365	1.13E+00	1.13E+01	3.84E+01	3.84E+00
Manganese	169.69	0.12	169.6889	19.83166042	9.97E+02	9.97E+03	1.99E-02	1.99E-03
Mercury	0.30	0	0.297778	0.03478744	4.50E-01	9.00E-01	7.73E-02	3.87E-02
Nickel	49.66	0	49.65556	5.80093167	7.74E+01	1.07E+02	7.49E-02	5.42E-02
Thallium	1.59	0	1.592222	0.186008798	NA	NA	NA	NA
Vanadium	26.48	0	26.47778	3.093224456	1.14E+01	1.14E+02	2.71E-01	2.71E-02
Zinc	1157.46	0.27	1157.456	135.2360092	1.45E+01	1.31E+02	9.33E+00	1.03E+00
4,4'-DDD	0.49	0	0.49	0.057243469	3.00E-03	2.80E-02	1.91E+01	2.04E+00
4,4'-DDE	0.14	0	0.14	0.016355277	3.00E-03	2.80E-02	5.45E+00	5.84E-01
4,4'-DDT	0.15	0	0.15	0.017523511	3.00E-03	2.80E-02	5.84E+00	6.26E-01
Aroclor-1260	0.07	0	0.074	0.008644932	NA	NA	NA	NA
2-Methylnaphthalene	0.31	0	0.31	0.036215256	1.00E+01	1.00E+02	3.62E-03	3.62E-04
Acenaphthene	0.17	0	0.17	0.019859979	1.00E+01	1.00E+02	1.99E-03	1.99E-04
Acenaphthylene	0.59	0	0.59	0.06892581	1.00E+01	1.00E+02	6.89E-03	6.89E-04
Anthracene	0.58	0	0.58	0.067757576	1.00E+01	1.00E+02	6.78E-03	6.78E-04
Benzo(a)anthracene	0.62	0	0.62	0.072430512	1.00E+01	1.00E+02	7.24E-03	7.24E-04
Benzo(a)pyrene	0.51	0	0.51	0.059579937	1.00E+01	1.00E+02	5.96E-03	5.96E-04
Benzo(b)fluoranthene	0.65	0	0.65	0.075935214	1.00E+01	1.00E+02	7.59E-03	7.59E-04
Benzo(g,h,i)perylene	0.45	0	0.45	0.052570533	1.00E+01	1.00E+02	5.26E-03	5.26E-04
Benzo(k)fluoranthene	0.44	0	0.44	0.051402299	1.00E+01	1.00E+02	5.14E-03	5.14E-04
Bis(2-ethylhexyl)phthalate	0.054	0	0.054	0.006308464	1.10E+00	1.10E+01	5.73E-03	5.73E-04
Butylbenzylphthalate	0.28	0	0.28	0.032710554	NA	NA	NA	NA
Carbazole	0.3	0	0.3	0.035047022	1.00E+01	1.00E+02	3.50E-03	3.50E-04
Chrysene	0.68	0	0.68	0.079439916	1.00E+01	1.00E+02	7.94E-03	7.94E-04
Di-n-Butylphthalate	0.21	0	0.21	0.024532915	1.10E-01	1.10E+00	2.23E-01	2.23E-02
Dibenzofuran	0.07	0	0.07	0.008177638	NA	NA	NA	NA
Fluoranthene	1.04	0	1.04	0.121496343	1.00E+01	1.00E+02	1.21E-02	1.21E-03
Fluorene	0.38	0	0.38	0.044392894	1.00E+01	1.00E+02	4.44E-03	4.44E-04
Indeno(1,2,3-cd)pyrene	0.38	0	0.38	0.044392894	1.00E+01	1.00E+02	4.44E-03	4.44E-04
Phenanthrene	0.92	0	0.92	0.107477534	1.00E+01	1.00E+02	1.07E-02	1.07E-03
Pyrene	1.15	0	1.15	0.134346917	1.00E+01	1.00E+02	1.34E-02	1.34E-03
Acetone	0.01	0	0.013	0.001518704	NA	NA	NA	NA

NA - Not Available

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red-Tailed Hawk
(Conservative Inputs)

Body Weight	0.9570000 kg	(USEPA, 1993)
Food Ingestion Rate	0.1090000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0640000 L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0028000 kg/day	(USEPA, 1993; life history fact sheet)

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Sm. Mammals Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	153	0.202	153	17.88749007	NA	NA	NA	NA
Aluminum	18600	7.87	18600	2173.441672	1.10E+02	4.45E+01	1.98E+01	4.88E+01
Antimony	7	0	7	0.817763845	NA	NA	NA	NA
Arsenic	0	0.0031	0	0.000207315	5.10E+00	1.28E+01	4.06E-05	1.62E-05
Beryllium	13.4	0	13.4	1.565433647	NA	NA	NA	NA
Chromium	246	0.17	246	28.74992685	1.00E+00	5.00E+00	2.87E+01	5.75E+00
Copper	4260	0.2	4260	497.6810867	4.70E+01	6.17E+01	1.06E+01	8.07E+00
Cyanide	0.85	0	0.85	0.099299896	4.50E+00	4.50E+01	2.21E-02	2.21E-03
Iron	106000	10.7	106000	12383.99666	1.00E+02	1.00E+03	1.24E+02	1.24E+01
Lead	2370	0.078	2370	276.8766897	1.13E+00	1.13E+01	2.45E+02	2.45E+01
Manganese	688	0.12	688	80.38252874	9.97E+02	9.97E+03	8.06E-02	8.06E-03
Mercury	0.56	0	0.56	0.065421108	4.50E-01	9.00E-01	1.45E-01	7.27E-02
Nickel	246	0	246	28.73855799	7.74E+01	1.07E+02	3.71E-01	2.69E-01
Thallium	6.2	0	6.2	0.72430512	NA	NA	NA	NA
Vanadium	66.1	0	66.1	7.722027168	1.14E+01	1.14E+02	6.77E-01	6.77E-02
Zinc	7560	0.27	7560	883.2030094	1.45E+01	1.31E+02	6.09E+01	6.74E+00
4,4'-DDD	4.2	0	4.2	0.490658307	3.00E-03	2.80E-02	1.64E+02	1.75E+01
4,4'-DDE	0.46	0	0.46	0.053738767	3.00E-03	2.80E-02	1.79E+01	1.92E+00
4,4'-DDT	0.9	0	0.9	0.105141066	3.00E-03	2.80E-02	3.50E+01	3.76E+00
Aroclor-1260	0.11	0	0.11	0.012850575	NA	NA	NA	NA
2-Methylnaphthalene	0.31	0	0.31	0.036215256	1.00E+01	1.00E+02	3.62E-03	3.62E-04
Acenaphthene	0.17	0	0.17	0.019859979	1.00E+01	1.00E+02	1.99E-03	1.99E-04
Acenaphthylene	0.82	0	0.82	0.095795193	1.00E+01	1.00E+02	9.58E-03	9.58E-04
Anthracene	0.59	0	0.59	0.06892581	1.00E+01	1.00E+02	6.89E-03	6.89E-04
Benzo(a)anthracene	2.3	0	2.3	0.268693835	1.00E+01	1.00E+02	2.69E-02	2.69E-03
Benzo(a)pyrene	1.4	0	1.4	0.163552769	1.00E+01	1.00E+02	1.64E-02	1.64E-03
Benzo(b)fluoranthene	1.7	0	1.7	0.198599791	1.00E+01	1.00E+02	1.99E-02	1.99E-03
Benzo(g,h,i)perylene	0.89	0	0.89	0.103972832	1.00E+01	1.00E+02	1.04E-02	1.04E-03
Benzo(k)fluoranthene	1.1	0	1.1	0.128505747	1.00E+01	1.00E+02	1.29E-02	1.29E-03
Bis(2-ethylhexyl)phthalate	0.054	0	0.054	0.006308464	1.10E+00	1.10E+01	5.73E-03	5.73E-04
Butylbenzylphthalate	0.28	0	0.28	0.032710554	NA	NA	NA	NA
Carbazole	0.3	0	0.3	0.035047022	1.00E+01	1.00E+02	3.50E-03	3.50E-04
Chrysene	2.7	0	2.7	0.315423197	1.00E+01	1.00E+02	3.15E-02	3.15E-03
Di-n-Butylphthalate	0.21	0	0.21	0.024532915	1.10E-01	1.10E+00	2.23E-01	2.23E-02
Dibenzofuran	0.07	0	0.07	0.008177638	NA	NA	NA	NA
Fluoranthene	5	0	5	0.584117032	1.00E+01	1.00E+02	5.84E-02	5.84E-03
Fluorene	0.38	0	0.38	0.044392894	1.00E+01	1.00E+02	4.44E-03	4.44E-04
Indeno(1,2,3-cd)pyrene	0.8	0	0.8	0.093458725	1.00E+01	1.00E+02	9.35E-03	9.35E-04
Phenanthrene	4.4	0	4.4	0.514022989	1.00E+01	1.00E+02	5.14E-02	5.14E-03
Pyrene	7.2	0	7.2	0.841128527	1.00E+01	1.00E+02	8.41E-02	8.41E-03
Acetone	0.035	0	0.035	0.004088819	NA	NA	NA	NA

NA - Not Available

TABLE D-4
HAZARD QUOTIENT CALCULATIONS FOR AMERICAN WOODCOCK

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Woodcock
(Conservataive Inputs)

Body Weight	0.1340000	kg	(USEPA, 1993)
Food Ingestion Rate	0.1500000	kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0200000	L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0075000	kg/day	(Beyer, 1994)

Mean Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	29.39	0.202	29.38889	34.57306101	NA	NA	NA	NA
Aluminum	6521.11	7.87	6521.111	7665.913302	1.10E+02	4.45E+01	6.99E+01	1.72E+02
Antimony	2.46	0	2.458333	2.889458563	NA	NA	NA	NA
Arsenic	0	0.0031	0	0.000462687	5.10E+00	1.28E+01	9.07E-05	3.61E-05
Beryllium	1.91	0	1.91	2.244962687	NA	NA	NA	NA
Chromium	63.36	0.17	63.35556	74.49179627	1.00E+00	5.00E+00	7.45E+01	1.49E+01
Copper	548.86	0.2	548.8556	645.1399776	4.70E+01	6.17E+01	1.37E+01	1.05E+01
Cyanide	0.32	0	0.323333	0.380036922	4.50E+00	4.50E+01	8.45E-02	8.45E-03
Iron	28112.22	10.7	28112.22	33043.94515	1.00E+02	1.00E+03	3.30E+02	3.30E+01
Lead	371.28	0.078	371.2778	436.4015933	1.13E+00	1.13E+01	3.86E+02	3.86E+01
Manganese	169.69	0.12	169.6889	199.4656847	9.97E+02	9.97E+03	2.00E-01	2.00E-02
Mercury	0.30	0	0.297778	0.350000261	4.50E-01	9.00E-01	7.78E-01	3.89E-01
Nickel	49.66	0	49.65556	58.36381119	7.74E+01	1.07E+02	7.54E-01	5.45E-01
Thallium	1.59	0	1.592222	1.871454963	NA	NA	NA	NA
Vanadium	26.48	0	26.47778	31.12127127	1.14E+01	1.14E+02	2.73E+00	2.73E-01
Zinc	1157.46	0.27	1157.456	1360.482985	1.45E+01	1.31E+02	9.38E+01	1.04E+01
4,4'-DDD	0.49	0	0.49	0.575932836	3.00E-03	2.80E-02	1.92E+02	2.06E+01
4,4'-DDE	0.14	0	0.14	0.164552239	3.00E-03	2.80E-02	5.49E+01	5.88E+00
4,4'-DDT	0.15	0	0.15	0.17630597	3.00E-03	2.80E-02	5.88E+01	6.30E+00
Aroclor-1260	0.07	0	0.074	0.086977612	NA	NA	NA	NA
2-Methylnaphthalene	0.31	0	0.31	0.364365672	1.00E+01	1.00E+02	3.64E-02	3.64E-03
Acenaphthene	0.17	0	0.17	0.199813433	1.00E+01	1.00E+02	2.00E-02	2.00E-03
Acenaphthylene	0.59	0	0.59	0.693470149	1.00E+01	1.00E+02	6.93E-02	6.93E-03
Anthracene	0.58	0	0.58	0.681716418	1.00E+01	1.00E+02	6.82E-02	6.82E-03
Benzo(a)anthracene	0.62	0	0.62	0.728731343	1.00E+01	1.00E+02	7.29E-02	7.29E-03
Benzo(a)pyrene	0.51	0	0.51	0.599440299	1.00E+01	1.00E+02	5.99E-02	5.99E-03
Benzo(b)fluoranthene	0.65	0	0.65	0.763992537	1.00E+01	1.00E+02	7.64E-02	7.64E-03
Benzo(g,h,i)perylene	0.45	0	0.45	0.52891791	1.00E+01	1.00E+02	5.29E-02	5.29E-03
Benzo(k)fluoranthene	0.44	0	0.44	0.517164179	1.00E+01	1.00E+02	5.17E-02	5.17E-03
Bis(2-ethylhexyl)phthalate	0.054	0	0.054	0.063470149	1.10E+00	1.10E+01	5.77E-02	5.77E-03
Butylbenzylphthalate	0.28	0	0.28	0.329104478	NA	NA	NA	NA
Carbazole	0.3	0	0.3	0.35261194	1.00E+01	1.00E+02	3.53E-02	3.53E-03
Chrysene	0.68	0	0.68	0.799253731	1.00E+01	1.00E+02	7.99E-02	7.99E-03
Di-n-Butylphthalate	0.21	0	0.21	0.246828358	1.10E-01	1.10E+00	2.24E+00	2.24E-01
Dibenzofuran	0.07	0	0.07	0.082276119	NA	NA	NA	NA
Fluoranthene	1.04	0	1.04	1.22238806	1.00E+01	1.00E+02	1.22E-01	1.22E-02
Fluorene	0.38	0	0.38	0.446641791	1.00E+01	1.00E+02	4.47E-02	4.47E-03
Indeno(1,2,3-cd)pyrene	0.38	0	0.38	0.446641791	1.00E+01	1.00E+02	4.47E-02	4.47E-03
Phenanthrene	0.92	0	0.92	1.081343284	1.00E+01	1.00E+02	1.08E-01	1.08E-02
Pyrene	1.15	0	1.15	1.351679104	1.00E+01	1.00E+02	1.35E-01	1.35E-02
Acetone	0.01	0	0.013	0.015279851	NA	NA	NA	NA

NA - Not Available

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Woodcock
(Conservataive Inputs)

Body Weight	0.1340000	kg	(USEPA, 1993)
Food Ingestion Rate	0.1500000	kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0200000	L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0075000	kg/day	(Beyer, 1994)

Maximum Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	153	0.202	153	179.8622388	NA	NA	NA	NA
Aluminum	18600	7.87	18600	21863.11493	1.10E+02	4.45E+01	1.99E+02	4.91E+02
Antimony	7	0	7	8.22761194	NA	NA	NA	NA
Arsenic	0	0.0031	0	0.000462687	5.10E+00	1.28E+01	9.07E-05	3.61E-05
Beryllium	13.4	0	13.4	15.75	NA	NA	NA	NA
Chromium	246	0.17	246	289.1671642	1.00E+00	5.00E+00	2.89E+02	5.78E+01
Copper	4260	0.2	4260	5007.119403	4.70E+01	6.17E+01	1.07E+02	8.12E+01
Cyanide	0.85	0	0.85	0.999067164	4.50E+00	4.50E+01	2.22E-01	2.22E-02
Iron	106000	10.7	106000	124591.1493	1.00E+02	1.00E+03	1.25E+03	1.25E+02
Lead	2370	0.078	2370	2785.64597	1.13E+00	1.13E+01	2.47E+03	2.47E+02
Manganese	688	0.12	688	808.6746269	9.97E+02	9.97E+03	8.11E-01	8.11E-02
Mercury	0.56	0	0.56	0.658208955	4.50E-01	9.00E-01	1.46E+00	7.31E-01
Nickel	246	0	246	289.141791	7.74E+01	1.07E+02	3.74E+00	2.70E+00
Thallium	6.2	0	6.2	7.287313433	NA	NA	NA	NA
Vanadium	66.1	0	66.1	77.69216418	1.14E+01	1.14E+02	6.82E+00	6.82E-01
Zinc	7560	0.27	7560	8885.861194	1.45E+01	1.31E+02	6.13E+02	6.78E+01
4,4'-DDD	4.2	0	4.2	4.936567164	3.00E-03	2.80E-02	1.65E+03	1.76E+02
4,4'-DDE	0.46	0	0.46	0.540671642	3.00E-03	2.80E-02	1.80E+02	1.93E+01
4,4'-DDT	0.9	0	0.9	1.057835821	3.00E-03	2.80E-02	3.53E+02	3.78E+01
Aroclor-1260	0.11	0	0.11	0.129291045	NA	NA	NA	NA
2-Methylnaphthalene	0.31	0	0.31	0.364365672	1.00E+01	1.00E+02	3.64E-02	3.64E-03
Acenaphthene	0.17	0	0.17	0.199813433	1.00E+01	1.00E+02	2.00E-02	2.00E-03
Acenaphthylene	0.82	0	0.82	0.96380597	1.00E+01	1.00E+02	9.64E-02	9.64E-03
Anthracene	0.59	0	0.59	0.693470149	1.00E+01	1.00E+02	6.93E-02	6.93E-03
Benzo(a)anthracene	2.3	0	2.3	2.703358209	1.00E+01	1.00E+02	2.70E-01	2.70E-02
Benzo(a)pyrene	1.4	0	1.4	1.645522388	1.00E+01	1.00E+02	1.65E-01	1.65E-02
Benzo(b)fluoranthene	1.7	0	1.7	1.998134328	1.00E+01	1.00E+02	2.00E-01	2.00E-02
Benzo(g,h,i)perylene	0.89	0	0.89	1.04608209	1.00E+01	1.00E+02	1.05E-01	1.05E-02
Benzo(k)fluroanthene	1.1	0	1.1	1.292910448	1.00E+01	1.00E+02	1.29E-01	1.29E-02
Bis(2-ethylhexyl)phthalate	0.054	0	0.054	0.063470149	1.10E+00	1.10E+01	5.77E-02	5.77E-03
Butylbenzylphthalate	0.28	0	0.28	0.329104478	NA	NA	NA	NA
Carbazole	0.3	0	0.3	0.35261194	1.00E+01	1.00E+02	3.53E-02	3.53E-03
Chrysene	2.7	0	2.7	3.173507463	1.00E+01	1.00E+02	3.17E-01	3.17E-02
Di-n-Butylphthalate	0.21	0	0.21	0.246828358	1.10E-01	1.10E+00	2.24E+00	2.24E-01
Dibenzofuran	0.07	0	0.07	0.082276119	NA	NA	NA	NA
Fluoranthene	5	0	5	5.876865672	1.00E+01	1.00E+02	5.88E-01	5.88E-02
Fluorene	0.38	0	0.38	0.446641791	1.00E+01	1.00E+02	4.47E-02	4.47E-03
Indeno(1,2,3-cd)pyrene	0.8	0	0.8	0.940298507	1.00E+01	1.00E+02	9.40E-02	9.40E-03
Phenanthrene	4.4	0	4.4	5.171641791	1.00E+01	1.00E+02	5.17E-01	5.17E-02
Pyrene	7.2	0	7.2	8.462686567	1.00E+01	1.00E+02	8.46E-01	8.46E-02
Acetone	0.035	0	0.035	0.04113806	NA	NA	NA	NA

NA - Not Available

TABLE D-5
HAZARD QUOTIENT CALCULATIONS FOR RED FOX

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red Fox
(Conservative Inputs)

Body Weight	3.9400000 kg	(USEPA, 1993)
Food Ingestion Rate	0.4500000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.3800000 L/day	(USDOE, 1996)
Soil Ingestion Rate	*0.0165074 kg/day*	*(Beyer, 1994)*

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	29.39	0.202	29.38889	3.49921184	NA	NA	NA	NA
Aluminum	6521.11	7.87	6521.111	772.877446	5.51E-01	5.52E+00	1.40E+03	1.40E+02
Antimony	2.46	0	2.458333	0.29107374	3.60E-02	3.57E-01	8.09E+00	8.15E-01
Arsenic	0	0.0031	0	0.00029898	3.60E-02	3.60E-01	8.31E-03	8.31E-04
Beryllium	1.91	0	1.91	0.22614953	3.50E-01	3.50E+00	6.46E-01	6.46E-02
Chromium	63.36	0.17	63.35556	7.51787756	8.00E+00	1.06E+01	9.40E-01	7.09E-01
Copper	*548.86*	*0.2*	*548.8556*	*65.0053804*	*8.00E+00*	*1.06E+01*	*8.13E+00*	*6.13E+00*
Cyanide	0.32	0	0.323333	0.03828356	3.41E+01	3.41E+02	1.12E-03	1.12E-04
Iron	28112.22	10.7	28112.22	3329.60017	5.00E+01	5.00E+02	6.66E+01	6.66E+00
Lead	371.28	0.078	371.2778	43.9678886	4.22E+00	4.23E+01	1.04E+01	1.04E+00
Manganese	169.69	0.12	169.6889	20.1032303	4.60E+01	1.50E+02	4.37E-01	1.34E-01
Mercury	0.30	0	0.297778	0.03525778	3.77E+00	3.77E+01	9.35E-03	9.35E-04
Nickel	49.66	0	49.65556	5.87936198	2.11E+01	4.23E+01	2.78E-01	1.39E-01
Thallium	1.59	0	1.592222	0.18852369	4.00E-03	3.90E-02	4.71E+01	4.83E+00
Vanadium	26.48	0	26.47778	3.13504576	1.03E-01	1.03E+00	3.04E+01	3.04E+00
Zinc	1157.46	0.27	1157.456	137.07218	8.45E+01	1.69E+02	1.62E+00	8.11E-01
4,4'-DDD	0.49	0	0.49	0.05801742	4.20E-01	2.11E+00	1.38E-01	2.75E-02
4,4'-DDE	0.14	0	0.14	0.01657641	4.20E-01	2.11E+00	3.95E-02	7.86E-03
4,4'-DDT	0.15	0	0.15	0.01776043	4.20E-01	2.11E+00	4.23E-02	8.42E-03
Aroclor-1260	*0.07*	*0*	*0.074*	*0.00876181*	*3.90E-01*	*3.90E+00*	*2.25E-02*	*2.25E-03*
2-Methylnaphthalene	0.31	0	0.31	0.0367049	1.30E+00	2.60E+00	2.82E-02	1.41E-02
Acenaphthene	0.17	0	0.17	0.02012849	1.30E+00	2.60E+00	1.55E-02	7.74E-03
Acenaphthylene	0.59	0	0.59	0.06985771	1.30E+00	2.60E+00	5.37E-02	2.69E-02
Anthracene	0.58	0	0.58	0.06867368	1.30E+00	2.60E+00	5.28E-02	2.64E-02
Benzo(a)anthracene	0.62	0	0.62	0.07340979	1.30E+00	2.60E+00	5.65E-02	2.82E-02
Benzo(a)pyrene	0.51	0	0.51	0.06038548	2.90E-01	2.86E+00	2.08E-01	2.11E-02
Benzo(b)fluoranthene	0.65	0	0.65	0.07696188	1.30E+00	2.60E+00	5.92E-02	2.96E-02
Benzo(g,h,i)perylene	0.45	0	0.45	0.0532813	1.30E+00	2.60E+00	4.10E-02	2.05E-02
Benzo(k)fluoranthene	0.44	0	0.44	0.05209727	1.30E+00	2.60E+00	4.01E-02	2.00E-02
Bis(2-ethylhexyl)phthalate	0.054	0	0.054	0.00639376	5.20E+00	5.20E+01	1.23E-03	1.23E-04
Butylbenzylphthalate	0.28	0	0.28	0.03315281	1.59E+02	1.59E+03	2.09E-04	2.09E-05
Carbazole	0.3	0	0.3	0.03552087	1.30E+00	2.60E+00	2.73E-02	1.37E-02
Chrysene	*0.68*	*0*	*0.68*	*0.08051397*	*1.30E+00*	*2.60E+00*	*6.19E-02*	*3.10E-02*
Di-n-Butylphthalate	0.21	0	0.21	0.02486461	1.57E+02	5.24E+02	1.58E-04	4.75E-05
Dibenzofuran	0.07	0	0.07	0.0082882	NA	NA	NA	NA
Fluoranthene	1.04	0	1.04	0.12313901	1.30E+00	2.60E+00	9.47E-02	4.74E-02
Fluorene	0.38	0	0.38	0.0449931	1.30E+00	2.60E+00	3.46E-02	1.73E-02
Indeno(1,2,3-cd)pyrene	0.38	0	0.38	0.0449931	1.30E+00	2.60E+00	3.46E-02	1.73E-02
Phenanthrene	0.92	0	0.92	0.10893066	1.30E+00	2.60E+00	8.38E-02	4.19E-02
Pyrene	1.15	0	1.15	0.13616333	1.30E+00	2.60E+00	1.05E-01	5.24E-02
Acetone	0.01	0	0.013	0.00153924	5.30E+00	2.64E+01	2.90E-04	5.83E-05

NA - Not Available

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red Fox
(Conservative Inputs)

Body Weight	3.9400000 kg	(USEPA, 1993)
Food Ingestion Rate	0.4500000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.3800000 L/day	(USDOE, 1996)
Soil Ingestion Rate	*0.0165074 kg/day*	*(Beyer, 1994)*

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	153	0.202	153	18.13512492	NA	NA	NA	NA
Aluminum	18600	7.87	18600	7.87	5.51E-01	5.52E+00	1.43E+01	1.43E+00
Antimony	7	0	7	0.828820254	3.60E-02	3.57E-01	2.30E+01	2.32E+00
Arsenic	0	0.0031	0	0.000298985	3.60E-02	3.60E-01	8.31E-03	8.31E-04
Beryllium	13.4	0	13.4	1.586598772	3.50E-01	3.50E+00	4.53E+00	4.53E-01
Chromium	246	0.17	246	29.14350772	8.00E+00	1.06E+01	3.64E+00	2.75E+00
Copper	*4260*	*0.2*	*4260*	*504.4156152*	*8.00E+00*	*1.06E+01*	*6.31E+01*	*4.76E+01*
Cyanide	0.85	0	0.85	0.100642459	3.41E+01	3.41E+02	2.95E-03	2.95E-04
Iron	106000	10.7	106000	12551.73868	5.00E+01	5.00E+02	2.51E+02	2.51E+01
Lead	2370	0.078	2370	280.6223802	4.22E+00	4.23E+01	6.65E+01	6.64E+00
Manganese	688	0.12	688	81.47276426	4.60E+01	1.50E+02	1.77E+00	5.43E-01
Mercury	0.56	0	0.56	0.06630562	3.77E+00	3.77E+01	1.76E-02	1.76E-03
Nickel	246	0	246	29.12711178	2.11E+01	4.23E+01	1.38E+00	6.89E-01
Thallium	6.2	0	6.2	0.734097939	4.00E-03	3.90E-02	1.84E+02	1.88E+01
Vanadium	66.1	0	66.1	7.826431254	1.03E-01	1.03E+00	7.60E+01	7.60E+00
Zinc	7560	0.27	7560	895.1519147	8.45E+01	1.69E+02	1.06E+01	5.30E+00
4,4'-DDD	4.2	0	4.2	0.497292152	4.20E-01	2.11E+00	1.18E+00	2.36E-01
4,4'-DDE	0.46	0	0.46	0.054465331	4.20E-01	2.11E+00	1.30E-01	2.58E-02
4,4'-DDT	0.9	0	0.9	0.106562604	4.20E-01	2.11E+00	2.54E-01	5.05E-02
Aroclor-1260	*0.11*	*0*	*0.11*	*0.013024318*	*3.90E-01*	*3.90E+00*	*3.34E-02*	*3.34E-03*
2-Methylnaphthalene	0.31	0	0.31	0.036704897	1.30E+00	2.60E+00	2.82E-02	1.41E-02
Acenaphthene	0.17	0	0.17	0.020128492	1.30E+00	2.60E+00	1.55E-02	7.74E-03
Acenaphthylene	0.82	0	0.82	0.097090373	1.30E+00	2.60E+00	7.47E-02	3.73E-02
Anthracene	0.59	0	0.59	0.069857707	1.30E+00	2.60E+00	5.37E-02	2.69E-02
Benzo(a)anthracene	2.3	0	2.3	0.272326655	1.30E+00	2.60E+00	2.09E-01	1.05E-01
Benzo(a)pyrene	1.4	0	1.4	0.165764051	2.90E-01	2.86E+00	5.72E-01	5.80E-02
Benzo(b)fluoranthene	1.7	0	1.7	0.201284919	1.30E+00	2.60E+00	1.55E-01	7.74E-02
Benzo(g,h,i)perylene	0.89	0	0.89	0.105378575	1.30E+00	2.60E+00	8.11E-02	4.05E-02
Benzo(k)fluoranthene	1.1	0	1.1	0.130243183	1.30E+00	2.60E+00	1.00E-01	5.01E-02
Bis(2-ethylhexyl)phthalate	0.054	0	0.054	0.006393756	5.20E+00	5.20E+01	1.23E-03	1.23E-04
Butylbenzylphthalate	0.28	0	0.28	0.03315281	1.59E+02	1.59E+03	2.09E-04	2.09E-05
Carbazole	0.3	0	0.3	0.035520868	1.30E+00	2.60E+00	2.73E-02	1.37E-02
Chrysene	*2.7*	*0*	*2.7*	*0.319687812*	*1.30E+00*	*2.60E+00*	*2.46E-01*	*1.23E-01*
Di-n-Butylphthalate	0.21	0	0.21	0.024864608	1.57E+02	5.24E+02	1.58E-04	4.75E-05
Dibenzofuran	0.07	0	0.07	0.008288203	NA	NA	NA	NA
Fluoranthene	5	0	5	0.592014467	1.30E+00	2.60E+00	4.55E-01	2.28E-01
Fluorene	0.38	0	0.38	0.044993099	1.30E+00	2.60E+00	3.46E-02	1.73E-02
Indeno(1,2,3-cd)pyrene	0.8	0	0.8	0.094722315	1.30E+00	2.60E+00	7.29E-02	3.64E-02
Phenanthrene	4.4	0	4.4	0.520972731	1.30E+00	2.60E+00	4.01E-01	2.00E-01
Pyrene	7.2	0	7.2	0.852500832	1.30E+00	2.60E+00	6.56E-01	3.28E-01
Acetone	0.035	0	0.035	0.004144101	5.30E+00	2.64E+01	7.82E-04	1.57E-04

NA - Not Available

TABLE D-6
HAZARD QUOTIENT CALCULATIONS FOR DEER MOUSE

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Deer Mouse
(Conservative Inputs)

Body Weight	0.0148000	kg	(USEPA, 1993)
Food Ingestion Rate	0.0066600	kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0028120	L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0000700	kg/day	(Beyer, 1994)

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	29.39	0.202	11.755556	17.633334	13.402382	NA	NA	NA	NA
Aluminum	6521.11	7.87	2608.4444	3912.6666	2966.83834	1.93E+00	1.93E+01	1.54E+03	1.54E+02
Antimony	2.46	0	0.9833332	1.4749998	1.1178771	1.25E-01	1.25E+00	8.94E+00	8.94E-01
Arsenic	0	0.0031	0	0	0.000589	1.26E-01	1.26E+00	4.67E-03	4.67E-04
Beryllium	1.91	0	0.764	1.146	0.86853378	6.60E-01	6.60E+00	1.32E+00	1.32E-01
Chromium	63.36	0.17	25.342224	38.013336	28.8419567	1.17E+01	1.54E+01	2.47E+00	1.87E+00
Copper	548.86	0.2	219.54224	329.31336	249.618959	1.17E+01	1.54E+01	2.13E+01	1.62E+01
Cyanide	0.32	0	0.1293332	0.1939998	0.14702913	6.87E+01	6.87E+02	2.14E-03	2.14E-04
Iron	28112.22	10.7	11244.888	16867.332	12785.4952	5.00E+01	5.00E+02	2.56E+02	2.56E+01
Lead	371.28	0.078	148.51112	222.76668	168.845874	8.00E+00	8.00E+01	2.11E+01	2.11E+00
Manganese	169.69	0.12	67.87556	101.81334	77.1853876	8.80E+01	2.84E+02	8.77E-01	2.72E-01
Mercury	0.30	0	0.1191112	0.1786668	0.13540851	1.32E+01	1.32E+02	1.03E-02	1.03E-03
Nickel	49.66	0	19.862224	29.793336	22.5798594	4.00E+01	8.00E+01	5.64E-01	2.82E-01
Thallium	1.59	0	0.6368888	0.9553332	0.72403068	7.40E-03	7.40E-02	9.78E+01	9.78E+00
Vanadium	26.48	0	10.591112	15.886668	12.0402337	2.10E-01	2.10E+00	5.73E+01	5.73E+00
Zinc	1157.46	0.27	462.9824	694.4736	526.380954	1.60E+02	3.20E+02	3.29E+00	1.64E+00
4,4'-DDD	0.49	0	0.196	0.294	0.22281757	8.00E-01	4.00E+00	2.79E-01	5.57E-02
4,4'-DDE	0.14	0	0.056	0.084	0.06366216	8.00E-01	4.00E+00	7.96E-02	1.59E-02
4,4'-DDT	0.15	0	0.06	0.09	0.06820946	8.00E-01	4.00E+00	8.53E-02	1.71E-02
Aroclor-1260	0.07	0	0.0296	0.0444	0.03365	3.90E-01	3.90E+00	8.63E-02	8.63E-03
2-Methylnaphthalene	0.31	0	0.124	0.186	0.14096622	1.30E+00	2.60E+00	1.08E-01	5.42E-02
Acenaphthene	0.17	0	0.068	0.102	0.07730405	1.30E+00	2.60E+00	5.95E-02	2.97E-02
Acenaphthylene	0.59	0	0.236	0.354	0.26829054	1.30E+00	2.60E+00	2.06E-01	1.03E-01
Anthracene	0.58	0	0.232	0.348	0.26374324	1.30E+00	2.60E+00	2.03E-01	1.01E-01
Benzo(a)anthracene	0.62	0	0.248	0.372	0.28193243	1.30E+00	2.60E+00	2.17E-01	1.08E-01
Benzo(a)pyrene	0.51	0	0.204	0.306	0.23191216	1.00E+00	1.00E+01	2.32E-01	2.32E-02
Benzo(b)fluoranthene	0.65	0	0.26	0.39	0.29557432	1.30E+00	2.60E+00	2.27E-01	1.14E-01
Benzo(g,h,i)perylene	0.45	0	0.18	0.27	0.20462838	1.30E+00	2.60E+00	1.57E-01	7.87E-02
Benzo(k)fluoranthene	0.44	0	0.176	0.264	0.20008108	1.30E+00	2.60E+00	1.54E-01	7.70E-02
Bis(2-ethylhexyl)phthalate	0.054	0	0.0216	0.0324	0.02455541	1.83E+01	1.83E+02	1.34E-03	1.34E-04
Butylbenzylphthalate	0.28	0	0.112	0.168	0.12732432	1.59E+02	1.59E+03	8.01E-04	8.01E-05
Carbazole	0.3	0	0.12	0.18	0.13641892	1.30E+00	2.60E+00	1.05E-01	5.25E-02
Chrysene	0.68	0	0.272	0.408	0.30921622	1.30E+00	2.60E+00	2.38E-01	1.19E-01
Di-n-Butylphthalate	0.21	0	0.084	0.126	0.09549324	5.50E+02	1.83E+03	1.74E-04	5.21E-05
Dibenzofuran	0.07	0	0.028	0.042	0.03183108	NA	NA	NA	NA
Fluoranthene	1.04	0	0.416	0.624	0.47291892	1.30E+00	2.60E+00	3.64E-01	1.82E-01
Fluorene	0.38	0	0.152	0.228	0.1727973	1.30E+00	2.60E+00	1.33E-01	6.65E-02
Indeno(1,2,3-cd)pyrene	0.38	0	0.152	0.228	0.1727973	1.30E+00	2.60E+00	1.33E-01	6.65E-02
Phenanthrene	0.92	0	0.368	0.552	0.41835135	1.30E+00	2.60E+00	3.22E-01	1.61E-01
Pyrene	1.15	0	0.46	0.69	0.52293919	1.30E+00	2.60E+00	4.02E-01	2.01E-01
Acetone	0.01	0	0.0052	0.0078	0.00591149	1.00E+01	5.00E+01	5.91E-04	1.18E-04

NA - Not Available

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Deer Mouse
(Conservative Inputs)

Body Weight	0.0148000	kg	(USEPA, 1993)
Food Ingestion Rate	0.0066600	kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0028120	L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0000700	kg/day	(Beyer, 1994)

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	153	0.202	61.2	91.8	69.6120286	NA	NA	NA	NA
Aluminum	18600	7.87	7440	11160	8459.46827	1.93E+00	1.93E+01	4.38E+03	4.38E+02
Antimony	7	0	2.8	4.2	3.18310811	1.25E-01	1.25E+00	2.55E+01	2.55E+00
Arsenic	0	0.0031	0	0	0.000589	1.26E-01	1.26E+00	4.67E-03	4.67E-04
Beryllium	13.4	0	5.36	8.04	6.09337838	6.60E-01	6.60E+00	9.23E+00	9.23E-01
Chromium	246	0.17	98.4	147.6	111.895814	1.17E+01	1.54E+01	9.56E+00	7.27E+00
Copper	4260	0.2	1704	2556	1937.18665	1.17E+01	1.54E+01	1.66E+02	1.26E+02
Cyanide	0.85	0	0.34	0.51	0.38652027	6.87E+01	6.87E+02	5.63E-03	5.63E-04
Iron	106000	10.7	42400	63600	48203.3844	5.00E+01	5.00E+02	9.64E+02	9.64E+01
Lead	2370	0.078	948	1422	1077.72428	8.00E+00	8.00E+01	1.35E+02	1.35E+01
Manganese	688	0.12	275.2	412.8	312.876854	8.80E+01	2.84E+02	3.56E+00	1.10E+00
Mercury	0.56	0	0.224	0.336	0.25464865	1.32E+01	1.32E+02	1.93E-02	1.93E-03
Nickel	246	0	98.4	147.6	111.863514	4.00E+01	8.00E+01	2.80E+00	1.40E+00
Thallium	6.2	0	2.48	3.72	2.81932432	7.40E-03	7.40E-02	3.81E+02	3.81E+01
Vanadium	66.1	0	26.44	39.66	30.0576351	2.10E-01	2.10E+00	1.43E+02	1.43E+01
Zinc	7560	0.27	3024	4536	3437.80806	1.60E+02	3.20E+02	2.15E+01	1.07E+01
4,4'-DDD	4.2	0	1.68	2.52	1.90986486	8.00E-01	4.00E+00	2.39E+00	4.77E-01
4,4'-DDE	0.46	0	0.184	0.276	0.20917568	8.00E-01	4.00E+00	2.61E-01	5.23E-02
4,4'-DDT	0.9	0	0.36	0.54	0.40925676	8.00E-01	4.00E+00	5.12E-01	1.02E-01
Aroclor-1260	0.11	0	0.044	0.066	0.05002027	3.90E-01	3.90E+00	1.28E-01	1.28E-02
2-Methylnaphthalene	0.31	0	0.124	0.186	0.14096622	1.30E+00	2.60E+00	1.08E-01	5.42E-02
Acenaphthene	0.17	0	0.068	0.102	0.07730405	1.30E+00	2.60E+00	5.95E-02	2.97E-02
Acenaphthylene	0.82	0	0.328	0.492	0.37287838	1.30E+00	2.60E+00	2.87E-01	1.43E-01
Anthracene	0.59	0	0.236	0.354	0.26829054	1.30E+00	2.60E+00	2.06E-01	1.03E-01
Benzo(a)anthracene	2.3	0	0.92	1.38	1.04587838	1.30E+00	2.60E+00	8.05E-01	4.02E-01
Benzo(a)pyrene	1.4	0	0.56	0.84	0.63662162	1.00E+00	1.00E+01	6.37E-01	6.37E-02
Benzo(b)fluoranthene	1.7	0	0.68	1.02	0.77304054	1.30E+00	2.60E+00	5.95E-01	2.97E-01
Benzo(g,h,i)perylene	0.89	0	0.356	0.534	0.40470946	1.30E+00	2.60E+00	3.11E-01	1.56E-01
Benzo(k)fluoranthene	1.1	0	0.44	0.66	0.5002027	1.30E+00	2.60E+00	3.85E-01	1.92E-01
Bis(2-ethylhexyl)phthalate	0.054	0	0.0216	0.0324	0.02455541	1.83E+01	1.83E+02	1.34E-03	1.34E-04
Butylbenzylphthalate	0.28	0	0.112	0.168	0.12732432	1.59E+02	1.59E+03	8.01E-04	8.01E-05
Carbazole	0.3	0	0.12	0.18	0.13641892	1.30E+00	2.60E+00	1.05E-01	5.25E-02
Chrysene	2.7	0	1.08	1.62	1.22777027	1.30E+00	2.60E+00	9.44E-01	4.72E-01
Di-n-Butylphthalate	0.21	0	0.084	0.126	0.09549324	5.50E+02	1.83E+03	1.74E-04	5.21E-05
Dibenzofuran	0.07	0	0.028	0.042	0.03183108	NA	NA	NA	NA
Fluoranthene	5	0	2	3	2.27364865	1.30E+00	2.60E+00	1.75E+00	8.74E-01
Fluorene	0.38	0	0.152	0.228	0.1727973	1.30E+00	2.60E+00	1.33E-01	6.65E-02
Indeno(1,2,3-cd)pyrene	0.8	0	0.32	0.48	0.36378378	1.30E+00	2.60E+00	2.80E-01	1.40E-01
Phenanthrene	4.4	0	1.76	2.64	2.00081081	1.30E+00	2.60E+00	1.54E+00	7.70E-01
Pyrene	7.2	0	2.88	4.32	3.27405405	1.30E+00	2.60E+00	2.52E+00	1.26E+00
Acetone	0.035	0	0.014	0.021	0.01591554	1.00E+01	5.00E+01	1.59E-03	3.18E-04

NA - Not Available

TABLE D-7
HAZARD QUOTIENT CALCULATIONS FOR RACCOON

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Raccoon
(Conservative Inputs)

Body Weight	3.6700000	kg	(USEPA, 1993)
Food Ingestion Rate	0.8000000	kg/day	(USEPA, 1993, using placental mammal equation)
Water Ingestion Rate	0.3000000	L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0400000	kg/day	(estimated)
Sed. Ingestion Rate	0.0400000	kg/day	(estimated)

Mean Concentrations ECOC	Soil Concentration (mg/kg)	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	29.39	16.85	0.202	14.694445	8.425	5.5601394	NA	NA	NA	NA
Aluminum	6521.11	19050	7.87	3260.5555	9525	3066.3896	1.93E+00	1.93E+01	1.59E+03	1.59E+02
Antimony	2.46	0	0	1.2291665	0	0.29473202	1.25E-01	1.25E+00	2.36E+00	2.36E-01
Arsenic	0	12.4	0.0031	0	6.2	1.48690191	1.26E-01	1.26E+00	1.18E+01	1.18E+00
Barium	0	82.35	0	0	41.175	9.87302452	5.10E+00	1.98E+01	1.94E+00	4.99E-01
Beryllium	1.91	1.1	0	0.955	0.55	0.36087193	6.60E-01	6.60E+00	5.47E-01	5.47E-02
Chromium	63.36	0	0.17	31.67778	0	7.60965842	1.17E+01	1.54E+01	6.50E-01	4.94E-01
Cobalt	0	6.365	0	0	3.1825	0.76310627	1.00E+00	1.00E+01	7.63E-01	7.63E-02
Copper	548.86	1482	0.2	274.4278	741	243.497674	1.17E+01	1.54E+01	2.08E+01	1.58E+01
Cyanide	0.32	0	0	0.1616665	0	0.03876472	6.87E+01	6.87E+02	5.64E-04	5.64E-05
Iron	28112.22	24800	10.7	14056.11	12400	6344.57406	5.00E+01	5.00E+02	1.27E+02	1.27E+01
Lead	371.28	353	0.078	185.6389	176.5	86.8407717	8.00E+00	8.00E+01	1.09E+01	1.09E+00
Manganese	169.69	170	0.12	84.84445	85	40.735454	8.80E+01	2.84E+02	4.63E-01	1.43E-01
Mercury	0.30	0.62	0	0.148889	0.31	0.11003333	1.32E+01	1.32E+02	8.34E-03	8.34E-04
Nickel	49.66	28.95	0	24.82778	14.475	9.42409984	4.00E+01	8.00E+01	2.36E-01	1.18E-01
Thallium	1.59	1.16	0	0.796111	0.58	0.32996667	7.40E-03	7.40E-02	4.46E+01	4.46E+00
Vanadium	26.48	71.9	0	13.23889	35.95	11.7946112	2.10E-01	2.10E+00	5.62E+01	5.62E+00
Zinc	1157.46	908	0.27	578.728	454	247.651673	1.60E+02	3.20E+02	1.55E+00	7.74E-01
4,4'-DDD	0.49	0.26	0	0.245	0.13	0.08991826	8.00E-01	4.00E+00	1.12E-01	2.25E-02
4,4'-DDE	0.14	0.1	0	0.07	0.05	0.02877384	8.00E-01	4.00E+00	3.60E-02	7.19E-03
4,4'-DDT	0.15	0.014	0	0.075	0.007	0.01966213	8.00E-01	4.00E+00	2.46E-02	4.92E-03
alpha-Chlordane	0	0.018	0	0	0.009	0.00215804	4.60E+00	9.20E+00	4.69E-04	2.35E-04
Aroclor-1260	0.07	0.061	0	0.037	0.0305	0.01618529	3.90E-01	3.90E+00	4.15E-02	4.15E-03
Dieldrin	0	0.021	0	0	0.0105	0.00251771	2.00E-02	2.00E-01	1.26E-01	1.26E-02
gamma-Chlordane	0	0.019	0	0	0.0095	0.00227793	4.60E+00	9.20E+00	4.95E-04	2.48E-04
2-Methylnaphthalene	0.31	0	0	0.155	0	0.03716621	1.30E+00	2.60E+00	2.86E-02	1.43E-02
Acenaphthene	0.17	0	0	0.085	0	0.02038147	1.30E+00	2.60E+00	1.57E-02	7.84E-03
Acenaphthylene	0.59	0	0	0.295	0	0.07073569	1.30E+00	2.60E+00	5.44E-02	2.72E-02
Anthracene	0.58	0.13	0	0.29	0.065	0.08512262	1.30E+00	2.60E+00	6.55E-02	3.27E-02
Benzo(a)anthracene	0.62	0.44	0	0.31	0.22	0.12708447	1.30E+00	2.60E+00	9.78E-02	4.89E-02
Benzo(a)pyrene	0.51	0.66	0	0.255	0.33	0.14027248	1.00E+00	1.00E+01	1.40E-01	1.40E-02
Benzo(b)fluoranthene	0.65	0	0	0.325	0	0.07792916	1.30E+00	2.60E+00	5.99E-02	3.00E-02
Benzo(g,h,i)perylene	0.45	0	0	0.225	0	0.05395095	1.30E+00	2.60E+00	4.15E-02	2.08E-02
Benzo(k)fluoranthene	0.44	0.47	0	0.22	0.235	0.10910082	1.30E+00	2.60E+00	8.39E-02	4.20E-02
Bis(2-ethylhexyl)phthalate	0.054	0	0	0.027	0	0.00647411	1.83E+01	1.83E+02	3.54E-04	3.54E-05
Butylbenzylphthalate	0.28	0	0	0.14	0	0.03356948	1.59E+02	1.59E+03	2.11E-04	2.11E-05
Carbazole	0.3	0	0	0.15	0	0.0359673	1.30E+00	2.60E+00	2.77E-02	1.38E-02
Chrysene	0.68	0.68	0	0.34	0.34	0.16305177	1.30E+00	2.60E+00	1.25E-01	6.27E-02
Di-n-Butylphthalate	0.21	0	0	0.105	0	0.02517711	5.50E+02	1.83E+03	4.58E-05	1.37E-05
Dibenzofuran	0.07	0	0	0.035	0	0.00839237	NA	NA	NA	NA
Diethylphthalate	0	0.25	0	0	0.125	0.02997275	4.58E+03	4.58E+04	6.54E-06	6.54E-07
Fluoranthene	1.04	0.89	0	0.52	0.445	0.23138965	1.30E+00	2.60E+00	1.78E-01	8.90E-02
Fluorene	0.38	0	0	0.19	0	0.04555858	1.30E+00	2.60E+00	3.50E-02	1.75E-02
Indeno(1,2,3-cd)pyrene	0.38	0	0	0.19	0	0.04555858	1.30E+00	2.60E+00	3.50E-02	1.75E-02
Phenanthrene	0.92	0	0	0.46	0	0.11029973	1.30E+00	2.60E+00	8.48E-02	4.24E-02
Pyrene	1.15	1.15	0	0.575	0.575	0.27574932	1.30E+00	2.60E+00	2.12E-01	1.06E-01
1,2-Dichloroethane (total)	0	0.009	0	0	0.0045	0.00107902	NA	NA	NA	NA
4-Methyl-2-pentanone	0	0.005	0	0	0.0025	0.00059946	2.50E+01	2.50E+02	2.40E-05	2.40E-06
Acetone	0.01	0.27	0	0.0065	0.135	0.03392916	1.00E+01	5.00E+01	3.39E-03	6.79E-04
Carbon Disulfide	0.00	0.048	0	0	0.024	0.00575477	NA	NA	NA	NA

NA - Not Available

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Raccoon
(Conservative Inputs)

Body Weight	3.6700000	kg	(USEPA, 1993)
Food Ingestion Rate	0.8000000	kg/day	(USEPA, 1993, using placental mammal equation)
Water Ingestion Rate	0.3000000	L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0400000	kg/day	(estimated)
Sed. Ingestion Rate	0.0400000	kg/day	(estimated)

Maximum Concentrations ECOC	Soil Concentration (mg/kg)	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	153	20.2	0.202	76.5	10.1	20.7816349	NA	NA	NA	NA
Aluminum	18600	27200	7.87	9300	13600	5491.6515	1.93E+00	1.93E+01	2.85E+03	2.85E+02
Antimony	7	0	0	3.5	0	0.83923706	1.25E-01	1.25E+00	6.71E+00	6.71E-01
Arsenic	0	19.4	0.0031	0	9.7	2.32613896	1.26E-01	1.26E+00	1.85E+01	1.85E+00
Barium	0	109	0	0	54.5	13.0681199	5.10E+00	1.98E+01	2.56E+00	6.60E-01
Beryllium	13.4	1.1	0	6.7	0.55	1.73841962	6.60E-01	6.60E+00	2.63E+00	2.63E-01
Chromium	246	0	0.17	123	0	29.5070845	1.17E+01	1.54E+01	2.52E+00	1.92E+00
Cobalt	0	10.7	0	0	5.35	1.28283379	1.00E+00	1.00E+01	1.28E+00	1.28E-01
Copper	4260	2620	0.2	2130	1310	824.866485	1.17E+01	1.54E+01	7.05E+01	5.36E+01
Cyanide	0.85	0	0	0.425	0	0.10190736	6.87E+01	6.87E+02	1.48E-03	1.48E-04
Iron	106000	31100	10.7	53000	15550	16437.9319	5.00E+01	5.00E+02	3.29E+02	3.29E+01
Lead	2370	545	0.078	1185	272.5	349.488665	8.00E+00	8.00E+01	4.37E+01	4.37E+00
Manganese	688	235	0.12	344	117.5	110.66921	8.80E+01	2.84E+02	1.26E+00	3.90E-01
Mercury	0.56	0.79	0	0.28	0.395	0.16185286	1.32E+01	1.32E+02	1.23E-02	1.23E-03
Nickel	246	41.5	0	123	20.75	34.4686649	4.00E+01	8.00E+01	8.62E-01	4.31E-01
Thallium	6.2	2.2	0	3.1	1.1	1.00708447	7.40E-03	7.40E-02	1.36E+02	1.36E+01
Vanadium	66.1	115	0	33.05	57.5	21.7122616	2.10E-01	2.10E+00	1.03E+02	1.03E+01
Zinc	7560	1400	0.27	3780	700	1074.2455	1.60E+02	3.20E+02	6.71E+00	3.36E+00
4,4'-DDD	4.2	0.31	0	2.1	0.155	0.54070845	8.00E-01	4.00E+00	6.76E-01	1.35E-01
4,4'-DDE	0.46	0.13	0	0.23	0.065	0.07073569	8.00E-01	4.00E+00	8.84E-02	1.77E-02
4,4'-DDT	0.9	0.028	0	0.45	0.014	0.11125886	8.00E-01	4.00E+00	1.39E-01	2.78E-02
alpha-Chlordane	0	0.028	0	0	0.014	0.00335695	4.60E+00	9.20E+00	7.30E-04	3.65E-04
Aroclor-1260	0.11	0.069	0	0.055	0.0345	0.02146049	3.90E-01	3.90E+00	5.50E-02	5.50E-03
Dieldrin	0	0.036	0	0	0.018	0.00431608	2.00E-02	2.00E-01	2.16E-01	2.16E-02
gamma-Chlordane	0	0.029	0	0	0.0145	0.00347684	4.60E+00	9.20E+00	7.56E-04	3.78E-04
2-Methylnaphthalene	0.31	0	0	0.155	0	0.03716621	1.30E+00	2.60E+00	2.86E-02	1.43E-02
Acenaphthene	0.17	0	0	0.085	0	0.02038147	1.30E+00	2.60E+00	1.57E-02	7.84E-03
Acenaphthylene	0.82	0	0	0.41	0	0.09831063	1.30E+00	2.60E+00	7.56E-02	3.78E-02
Anthracene	0.59	0.13	0	0.295	0.065	0.08632153	1.30E+00	2.60E+00	6.64E-02	3.32E-02
Benzo(a)anthracene	2.3	0.44	0	1.15	0.22	0.32850136	1.30E+00	2.60E+00	2.53E-01	1.26E-01
Benzo(a)pyrene	1.4	0.66	0	0.7	0.33	0.24697548	1.00E+00	1.00E+01	2.47E-01	2.47E-02
Benzo(b)fluoranthene	1.7	0	0	0.85	0	0.20381471	1.30E+00	2.60E+00	1.57E-01	7.84E-02
Benzo(g,h,i)perylene	0.89	0	0	0.445	0	0.106703	1.30E+00	2.60E+00	8.21E-02	4.10E-02
Benzo(k)fluoranthene	1.1	0.47	0	0.55	0.235	0.18822888	1.30E+00	2.60E+00	1.45E-01	7.24E-02
Bis(2-ethylhexyl)phthalate	0.054	0	0	0.027	0	0.00647411	1.83E+01	1.83E+02	3.54E-04	3.54E-05
Butylbenzylphthalate	0.28	0	0	0.14	0	0.03356948	1.59E+02	1.59E+03	2.11E-04	2.11E-05
Carbazole	0.3	0	0	0.15	0	0.0359673	1.30E+00	2.60E+00	2.77E-02	1.38E-02
Chrysene	2.7	0.68	0	1.35	0.34	0.40523161	1.30E+00	2.60E+00	3.12E-01	1.56E-01
Di-n-Butylphthalate	0.21	0	0	0.105	0	0.02517711	5.50E+02	1.83E+03	4.58E-05	1.37E-05
Dibenzofuran	0.07	0	0	0.035	0	0.00839237	NA	NA	NA	NA
Diethylphthalate	0	0.25	0	0	0.125	0.02997275	4.58E+03	4.58E+04	6.54E-06	6.54E-07
Fluoranthene	5	0.93	0	2.5	0.465	0.71095368	1.30E+00	2.60E+00	5.47E-01	2.73E-01
Fluorene	0.38	0	0	0.19	0	0.04555858	1.30E+00	2.60E+00	3.50E-02	1.75E-02
Indeno(1,2,3-cd)pyrene	0.8	0	0	0.4	0	0.09591281	1.30E+00	2.60E+00	7.38E-02	3.69E-02
Phenanthrene	4.4	0	0	2.2	0	0.52752044	1.30E+00	2.60E+00	4.06E-01	2.03E-01
Pyrene	7.2	1.2	0	3.6	0.6	1.00708447	1.30E+00	2.60E+00	7.75E-01	3.87E-01
1,2-Dichloroethane (total)	0	0.009	0	0	0.0045	0.00107902	NA	NA	NA	NA
4-Methyl-2-pentanone	0	0.005	0	0	0.0025	0.00059946	2.50E+01	2.50E+02	2.40E-05	2.40E-06
Acetone	0.035	0.45	0	0.0175	0.225	0.05814714	1.00E+01	5.00E+01	5.81E-03	1.16E-03
Carbon Disulfide	0.00	0.081	0	0	0.0405	0.00971117	NA	NA	NA	NA

NA - Not Available

TABLE D-8
HAZARD QUOTIENT CALCULATIONS FOR MUSKRAT

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Muskrat
(Conservative Inputs)

Body Weight	0.8370000 kg	(USEPA, 1993)
Food Ingestion Rate	0.2850000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.8202600 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0285000 kg/day	(estimated)

Mean Concentrations

ECOC	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_t
Total Phosphorous	16.85	0.202	16.85	6.509	NA	NA	NA	NA
Aluminum	19050	7.87	19050	7142.928	1.93E+00	1.93E+01	3.70E+03	3.70E+02
Arsenic	12.4	0.0031	12.4	4.647	1.26E-01	1.26E+00	3.69E+01	3.69E+00
Barium	82.35	0	82.35	30.844	5.10E+00	1.98E+01	6.05E+00	1.56E+00
Beryllium	1.1	0	1.1	0.412	6.60E-01	6.60E+00	6.24E-01	6.24E-02
Chromium	0	0.17	0	0.167	1.17E+01	1.54E+01	1.42E-02	1.08E-02
Colbalt	6.365	0	6.365	2.384	1.00E+00	1.00E+01	2.38E+00	2.38E-01
Copper	1482	0.2	1482	555.282	1.17E+01	1.54E+01	4.75E+01	3.61E+01
Iron	24800	10.7	24800	9299.375	5.00E+01	5.00E+02	1.86E+02	1.86E+01
Lead	353	0.078	353	132.293	8.00E+00	8.00E+01	1.65E+01	1.65E+00
Manganese	170	0.12	170	63.791	8.80E+01	2.84E+02	7.25E-01	2.25E-01
Mercury	0.62	0	0.62	0.232	1.32E+01	1.32E+02	1.76E-02	1.76E-03
Nickel	28.95	0	28.95	10.843	4.00E+01	8.00E+01	2.71E-01	1.36E-01
Thallium	1.16	0	1.16	0.434	7.40E-03	7.40E-02	5.87E+01	5.87E+00
Vanadium	71.9	0	71.9	26.930	2.10E-01	2.10E+00	1.28E+02	1.28E+01
Zinc	908	0.27	908	340.358	1.60E+02	3.20E+02	2.13E+00	1.06E+00
4,4'-DDD	0.26	0	0.26	0.097	8.00E-01	4.00E+00	1.22E-01	2.43E-02
4,4'-DDE	0.1	0	0.1	0.037	8.00E-01	4.00E+00	4.68E-02	9.36E-03
4,4'-DDT	0.014	0	0.014	0.005	8.00E-01	4.00E+00	6.55E-03	1.31E-03
alpha-Chlordane	0.018	0	0.018	0.007	4.60E+00	9.20E+00	1.47E-03	7.33E-04
Aroclor-1260	0.061	0	0.061	0.023	3.90E-01	3.90E+00	5.86E-02	5.86E-03
Dieldrin	0.021	0	0.021	0.008	2.00E-02	2.00E-01	3.93E-01	3.93E-02
gamma-Chlordane	0.019	0	0.019	0.007	4.60E+00	9.20E+00	1.55E-03	7.74E-04
Anthracene	0.13	0	0.13	0.049	1.30E+00	2.60E+00	3.75E-02	1.87E-02
Benzo(a)anthracene	0.44	0	0.44	0.165	1.30E+00	2.60E+00	1.27E-01	6.34E-02
Benzo(a)pyrene	0.66	0	0.66	0.247	1.00E+00	1.00E+01	2.47E-01	2.47E-02
Benzo(k)fluoranthene	0.47	0	0.47	0.176	1.30E+00	2.60E+00	1.35E-01	6.77E-02
Chrysene	0.68	0	0.68	0.255	1.30E+00	2.60E+00	1.96E-01	9.80E-02
Diethylphthalate	0.25	0	0.25	0.094	4.58E+03	4.58E+04	2.04E-05	2.04E-06
Fluoranthene	0.89	0	0.89	0.333	1.30E+00	2.60E+00	2.56E-01	1.28E-01
Pyrene	1.15	0	1.15	0.431	1.30E+00	2.60E+00	3.31E-01	1.66E-01
1,2-Dichloroethane (total)	0.009	0	0.009	0.003	NA	NA	NA	NA
4-Methyl-2-pentanone	0.005	0	0.005	0.002	2.50E+01	2.50E+02	7.49E-05	7.49E-06
Acetone	0.27	0	0.27	0.101	1.00E+01	5.00E+01	1.01E-02	2.02E-03
Carbon Disulfide	0.048	0	0.048	0.018	NA	NA	NA	NA

NA - Not Available

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Muskrat
(Conservative Inputs)

Body Weight	0.8370000 kg	(USEPA, 1993)
Food Ingestion Rate	0.2850000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.8202600 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0285000 kg/day	(estimated)

Maximum Concentrations

ECOC	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_t
Total Phosphorous	20.2	0.202	20.2	7.763909821	NA	NA	NA	NA
Aluminum	27200	7.87	27200	10195.52622	1.93E+00	1.93E+01	5.28E+03	5.28E+02
Arsenic	19.4	0.0031	19.4	7.269346244	1.26E-01	1.26E+00	5.77E+01	5.77E+00
Barium	109	0	109	40.82616487	5.10E+00	1.98E+01	8.01E+00	2.06E+00
Beryllium	1.1	0	1.1	0.412007168	6.60E-01	6.60E+00	6.24E-01	6.24E-02
Chromium	0	0.17	0	0.1666	1.17E+01	1.54E+01	1.42E-02	1.08E-02
Colbalt	10.7	0	10.7	4.007706093	1.00E+00	1.00E+01	4.01E+00	4.01E-01
Copper	2620	0.2	2620	981.5221649	1.17E+01	1.54E+01	8.39E+01	6.37E+01
Iron	31100	10.7	31100	11659.05231	5.00E+01	5.00E+02	2.33E+02	2.33E+01
Lead	545	0.078	545	204.2072644	8.00E+00	8.00E+01	2.55E+01	2.55E+00
Manganese	235	0.12	235	88.13731326	8.80E+01	2.84E+02	1.00E+00	3.10E-01
Mercury	0.79	0	0.79	0.295896057	1.32E+01	1.32E+02	2.24E-02	2.24E-03
Nickel	41.5	0	41.5	15.54390681	4.00E+01	8.00E+01	3.89E-01	1.94E-01
Thallium	2.2	0	2.2	0.824014337	7.40E-03	7.40E-02	1.11E+02	1.11E+01
Vanadium	115	0	115	43.0734767	2.10E-01	2.10E+00	2.05E+02	2.05E+01
Zinc	1400	0.27	1400	524.6373599	1.60E+02	3.20E+02	3.28E+00	1.64E+00
4,4'-DDD	0.31	0	0.31	0.116111111	8.00E-01	4.00E+00	1.45E-01	2.90E-02
4,4'-DDE	0.13	0	0.13	0.048691756	8.00E-01	4.00E+00	6.09E-02	1.22E-02
4,4'-DDT	0.028	0	0.028	0.010487455	8.00E-01	4.00E+00	1.31E-02	2.62E-03
alpha-Clordane	0.028	0	0.028	0.010487455	4.60E+00	9.20E+00	2.28E-03	1.14E-03
Aroclor-1260	0.069	0	0.069	0.025844086	3.90E-01	3.90E+00	6.63E-02	6.63E-03
Dieldrin	0.036	0	0.036	0.013483871	2.00E-02	2.00E-01	6.74E-01	6.74E-02
gamma-Chlordane	0.029	0	0.029	0.010862007	4.60E+00	9.20E+00	2.36E-03	1.18E-03
Anthracene	0.13	0	0.13	0.048691756	1.30E+00	2.60E+00	3.75E-02	1.87E-02
Benzo(a)anthracene	0.44	0	0.44	0.164802867	1.30E+00	2.60E+00	1.27E-01	6.34E-02
Benzo(a)pyrene	0.66	0	0.66	0.247204301	1.00E+00	1.00E+01	2.47E-01	2.47E-02
Benzo(k)fluoranthene	0.47	0	0.47	0.176039427	1.30E+00	2.60E+00	1.35E-01	6.77E-02
Chrysene	0.68	0	0.68	0.254695341	1.30E+00	2.60E+00	1.96E-01	9.80E-02
Diethylphthalate	0.25	0	0.25	0.093637993	4.58E+03	4.58E+04	2.04E-05	2.04E-06
Fluoranthene	0.93	0	0.93	0.348333333	1.30E+00	2.60E+00	2.68E-01	1.34E-01
Pyrene	1.2	0	1.2	0.449462366	1.30E+00	2.60E+00	3.46E-01	1.73E-01
1,2-Dichloroethane (total)	0.009	0	0.009	0.003370968	NA	NA	NA	NA
4-Methyl-2-pentanone	0.005	0	0.005	0.00187276	2.50E+01	2.50E+02	7.49E-05	7.49E-06
Acetone	0.45	0	0.45	0.168548387	1.00E+01	5.00E+01	1.69E-02	3.37E-03
Carbon Disulfide	0.081	0	0.081	0.03033871	NA	NA	NA	NA

NA - Not Available

TABLE D-9
HAZARD QUOTIENT CALCULATIONS FOR GREAT BLUE HERON

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Great Blue Heron
(Conservative Inputs)

Body Weight	2.2290000 kg	(USEPA, 1993)
Food Ingestion Rate	0.4200000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.1058000 L/day	(USDOE, 1996)
Sediment Ingestion Rate	0.0540000 kg/day	(Beyer, 1994)

Mean Concentrations

ECOC	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	16.85	0.202	16.85	3.592764289	NA	NA	NA	NA
Aluminum	19050	7.87	19050	4051.382973	1.10E+02	4.45E+01	3.69E+01	9.10E+01
Arsenic	12.4	0.0031	12.4	2.637024666	5.10E+00	1.28E+01	5.17E-01	2.06E-01
Barium	82.35	0	82.35	17.51184388	2.08E+01	4.17E+01	8.42E-01	4.20E-01
Beryllium	1.1	0	1.1	0.233916555	NA	NA	NA	NA
Chromium	0	0.17	0	0.008069089	1.00E+00	5.00E+00	8.07E-03	1.61E-03
Cobalt	6.365	0	6.365	1.353526245	1.00E+00	1.00E+01	1.35E+00	1.35E-01
Copper	1482	0.2	1482	315.1588874	4.70E+01	6.17E+01	6.71E+00	5.11E+00
Iron	24800	10.7	24800	5274.262925	1.00E+02	1.00E+03	5.27E+01	5.27E+00
Lead	353	0.078	353	75.06965114	1.13E+00	1.13E+01	6.64E+01	6.64E+00
Manganese	170	0.12	170	36.15643607	9.97E+02	9.97E+03	3.63E-02	3.63E-03
Mercury	0.62	0	0.62	0.131843876	4.50E-01	9.00E-01	2.93E-01	1.46E-01
Nickel	28.95	0	28.95	6.156258412	7.74E+01	1.07E+02	7.95E-02	5.75E-02
Thallium	1.16	0	1.16	0.246675639	NA	NA	NA	NA
Vanadium	71.9	0	71.9	15.28963661	1.14E+01	1.14E+02	1.34E+00	1.34E-01
Zinc	908	0.27	908	193.1002988	1.45E+01	1.31E+02	1.33E+01	1.47E+00
4,4'-DDD	0.26	0	0.26	0.055289367	3.00E-03	2.80E-02	1.84E+01	1.97E+00
4,4'-DDE	0.1	0	0.1	0.021265141	3.00E-03	2.80E-02	7.09E+00	7.59E-01
4,4'-DDT	0.014	0	0.014	0.00297712	3.00E-03	2.80E-02	9.92E-01	1.06E-01
alpha-Chlordane	0.018	0	0.018	0.003827725	2.10E+00	1.07E+01	1.82E-03	3.58E-04
Aroclor-1260	0.061	0	0.061	0.012971736	NA	NA	NA	NA
Dieldrin	0.021	0	0.021	0.00446568	7.70E-02	7.70E-01	5.80E-02	5.80E-03
gamma-Chlordane	0.019	0	0.019	0.004040377	2.10E+00	1.07E+01	1.92E-03	3.78E-04
Anthracene	0.13	0	0.13	0.027644684	1.00E+01	1.00E+02	2.76E-03	2.76E-04
Benzo(a)anthracene	0.44	0	0.44	0.093566622	1.00E+01	1.00E+02	9.36E-03	9.36E-04
Benzo(a)pyrene	0.66	0	0.66	0.140349933	1.00E+01	1.00E+02	1.40E-02	1.40E-03
Benzo(k)fluoranthene	0.47	0	0.47	0.099946164	1.00E+01	1.00E+02	9.99E-03	9.99E-04
Chrysene	0.68	0	0.68	0.144602961	1.00E+01	1.00E+02	1.45E-02	1.45E-03
Diethylphthalate	0.25	0	0.25	0.053162853	NA	NA	NA	NA
Fluoranthene	0.89	0	0.89	0.189259758	1.00E+01	1.00E+02	1.89E-02	1.89E-03
Pyrene	1.15	0	1.15	0.244549125	1.00E+01	1.00E+02	2.45E-02	2.45E-03
1,2-Dichloroethane (total)	0.009	0	0.009	0.001913863	NA	NA	NA	NA
4-Methyl-2-pentanone	0.005	0	0.005	0.001063257	NA	NA	NA	NA
Acetone	0.27	0	0.27	0.057415882	NA	NA	NA	NA
Carbon Disulfide	0.048	0	0.048	0.010207268	NA	NA	NA	NA

NA - Not Available

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Great Blue Heron
(Conservative Inputs)

Body Weight	2.2290000 kg	(USEPA, 1993)
Food Ingestion Rate	0.4200000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.1058000 L/day	(USDOE, 1996)
Sediment Ingestion Rate	0.0540000 kg/day	(Beyer, 1994)

Maximum Concentrations

ECOC	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	20.2	0.202	20.2	4.305146523	NA	NA	NA	NA
Aluminum	27200	7.87	27200	5784.49199	1.10E+02	4.45E+01	5.27E+01	1.30E+02
Arsenic	19.4	0.0031	19.4	4.125584558	5.10E+00	1.28E+01	8.09E-01	3.22E-01
Barium	109	0	109	23.17900404	2.08E+01	4.17E+01	1.11E+00	5.56E-01
Beryllium	1.1	0	1.1	0.233916555	NA	NA	NA	NA
Chromium	0	0.17	0	0.008069089	1.00E+00	5.00E+00	8.07E-03	1.61E-03
Cobalt	10.7	0	10.7	2.275370121	1.00E+00	1.00E+01	2.28E+00	2.28E-01
Copper	2620	0.2	2620	557.1561956	4.70E+01	6.17E+01	1.19E+01	9.03E+00
Iron	31100	10.7	31100	6613.966828	1.00E+02	1.00E+03	6.61E+01	6.61E+00
Lead	545	0.078	545	115.8987225	1.13E+00	1.13E+01	1.03E+02	1.03E+01
Manganese	235	0.12	235	49.97877793	9.97E+02	9.97E+03	5.01E-02	5.01E-03
Mercury	0.79	0	0.79	0.167994616	4.50E-01	9.00E-01	3.73E-01	1.87E-01
Nickel	41.5	0	41.5	8.825033647	7.74E+01	1.07E+02	1.14E-01	8.25E-02
Thallium	2.2	0	2.2	0.467833109	NA	NA	NA	NA
Vanadium	115	0	115	24.45491252	1.14E+01	1.14E+02	2.15E+00	2.15E-01
Zinc	1400	0.27	1400	297.7247941	1.45E+01	1.31E+02	2.05E+01	2.27E+00
4,4'-DDD	0.31	0	0.31	0.065921938	3.00E-03	2.80E-02	2.20E+01	2.35E+00
4,4'-DDE	0.13	0	0.13	0.027644684	3.00E-03	2.80E-02	9.21E+00	9.87E-01
4,4'-DDT	0.028	0	0.028	0.00595424	3.00E-03	2.80E-02	1.98E+00	2.13E-01
alpha-Chlordane	0.028	0	0.028	0.00595424	2.10E+00	1.07E+01	2.84E-03	5.56E-04
Aroclor-1260	0.069	0	0.069	0.014672948	NA	NA	NA	NA
Dieldrin	0.036	0	0.036	0.007655451	7.70E-02	7.70E-01	9.94E-02	9.94E-03
gamma-Chlordane	0.029	0	0.029	0.006166891	2.10E+00	1.07E+01	2.94E-03	5.76E-04
Anthracene	0.13	0	0.13	0.027644684	1.00E+01	1.00E+02	2.76E-03	2.76E-04
Benzo(a)anthracene	0.44	0	0.44	0.093566622	1.00E+01	1.00E+02	9.36E-03	9.36E-04
Benzo(a)pyrene	0.66	0	0.66	0.140349933	1.00E+01	1.00E+02	1.40E-02	1.40E-03
Benzo(k)fluoranthene	0.47	0	0.47	0.099946164	1.00E+01	1.00E+02	9.99E-03	9.99E-04
Chrysene	0.68	0	0.68	0.144602961	1.00E+01	1.00E+02	1.45E-02	1.45E-03
Diethylphthalate	0.25	0	0.25	0.053162853	NA	NA	NA	NA
Fluoranthene	0.93	0	0.93	0.197765814	1.00E+01	1.00E+02	1.98E-02	1.98E-03
Pyrene	1.2	0	1.2	0.255181696	1.00E+01	1.00E+02	2.55E-02	2.55E-03
1,2-Dichloroethane (total)	0.009	0	0.009	0.001913863	NA	NA	NA	NA
4-Methyl-2-pentanone	0.005	0	0.005	0.001063257	NA	NA	NA	NA
Acetone	0.45	0	0.45	0.095693136	NA	NA	NA	NA
Carbon Disulfide	0.081	0	0.081	0.017224764	NA	NA	NA	NA

NA - Not Available

TABLE D-10
HAZARD QUOTIENT CALCULATIONS FOR BULLFROG

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Bullfrog
(Conservative Inputs)

Body Weight	0.1428000 kg	(USEPA, 1993)
Food Ingestion Rate	0.0101388 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0000000 L/day	(No Data)
Sediment Ingestion Rate	0.0005982 kg/day	(Kirkwood, 1980)

Mean Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	16.85	0.202	16.85	1.266934626	NA	NA	NA	NA
Aluminum	19050	7.87	19050	1432.350423	NA	NA	NA	NA
Arsenic	12.4	0.0031	12.4	0.932343583	NA	NA	NA	NA
Barium	82.35	0	82.35	6.191814035	NA	NA	NA	NA
Beryllium	1.1	0	1.1	0.082707898	NA	NA	NA	NA
Chromium	0	0.17	0	0	1.20E-02	1.20E-01	0.00E+00	0.00E+00
Colbalt	6.365	0	6.365	0.478577976	NA	NA	NA	NA
Copper	1482	0.2	1482	111.4300959	NA	NA	NA	NA
Iron	24800	10.7	24800	1864.687165	NA	NA	NA	NA
Lead	353	0.078	353	26.54171651	NA	NA	NA	NA
Manganese	170	0.12	170	12.78212976	NA	NA	NA	NA
Mercury	0.62	0	0.62	0.046617179	9.40E-02	9.40E-01	4.96E-01	4.96E-02
Nickel	28.95	0	28.95	2.176721509	NA	NA	NA	NA
Thallium	1.16	0	1.16	0.087219238	NA	NA	NA	NA
Vanadium	71.9	0	71.9	5.406088999	NA	NA	NA	NA
Zinc	908	0.27	908	68.27161073	NA	NA	NA	NA
4,4'-DDD	0.26	0	0.26	0.01954914	NA	NA	NA	NA
4,4'-DDE	0.1	0	0.1	0.0075189	NA	NA	NA	NA
4,4'-DDT	0.014	0	0.014	0.001052646	NA	NA	NA	NA
alpha-Chlordane	0.018	0	0.018	0.001353402	NA	NA	NA	NA
Aroclor-1260	0.061	0	0.061	0.004586529	NA	NA	NA	NA
Dieldrin	0.021	0	0.021	0.001578969	NA	NA	NA	NA
gamma-Chlordane	0.019	0	0.019	0.001428591	NA	NA	NA	NA
Anthracene	0.13	0	0.13	0.00977457	3.00E-01	3.00E+00	3.26E-02	3.26E-03
Benzo(a)anthracene	0.44	0	0.44	0.033083159	3.00E-01	3.00E+00	1.10E-01	1.10E-02
Benzo(a)pyrene	0.66	0	0.66	0.049624739	NA	NA	NA	NA
Benzo(k)fluoranthene	0.47	0	0.47	0.035338829	3.00E-01	3.00E+00	1.18E-01	1.18E-02
Chrysene	0.68	0	0.68	0.051128519	3.00E-01	3.00E+00	1.70E-01	1.70E-02
Diethylphthalate	0.25	0	0.25	0.01879725	NA	NA	NA	NA
Fluoranthene	0.89	0	0.89	0.066918209	3.00E-01	3.00E+00	2.23E-01	2.23E-02
Pyrene	1.15	0	1.15	0.086467348	3.00E-01	3.00E+00	2.88E-01	2.88E-02
1,2-Dichloroethane (total)	0.009	0	0.009	0.000676701	NA	NA	NA	NA
4-Methyl-2-pentanone	0.005	0	0.005	0.000375945	NA	NA	NA	NA
Acetone	0.27	0	0.27	0.02030103	NA	NA	NA	NA
Carbon Disulfide	0.048	0	0.048	0.003609072	NA	NA	NA	NA

NA - Not Available

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Bullfrog
(Conservative Inputs)

Body Weight	0.1428000 kg	(USEPA, 1993)
Food Ingestion Rate	0.0101388 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0000000 L/day	(No Data)
Sediment Ingestion Rate	0.0005982 kg/day	(Kirkwood, 1980)

Maximum Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	20.2	0.202	20.2	1.518817772	NA	NA	NA	NA
Aluminum	27200	7.87	27200	2045.140762	NA	NA	NA	NA
Arsenic	19.4	0.0031	19.4	1.458666573	NA	NA	NA	NA
Barium	109	0	109	8.195600847	NA	NA	NA	NA
Beryllium	1.1	0	1.1	0.082707898	NA	NA	NA	NA
Chromium	0	0.17	0	0	1.20E-02	1.20E-01	0.00E+00	0.00E+00
Colbalt	10.7	0	10.7	0.804522285	NA	NA	NA	NA
Copper	2620	0.2	2620	196.9951763	NA	NA	NA	NA
Iron	31100	10.7	31100	2338.377856	NA	NA	NA	NA
Lead	545	0.078	545	40.97800424	NA	NA	NA	NA
Manganese	235	0.12	235	17.66941467	NA	NA	NA	NA
Mercury	0.79	0	0.79	0.059399309	9.40E-02	9.40E-01	6.32E-01	6.32E-02
Nickel	41.5	0	41.5	3.120343442	NA	NA	NA	NA
Thallium	2.2	0	2.2	0.165415797	NA	NA	NA	NA
Vanadium	115	0	115	8.646734839	NA	NA	NA	NA
Zinc	1400	0.27	1400	105.264598	NA	NA	NA	NA
4,4'-DDD	0.31	0	0.31	0.02330859	NA	NA	NA	NA
4,4'-DDE	0.13	0	0.13	0.00977457	NA	NA	NA	NA
4,4'-DDT	0.028	0	0.028	0.002105292	NA	NA	NA	NA
alpha-Chlordane	0.028	0	0.028	0.002105292	NA	NA	NA	NA
Aroclor-1260	0.069	0	0.069	0.005188041	NA	NA	NA	NA
Dieldrin	0.036	0	0.036	0.002706804	NA	NA	NA	NA
gamma-Chlordane	0.029	0	0.029	0.002180481	NA	NA	NA	NA
Anthracene	0.13	0	0.13	0.00977457	3.00E-01	3.00E+00	3.26E-02	3.26E-03
Benzo(a)anthracene	0.44	0	0.44	0.033083159	3.00E-01	3.00E+00	1.10E-01	1.10E-02
Benzo(a)pyrene	0.66	0	0.66	0.049624739	NA	NA	NA	NA
Benzo(k)fluoranthene	0.47	0	0.47	0.035338829	3.00E-01	3.00E+00	1.18E-01	1.18E-02
Chrysene	0.68	0	0.68	0.051128519	3.00E-01	3.00E+00	1.70E-01	1.70E-02
Diethylphthalate	0.25	0	0.25	0.01879725	NA	NA	NA	NA
Fluoranthene	0.93	0	0.93	0.069925769	3.00E-01	3.00E+00	2.33E-01	2.33E-02
Pyrene	1.2	0	1.2	0.090226798	3.00E-01	3.00E+00	3.01E-01	3.01E-02
1,2-Dichloroethane (total)	0.009	0	0.009	0.000676701	NA	NA	NA	NA
4-Methyl-2-pentanone	0.005	0	0.005	0.000375945	NA	NA	NA	NA
Acetone	0.45	0	0.45	0.033835049	NA	NA	NA	NA
Carbon Disulfide	0.081	0	0.081	0.006090309	NA	NA	NA	NA

NA - Not Available

TABLE D-11
HAZARD QUOTIENT CALCULATIONS FOR LARGEMOUTH BASS

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Bass
(Conservative Inputs)

Body Weight	1.1000000	kg	(Pflieger,1975)
Food Ingestion Rate	0.1330000	kg/day	(NRC, 1993)
Water Ingestion Rate	0.0000000	L/day	(No Data)
Sediment Ingestion Rate	0.0000000	kg/day	(No Data)

Mean Concentrations

ECOC	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	16.85	0.202	8.425	8.425	2.037318182	NA	NA	NA	NA
Aluminum	19050	7.87	9525	9525	2303.318182	NA	NA	NA	NA
Arsenic	12.4	0.0031	6.2	6.2	1.499272727	NA	NA	NA	NA
Barium	82.35	0	41.175	41.175	9.956863636	NA	NA	NA	NA
Beryllium	1.1	0	0.55	0.55	0.133	NA	NA	NA	NA
Chromium	0	0.17	0	0	0	1.20E-02	1.20E-01	0.00E+00	0.00E+00
Cobalt	6.365	0	3.1825	3.1825	0.769586364	NA	NA	NA	NA
Copper	1482	0.2	741	741	179.1872727	NA	NA	NA	NA
Iron	24800	10.7	12400	12400	2998.545455	NA	NA	NA	NA
Lead	353	0.078	176.5	176.5	42.68090909	NA	NA	NA	NA
Manganese	170	0.12	85	85	20.55454545	NA	NA	NA	NA
Mercury	0.62	0	0.31	0.31	0.074963636	9.40E-02	9.40E-01	7.97E-01	7.97E-02
Nickel	28.95	0	14.475	14.475	3.500318182	NA	NA	NA	#VALUE!
Thallium	1.16	0	0.58	0.58	0.140254545	NA	NA	NA	NA
Vanadium	71.9	0	35.95	35.95	8.693363636	NA	NA	NA	NA
Zinc	908	0.27	454	454	109.7854545	NA	NA	NA	NA
4,4'-DDD	0.26	0	0.13	0.13	0.031436364	NA	NA	NA	NA
4,4'-DDE	0.1	0	0.05	0.05	0.012090909	NA	NA	NA	NA
4,4'-DDT	0.014	0	0.007	0.007	0.001692727	NA	NA	NA	NA
alpha-Chlordane	0.018	0	0.009	0.009	0.002176364	NA	NA	NA	NA
Aroclor-1260	0.061	0	0.0305	0.0305	0.007375455	NA	NA	NA	NA
Dieldrin	0.021	0	0.0105	0.0105	0.002539091	NA	NA	NA	NA
gamma-Chlordane	0.019	0	0.0095	0.0095	0.002297273	NA	NA	NA	NA
Anthracene	0.13	0	0.065	0.065	0.015718182	3.00E-01	3.00E+00	5.24E-02	5.24E-03
Benzo(a)anthracene	0.44	0	0.22	0.22	0.0532	3.00E-01	3.00E+00	1.77E-01	1.77E-02
Benzo(a)pyrene	0.66	0	0.33	0.33	0.0798	3.00E-01	3.00E+00	2.66E-01	2.66E-02
Benzo(k)fluoranthene	0.47	0	0.235	0.235	0.056827273	3.00E-01	3.00E+00	1.89E-01	1.89E-02
Chrysene	0.68	0	0.34	0.34	0.082218182	3.00E-01	3.00E+00	2.74E-01	2.74E-02
Diethylphthalate	0.25	0	0.125	0.125	0.030227273	NA	NA	NA	NA
Fluoranthene	0.89	0	0.445	0.445	0.107609091	3.00E-01	3.00E+00	3.59E-01	3.59E-02
Pyrene	1.15	0	0.575	0.575	0.139045455	3.00E-01	3.00E+00	4.63E-01	4.63E-02
1,2-Dichloroethane (total)	0.009	0	0.0045	0.0045	0.001088182	NA	NA	NA	NA
4-Methyl-2-pentanone	0.005	0	0.0025	0.0025	0.000604545	NA	NA	NA	NA
Acetone	0.27	0	0.135	0.135	0.032645455	NA	NA	NA	NA
Carbon Disulfide	0.048	0	0.024	0.024	0.005803636	NA	NA	NA	NA

NA - Not Available

Site 2, Landfill B
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Bass
(Conservative Inputs)

Body Weight	1.1000000	kg	(Pflieger,1975)
Food Ingestion Rate	0.1330000	kg/day	(NRC, 1993)
Water Ingestion Rate	0.0000000	L/day	(No Data)
Sediment Ingestion Rate	0.0000000	kg/day	(No Data)

Maximum Concentrations

ECOC	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	20.2	0.202	10.1	10.1	2.442363636	NA	NA	NA	NA
Aluminum	27200	7.87	13600	13600	3288.727273	NA	NA	NA	NA
Arsenic	19.4	0.0031	9.7	9.7	2.345636364	NA	NA	NA	NA
Barium	109	0	54.5	54.5	13.17909091	NA	NA	NA	NA
Beryllium	1.1	0	0.55	0.55	0.133	NA	NA	NA	NA
Chromium	0	0.17	0	0	0	1.20E-02	1.20E-01	0.00E+00	0.00E+00
Cobalt	10.7	0	5.35	5.35	1.293727273	NA	NA	NA	NA
Copper	2620	0.2	1310	1310	316.7818182	NA	NA	NA	NA
Iron	31100	10.7	15550	15550	3760.272727	NA	NA	NA	NA
Lead	545	0.078	272.5	272.5	65.89545455	NA	NA	NA	NA
Manganese	235	0.12	117.5	117.5	28.41363636	NA	NA	NA	NA
Mercury	0.79	0	0.395	0.395	0.095518182	9.40E-02	9.40E-01	1.02E+00	1.02E-01
Nickel	41.5	0	20.75	20.75	5.017727273	NA	NA	NA	NA
Thallium	2.2	0	1.1	1.1	0.266	NA	NA	NA	NA
Vanadium	115	0	57.5	57.5	13.90454545	NA	NA	NA	NA
Zinc	1400	0.27	700	700	169.2727273	NA	NA	NA	NA
4,4'-DDD	0.31	0	0.155	0.155	0.037481818	NA	NA	NA	NA
4,4'-DDE	0.13	0	0.065	0.065	0.015718182	NA	NA	NA	NA
4,4'-DDT	0.028	0	0.014	0.014	0.003385455	NA	NA	NA	NA
alpha-Chlordane	0.028	0	0.014	0.014	0.003385455	NA	NA	NA	NA
Aroclor-1260	0.069	0	0.0345	0.0345	0.008342727	NA	NA	NA	NA
Dieldrin	0.036	0	0.018	0.018	0.004352727	NA	NA	NA	NA
gamma-Chlordane	0.029	0	0.0145	0.0145	0.003506364	NA	NA	NA	NA
Anthracene	0.13	0	0.065	0.065	0.015718182	3.00E-01	3.00E+00	5.24E-02	5.24E-03
Benzo(a)anthracene	0.44	0	0.22	0.22	0.0532	3.00E-01	3.00E+00	1.77E-01	1.77E-02
Benzo(a)pyrene	0.66	0	0.33	0.33	0.0798	3.00E-01	3.00E+00	2.66E-01	2.66E-02
Benzo(k)fluoranthene	0.47	0	0.235	0.235	0.056827273	3.00E-01	3.00E+00	1.89E-01	1.89E-02
Chrysene	0.68	0	0.34	0.34	0.082218182	3.00E-01	3.00E+00	2.74E-01	2.74E-02
Diethylphthalate	0.25	0	0.125	0.125	0.030227273	NA	NA	NA	NA
Fluoranthene	0.93	0	0.465	0.465	0.112445455	3.00E-01	3.00E+00	3.75E-01	3.75E-02
Pyrene	1.2	0	0.6	0.6	0.145090909	3.00E-01	3.00E+00	4.84E-01	4.84E-02
1,2-Dichloroethane (total)	0.009	0	0.0045	0.0045	0.001088182	NA	NA	NA	NA
4-Methyl-2-pentanone	0.005	0	0.0025	0.0025	0.000604545	NA	NA	NA	NA
Acetone	0.45	0	0.225	0.225	0.054409091	NA	NA	NA	NA
Carbon Disulfide	0.081	0	0.0405	0.0405	0.009793636	NA	NA	NA	NA

NA - Not Available

TABLE D-12
HAZARD QUOTIENT CALCULATIONS FOR SHORT-TAILED SHREW

Site 5, Burning Grounds
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Short-Tailed Shrew
(Conservative Inputs)

Body Weight	0.0150000 kg	(USEPA, 1993)
Food Ingestion Rate	0.0093000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0033450 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0009672 kg/day	(Beyer, 1994))

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	6.64	0	6.64	4.5449472	NA	NA	NA	NA
Aluminum	9240.00	0	9240	6324.5952	2.30E+00	2.30E+01	2.76E+03	2.76E+02
Antimony	0.76	0	0.763333	0.522486172	1.49E-01	1.49E+00	3.51E+00	3.51E-01
Barium	249.14	0	249.14	170.5313472	1.18E+01	4.35E+01	1.45E+01	3.92E+00
Beryllium	0.65	0	0.653	0.44696544	1.45E+00	1.45E+01	3.08E-01	3.08E-02
Cadmium	1.00	0	0.999444	0.684099429	2.12E+00	2.12E+01	3.23E-01	3.23E-02
Chromium	24.80	0	24.8	16.975104	3.34E+01	4.40E+01	5.08E-01	3.86E-01
Copper	697.29	0	697.29	477.2810592	3.34E+01	4.40E+01	1.43E+01	1.08E+01
Cyanide	0.42	0	0.424	0.29021952	1.42E+02	1.42E+03	2.05E-03	2.05E-04
Iron	28520.00	0	28520	19521.3696	5.00E+01	5.00E+02	3.90E+02	3.90E+01
Lead	1020.51	0	1020.51	698.5186848	1.76E+01	1.76E+02	3.97E+01	3.97E+00
Manganese	234.77	0	234.77	160.6953696	1.93E+02	6.24E+02	8.33E-01	2.58E-01
Mercury	0.41	0	0.411111	0.281397257	1.57E+01	1.57E+02	1.79E-02	1.79E-03
Nickel	19.04	0	19.04444	13.03553829	8.79E+01	1.76E+02	1.48E-01	7.41E-02
Silver	1.45	0	1.453333	0.994777372	1.81E+02	1.81E+03	5.49E-03	5.49E-04
Thallium	1.66	0	1.6605	1.13657904	1.60E-02	1.64E-01	7.10E+01	6.93E+00
Vanadium	30.71	0	30.71	21.0203808	4.28E-01	4.29E+00	4.91E+01	4.91E+00
Zinc	983.60	0	983.6	673.254528	3.52E+02	7.03E+02	1.91E+00	9.57E-01
4,4'-DDD	0.05	0	0.053	0.03627744	1.76E+00	8.79E+00	2.06E-02	4.13E-03
4,4'-DDE	0.37	0	0.37	0.2532576	1.76E+00	8.79E+00	1.44E-01	2.88E-02
4,4'-DDT	0.29	0	0.29	0.1984992	1.76E+00	8.79E+00	1.13E-01	2.26E-02
2,4-Dinitrotoluene	0.55	0	0.55	0.376464	2.00E-01	1.50E+00	1.88E+00	2.51E-01
2,6-Dinitrotoluene	0.039	0	0.039	0.02669472	NA	NA	NA	NA
2-Methylnaphthalene	0.042	0	0.042	0.02874816	1.30E+00	2.60E+00	2.21E-02	1.11E-02
Benzo(a)anthracene	0.28	0	0.28	0.1916544	1.30E+00	2.60E+00	1.47E-01	7.37E-02
Benzo(a)pyrene	0.23	0	0.23	0.1574304	1.19E+00	0.00E+00	1.32E-01	#DIV/0!
Benzo(b)fluoranthene	0.65	0	0.65	0.444912	1.30E+00	2.60E+00	3.42E-01	1.71E-01
Benzo(g,h,i)perylene	0.16	0	0.16	0.1095168	1.30E+00	2.60E+00	8.42E-02	4.21E-02
Benzo(k)fluoranthene	0.23	0	0.23	0.1574304	1.30E+00	2.60E+00	1.21E-01	6.06E-02
Carbazole	0.061	0	0.061	0.04175328	1.30E+00	2.60E+00	3.21E-02	1.61E-02
Chrysene	0.40	0	0.4	0.273792	1.30E+00	2.60E+00	2.11E-01	1.05E-01
Di-n-Butylphthalate	0.61	0	0.61	0.4175328	6.54E+02	2.18E+03	6.38E-04	1.92E-04
Fluoranthene	0.43	0	0.43	0.2943264	1.30E+00	2.60E+00	2.26E-01	1.13E-01
Indeno(1,2,3-cd)pyrene	0.19	0	0.19	0.1300512	1.30E+00	2.60E+00	1.00E-01	5.00E-02
N-Nitrosodiphenylamine	0.21	0	0.21	0.1437408	1.65E+00	1.65E+01	8.71E-02	8.71E-03
Phenanthrene	0.20	0	0.2	0.136896	1.30E+00	2.60E+00	1.05E-01	5.27E-02
Pyrene	0.46	0	0.46	0.3148608	1.30E+00	2.60E+00	2.42E-01	1.21E-01
2-Butanone	0.21	0	0.21	0.1437408	NA	NA	NA	NA
Acetone	0.01	0	0.012	0.00821376	2.20E+01	1.10E+02	3.73E-04	7.47E-05

NA - Not Available

Site 5, Burning Grounds
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Short-Tailed Shrew
(Conservative Inputs)

Body Weight	0.0150000 kg	(USEPA, 1993)
Food Ingestion Rate	0.0093000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0033450 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0009672 kg/day	(Beyer, 1994))

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	18.8	0	18.8	12.868224	NA	NA	NA	NA
Aluminum	20200	0	20200	13826.496	2.30E+00	2.30E+01	6.02E+03	6.02E+02
Antimony	1.1	0	1.1	0.752928	1.49E-01	1.49E+00	5.05E+00	5.06E-01
Barium	1040	0	1040	711.8592	1.18E+01	4.35E+01	6.03E+01	1.64E+01
Beryllium	1.2	0	1.2	0.821376	1.45E+00	1.45E+01	5.66E-01	5.66E-02
Cadmium	6	0	6	4.10688	2.12E+00	2.12E+01	1.94E+00	1.94E-01
Chromium	74.6	0	74.6	51.062208	3.34E+01	4.40E+01	1.53E+00	1.16E+00
Copper	6470	0	6470	4428.5856	3.34E+01	4.40E+01	1.33E+02	1.01E+02
Cyanide	1.45	0	1.45	0.992496	1.42E+02	1.42E+03	6.99E-03	6.99E-04
Iron	120000	0	120000	82137.6	5.00E+01	5.00E+02	1.64E+03	1.64E+02
Lead	7210	0	7210	4935.1008	1.76E+01	1.76E+02	2.81E+02	2.81E+01
Manganese	852	0	852	583.17696	1.93E+02	6.24E+02	3.02E+00	9.35E-01
Mercury	0.98	0	0.98	0.6707904	1.57E+01	1.57E+02	4.27E-02	4.27E-03
Nickel	91.5	0	91.5	62.62992	8.79E+01	1.76E+02	7.12E-01	3.56E-01
Silver	3.5	0	3.5	2.39568	1.81E+02	1.81E+03	1.32E-02	1.32E-03
Thallium	5.3	0	5.3	3.627744	1.60E-02	1.64E-01	2.27E+02	2.21E+01
Vanadium	55.7	0	55.7	38.125536	4.28E-01	4.29E+00	8.91E+01	8.90E+00
Zinc	8490	0	8490	5811.2352	3.52E+02	7.03E+02	1.65E+01	8.26E+00
4,4'-DDD	0.31	0	0.31	0.2121888	1.76E+00	8.79E+00	1.21E-01	2.41E-02
4,4'-DDE	2.2	0	2.2	1.505856	1.76E+00	8.79E+00	8.56E-01	1.71E-01
4,4'-DDT	1.2	0	1.2	0.821376	1.76E+00	8.79E+00	4.67E-01	9.34E-02
2,4-Dinitrotoluene	3.2	0	3.2	2.190336	2.00E-01	1.50E+00	1.10E+01	1.46E+00
2,6-Dinitrotoluene	0.039	0	0.039	0.02669472	NA	NA	NA	NA
2-Methylnaphthalene	0.042	0	0.042	0.02874816	1.30E+00	2.60E+00	2.21E-02	1.11E-02
Benzo(a)anthracene	0.81	0	0.81	0.5544288	1.30E+00	2.60E+00	4.26E-01	2.13E-01
Benzo(a)pyrene	0.48	0	0.48	0.3285504	1.19E+00	1.19E+01	2.76E-01	2.76E-02
Benzo(b)fluoranthene	1.9	0	1.9	1.300512	1.30E+00	2.60E+00	1.00E+00	5.00E-01
Benzo(g,h,i)perylene	0.35	0	0.35	0.239568	1.30E+00	2.60E+00	1.84E-01	9.21E-02
Benzo(k)fluoranthene	0.7	0	0.7	0.479136	1.30E+00	2.60E+00	3.69E-01	1.84E-01
Carbazole	0.061	0	0.061	0.04175328	1.30E+00	2.60E+00	3.21E-02	1.61E-02
Chrysene	1.1	0	1.1	0.752928	1.30E+00	2.60E+00	5.79E-01	2.90E-01
Di-n-Butylphthalate	4.7	0	4.7	3.217056	6.54E+02	2.18E+03	4.92E-03	1.48E-03
Fluoranthene	0.79	0	0.79	0.5407392	1.30E+00	2.60E+00	4.16E-01	2.08E-01
Indeno(1,2,3-cd)pyrene	0.54	0	0.54	0.3696192	1.30E+00	2.60E+00	2.84E-01	1.42E-01
N-Nitrosodiphenylamine	0.53	0	0.53	0.3627744	1.65E+00	1.65E+01	2.20E-01	2.20E-02
Phenanthrene	0.33	0	0.33	0.2258784	1.30E+00	2.60E+00	1.74E-01	8.69E-02
Pyrene	1.2	0	1.2	0.821376	1.30E+00	2.60E+00	6.32E-01	3.16E-01
2-Butanone	0.21	0	0.21	0.1437408	NA	NA	NA	NA
Acetone	0.028	0	0.028	0.01916544	2.20E+01	1.10E+02	8.71E-04	1.74E-04

NA - Not Available

TABLE D-13
HAZARD QUOTIENT CALCULATIONS FOR AMERICAN ROBIN

Site 5, Burning Grounds
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Robin
(Conservative Inputs)

Body Weight	0.0773000 kg	(USEPA, 1993)
Food Ingestion Rate	0.1175000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0108000 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0352500 kg/day	(Beyer, 1994)

Mean Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_o	LOAEL HQ_l
Total Phosphorous	6.64	0	6.64	13.12108668	NA	NA	NA	NA
Aluminum	9240.00	0	9240	18258.86158	1.10E+02	4.45E+01	1.66E+02	4.10E+02
Antimony	0.76	0	0.763333	1.508397358	NA	NA	NA	NA
Barium	249.14	0	249.14	492.3173997	2.08E+01	4.17E+01	2.37E+01	1.18E+01
Beryllium	0.65	0	0.653	1.290371928	NA	NA	NA	NA
Cadmium	1.00	0	0.999444	1.974968577	1.45E+00	2.00E+01	1.36E+00	9.87E-02
Chromium	24.80	0	24.8	49.00646831	1.00E+00	5.00E+00	4.90E+01	9.80E+00
Copper	697.29	0	697.29	1377.891947	4.70E+01	6.17E+01	2.93E+01	2.23E+01
Cyanide	0.42	0	0.424	0.837852523	4.50E+00	4.50E+01	1.86E-01	1.86E-02
Iron	28520.00	0	28520	56357.43855	1.00E+02	1.00E+03	5.64E+02	5.64E+01
Lead	1020.51	0	1020.51	2016.59641	1.13E+00	1.13E+01	1.78E+03	1.78E+02
Manganese	234.77	0	234.77	463.9213131	9.97E+02	9.97E+03	4.65E-01	4.65E-02
Mercury	0.41	0	0.411111	0.812382992	4.50E-01	9.00E-01	1.81E+00	9.03E-01
Nickel	19.04	0	19.04444	37.63309457	7.74E+01	1.07E+02	4.86E-01	3.52E-01
Silver	1.45	0	1.453333	2.871883774	NA	NA	NA	NA
Thallium	1.66	0	1.6605	3.281259702	NA	NA	NA	NA
Vanadium	30.71	0	30.71	60.68502587	1.14E+01	1.14E+02	5.32E+00	5.32E-01
Zinc	983.60	0	983.6	1943.659767	1.45E+01	1.31E+02	1.34E+02	1.48E+01
4,4'-DDD	0.05	0	0.053	0.104731565	3.00E-03	2.80E-02	3.49E+01	3.74E+00
4,4'-DDE	0.37	0	0.37	0.73114489	3.00E-03	2.80E-02	2.44E+02	2.61E+01
4,4'-DDT	0.29	0	0.29	0.573059508	3.00E-03	2.80E-02	1.91E+02	2.05E+01
2,4-Dinitrotoluene	0.55	0	0.55	1.086836999	NA	NA	NA	NA
2,6-Dinitrotoluene	0.039	0	0.039	0.077066624	NA	NA	NA	NA
2-Methylnaphthalene	0.042	0	0.042	0.082994825	1.00E+01	1.00E+02	8.30E-03	8.30E-04
Benzo(a)anthracene	0.28	0	0.28	0.553298836	1.00E+01	1.00E+02	5.53E-02	5.53E-03
Benzo(a)pyrene	0.23	0	0.23	0.454495472	1.00E+01	1.00E+02	4.54E-02	4.54E-03
Benzo(b)fluoranthene	0.65	0	0.65	1.284443726	1.00E+01	1.00E+02	1.28E-01	1.28E-02
Benzo(g,h,i)perylene	0.16	0	0.16	0.316170763	1.00E+01	1.00E+02	3.16E-02	3.16E-03
Benzo(k)fluoranthene	0.23	0	0.23	0.454495472	1.00E+01	1.00E+02	4.54E-02	4.54E-03
Carbazole	0.061	0	0.061	0.120540103	1.00E+01	1.00E+02	1.21E-02	1.21E-03
Chrysene	0.40	0	0.4	0.790426908	1.00E+01	1.00E+02	7.90E-02	7.90E-03
Di-n-Butylphthalate	0.61	0	0.61	1.205401035	1.10E-01	1.10E+00	1.10E+01	1.10E+00
Fluoranthene	0.43	0	0.43	0.849708926	1.00E+01	1.00E+02	8.50E-02	8.50E-03
Indeno(1,2,3-cd)pyrene	0.19	0	0.19	0.375452781	1.00E+01	1.00E+02	3.75E-02	3.75E-03
N-Nitrosodiphenylamine	0.21	0	0.21	0.414974127	NA	NA	NA	NA
Phenanthrene	0.20	0	0.2	0.395213454	1.00E+01	1.00E+02	3.95E-02	3.95E-03
Pyrene	0.46	0	0.46	0.908990944	1.00E+01	1.00E+02	9.09E-02	9.09E-03
2-Butanone	0.21	0	0.21	0.414974127	NA	NA	NA	NA
Acetone	0.01	0	0.012	0.023712807	NA	NA	NA	NA

NA - Not Available

Site 5, Burning Grounds
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Robin
(Conservative Inputs)

Body Weight	0.0773000 kg	(USEPA, 1993)
Food Ingestion Rate	0.1175000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0108000 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0352500 kg/day	(Beyer, 1994)

Maximum Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_o	LOAEL HQ_l
Total Phosphorous	18.8	0	18.8	37.15006468	NA	NA	NA	NA
Aluminum	20200	0	20200	39916.55886	1.10E+02	4.45E+01	3.64E+02	8.97E+02
Antimony	1.1	0	1.1	2.173673997	NA	NA	NA	NA
Barium	1040	0	1040	2055.109961	2.08E+01	4.17E+01	9.88E+01	4.93E+01
Beryllium	1.2	0	1.2	2.371280724	NA	NA	NA	NA
Cadmium	6	0	6	11.85640362	1.45E+00	2.00E+01	8.18E+00	5.93E-01
Chromium	74.6	0	74.6	147.4146184	1.00E+00	5.00E+00	1.47E+02	2.95E+01
Copper	6470	0	6470	12785.15524	4.70E+01	6.17E+01	2.72E+02	2.07E+02
Cyanide	1.45	0	1.45	2.865297542	4.50E+00	4.50E+01	6.37E-01	6.37E-02
Iron	120000	0	120000	237128.0724	1.00E+02	1.00E+03	2.37E+03	2.37E+02
Lead	7210	0	7210	14247.44502	1.13E+00	1.13E+01	1.26E+04	1.26E+03
Manganese	852	0	852	1683.609314	9.97E+02	9.97E+03	1.69E+00	1.69E-01
Mercury	0.98	0	0.98	1.936545925	4.50E-01	9.00E-01	4.30E+00	2.15E+00
Nickel	91.5	0	91.5	180.8101552	7.74E+01	1.07E+02	2.34E+00	1.69E+00
Silver	3.5	0	3.5	6.916235446	NA	NA	NA	NA
Thallium	5.3	0	5.3	10.47315653	NA	NA	NA	NA
Vanadium	55.7	0	55.7	110.066947	1.14E+01	1.14E+02	9.65E+00	9.65E-01
Zinc	8490	0	8490	16776.81113	1.45E+01	1.31E+02	1.16E+03	1.28E+02
4,4'-DDD	0.31	0	0.31	0.612580854	3.00E-03	2.80E-02	2.04E+02	2.19E+01
4,4'-DDE	2.2	0	2.2	4.347347995	3.00E-03	2.80E-02	1.45E+03	1.55E+02
4,4'-DDT	1.2	0	1.2	2.371280724	3.00E-03	2.80E-02	7.90E+02	8.47E+01
2,4-Dinitrotoluene	3.2	0	3.2	6.323415265	NA	NA	NA	NA
2,6-Dinitrotoluene	0.039	0	0.039	0.077066624	NA	NA	NA	NA
2-Methylnaphthalene	0.042	0	0.042	0.082994825	1.00E+01	1.00E+02	8.30E-03	8.30E-04
Benzo(a)anthracene	0.81	0	0.81	1.600614489	1.00E+01	1.00E+02	1.60E-01	1.60E-02
Benzo(a)pyrene	0.48	0	0.48	0.94851229	1.00E+01	1.00E+02	9.49E-02	9.49E-03
Benzo(b)fluoranthene	1.9	0	1.9	3.754527814	1.00E+01	1.00E+02	3.75E-01	3.75E-02
Benzo(g,h,i)perylene	0.35	0	0.35	0.691623545	1.00E+01	1.00E+02	6.92E-02	6.92E-03
Benzo(k)fluoranthene	0.7	0	0.7	1.383247089	1.00E+01	1.00E+02	1.38E-01	1.38E-02
Carbazole	0.061	0	0.061	0.120540103	1.00E+01	1.00E+02	1.21E-02	1.21E-03
Chrysene	1.1	0	1.1	2.173673997	1.00E+01	1.00E+02	2.17E-01	2.17E-02
Di-n-Butylphthalate	4.7	0	4.7	9.287516171	1.10E-01	1.10E+00	8.44E+01	8.44E+00
Fluoranthene	0.79	0	0.79	1.561093144	1.00E+01	1.00E+02	1.56E-01	1.56E-02
Indeno(1,2,3-cd)pyrene	0.54	0	0.54	1.067076326	1.00E+01	1.00E+02	1.07E-01	1.07E-02
N-Nitrosodiphenylamine	0.53	0	0.53	1.047315653	NA	NA	NA	NA
Phenanthrene	0.33	0	0.33	0.652102199	1.00E+01	1.00E+02	6.52E-02	6.52E-03
Pyrene	1.2	0	1.2	2.371280724	1.00E+01	1.00E+02	2.37E-01	2.37E-02
2-Butanone	0.21	0	0.21	0.414974127	NA	NA	NA	NA
Acetone	0.028	0	0.028	0.055329884	NA	NA	NA	NA

NA - Not Available

TABLE D-14
HAZARD QUOTIENT CALCULATIONS FOR RED-TAILED HAWK

Site 5, Burning Grounds
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red-Tailed Hawk
(Conservative Inputs)

Body Weight	0.9570000	kg	(USEPA, 1993)
Food Ingestion Rate	0.1090000	kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0640000	L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0028000	kg/day	(USEPA, 1993; life history fact sheet)

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Sm. Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	6.64	0	6.64	0.775707419	NA	NA	NA	NA
Aluminum	9240.00	0	9240	1079.448276	1.10E+02	4.45E+01	9.84E+00	2.43E+01
Antimony	0.76	0	0.763333	0.089175161	NA	NA	NA	NA
Barium	249.14	0	249.14	29.10538349	2.08E+01	4.17E+01	1.40E+00	6.98E-01
Beryllium	0.65	0	0.653	0.076285684	NA	NA	NA	NA
Cadmium	1.00	0	0.999444	0.116758453	1.45E+00	2.00E+01	8.05E-02	5.84E-03
Chromium	24.80	0	24.8	2.897220481	1.00E+00	5.00E+00	2.90E+00	5.79E-01
Copper	697.29	0	697.29	81.4597931	4.70E+01	6.17E+01	1.73E+00	1.32E+00
Cyanide	0.42	0	0.424	0.049533124	4.50E+00	4.50E+01	1.10E-02	1.10E-03
Iron	28520.00	0	28520	3331.803553	1.00E+02	1.00E+03	3.33E+01	3.33E+00
Lead	1020.51	0	1020.51	119.2194545	1.13E+00	1.13E+01	1.06E+02	1.06E+01
Manganese	234.77	0	234.77	27.42663114	9.97E+02	9.97E+03	2.75E-02	2.75E-03
Mercury	0.41	0	0.411111	0.048027387	4.50E-01	9.00E-01	1.07E-01	5.34E-02
Nickel	19.04	0	19.04444	2.224836355	7.74E+01	1.07E+02	2.87E-02	2.08E-02
Silver	1.45	0	1.453333	0.169783312	NA	NA	NA	NA
Thallium	1.66	0	1.6605	0.193985266	NA	NA	NA	NA
Vanadium	30.71	0	30.71	3.587646813	1.14E+01	1.14E+02	3.15E-01	3.15E-02
Zinc	983.60	0	983.6	114.9075026	1.45E+01	1.31E+02	7.92E+00	8.77E-01
4,4'-DDD	0.05	0	0.053	0.006191641	3.00E-03	2.80E-02	2.06E+00	2.21E-01
4,4'-DDE	0.37	0	0.37	0.04322466	3.00E-03	2.80E-02	1.44E+01	1.54E+00
4,4'-DDT	0.29	0	0.29	0.033878788	3.00E-03	2.80E-02	1.13E+01	1.21E+00
2,4-Dinitrotoluene	0.55	0	0.55	0.064252874	NA	NA	NA	NA
2,6-Dinitrotoluene	0.039	0	0.039	0.004556113	NA	NA	NA	NA
2-Methylnaphthalene	0.042	0	0.042	0.004906583	1.00E+01	1.00E+02	4.91E-04	4.91E-05
Benzo(a)anthracene	0.28	0	0.28	0.032710554	1.00E+01	1.00E+02	3.27E-03	3.27E-04
Benzo(a)pyrene	0.23	0	0.23	0.026869383	1.00E+01	1.00E+02	2.69E-03	2.69E-04
Benzo(b)fluoranthene	0.65	0	0.65	0.075935214	1.00E+01	1.00E+02	7.59E-03	7.59E-04
Benzo(g,h,i)perylene	0.16	0	0.16	0.018691745	1.00E+01	1.00E+02	1.87E-03	1.87E-04
Benzo(k)fluoranthene	0.23	0	0.23	0.026869383	1.00E+01	1.00E+02	2.69E-03	2.69E-04
Carbazole	0.061	0	0.061	0.007126228	1.00E+01	1.00E+02	7.13E-04	7.13E-05
Chrysene	0.40	0	0.4	0.046729363	1.00E+01	1.00E+02	4.67E-03	4.67E-04
Di-n-Butylphthalate	0.61	0	0.61	0.071262278	1.10E-01	1.10E+00	6.48E-01	6.48E-02
Fluoranthene	0.43	0	0.43	0.050234065	1.00E+01	1.00E+02	5.02E-03	5.02E-04
Indeno(1,2,3-cd)pyrene	0.19	0	0.19	0.022196447	1.00E+01	1.00E+02	2.22E-03	2.22E-04
N-Nitrosodiphenylamine	0.21	0	0.21	0.024532915	NA	NA	NA	NA
Phenanthrene	0.20	0	0.2	0.023364681	1.00E+01	1.00E+02	2.34E-03	2.34E-04
Pyrene	0.46	0	0.46	0.053738767	1.00E+01	1.00E+02	5.37E-03	5.37E-04
2-Butanone	0.21	0	0.21	0.024532915	NA	NA	NA	NA
Acetone	0.01	0	0.012	0.001401881	NA	NA	NA	NA

NA - Not Available

Site 5, Burning Grounds
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red-Tailed Hawk
(Conservative Inputs)

Body Weight	0.9570000	kg	(USEPA, 1993)
Food Ingestion Rate	0.1090000	kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0640000	L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0028000	kg/day	(USEPA, 1993; life history fact sheet)

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Sm. Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	18.8	0	18.8	2.196280042	NA	NA	NA	NA
Aluminum	20200	0	20200	2359.832811	1.10E+02	4.45E+01	2.15E+01	5.30E+01
Antimony	1.1	0	1.1	0.128505747	NA	NA	NA	NA
Barium	1040	0	1040	121.4963427	2.08E+01	4.17E+01	5.84E+00	2.91E+00
Beryllium	1.2	0	1.2	0.140188088	NA	NA	NA	NA
Cadmium	6	0	6	0.700940439	1.45E+00	2.00E+01	4.83E-01	3.50E-02
Chromium	74.6	0	74.6	8.715026123	1.00E+00	5.00E+00	8.72E+00	1.74E+00
Copper	6470	0	6470	755.8474399	4.70E+01	6.17E+01	1.61E+01	1.23E+01
Cyanide	1.45	0	1.45	0.169393939	4.50E+00	4.50E+01	3.76E-02	3.76E-03
Iron	120000	0	120000	14018.80878	1.00E+02	1.00E+03	1.40E+02	1.40E+01
Lead	7210	0	7210	842.2967607	1.13E+00	1.13E+01	7.45E+02	7.45E+01
Manganese	852	0	852	99.53354232	9.97E+02	9.97E+03	9.98E-02	9.98E-03
Mercury	0.98	0	0.98	0.114486938	4.50E-01	9.00E-01	2.54E-01	1.27E-01
Nickel	91.5	0	91.5	10.68934169	7.74E+01	1.07E+02	1.38E-01	9.99E-02
Silver	3.5	0	3.5	0.408881923	NA	NA	NA	NA
Thallium	5.3	0	5.3	0.619164054	NA	NA	NA	NA
Vanadium	55.7	0	55.7	6.507063741	1.14E+01	1.14E+02	5.71E-01	5.71E-02
Zinc	8490	0	8490	991.830721	1.45E+01	1.31E+02	6.84E+01	7.57E+00
4,4'-DDD	0.31	0	0.31	0.036215256	3.00E-03	2.80E-02	1.21E+01	1.29E+00
4,4'-DDE	2.2	0	2.2	0.257011494	3.00E-03	2.80E-02	8.57E+01	9.18E+00
4,4'-DDT	1.2	0	1.2	0.140188088	3.00E-03	2.80E-02	4.67E+01	5.01E+00
2,4-Dinitrotoluene	3.2	0	3.2	0.373834901	NA	NA	NA	NA
2,6-Dinitrotoluene	0.039	0	0.039	0.004556113	NA	NA	NA	NA
2-Methylnaphthalene	0.042	0	0.042	0.004906583	1.00E+01	1.00E+02	4.91E-04	4.91E-05
Benzo(a)anthracene	0.81	0	0.81	0.094626959	1.00E+01	1.00E+02	9.46E-03	9.46E-04
Benzo(a)pyrene	0.48	0	0.48	0.056075235	1.00E+01	1.00E+02	5.61E-03	5.61E-04
Benzo(b)fluoranthene	1.9	0	1.9	0.221964472	1.00E+01	1.00E+02	2.22E-02	2.22E-03
Benzo(g,h,i)perylene	0.35	0	0.35	0.040888192	1.00E+01	1.00E+02	4.09E-03	4.09E-04
Benzo(k)fluoranthene	0.7	0	0.7	0.081776385	1.00E+01	1.00E+02	8.18E-03	8.18E-04
Carbazole	0.061	0	0.061	0.007126228	1.00E+01	1.00E+02	7.13E-04	7.13E-05
Chrysene	1.1	0	1.1	0.128505747	1.00E+01	1.00E+02	1.29E-02	1.29E-03
Di-n-Butylphthalate	4.7	0	4.7	0.54907001	1.10E-01	1.10E+00	4.99E+00	4.99E-01
Fluoranthene	0.79	0	0.79	0.092290491	1.00E+01	1.00E+02	9.23E-03	9.23E-04
Indeno(1,2,3-cd)pyrene	0.54	0	0.54	0.063084639	1.00E+01	1.00E+02	6.31E-03	6.31E-04
N-Nitrosodiphenylamine	0.53	0	0.53	0.061916405	NA	NA	NA	NA
Phenanthrene	0.33	0	0.33	0.038551724	1.00E+01	1.00E+02	3.86E-03	3.86E-04
Pyrene	1.2	0	1.2	0.140188088	1.00E+01	1.00E+02	1.40E-02	1.40E-03
2-Butanone	0.21	0	0.21	0.024532915	NA	NA	NA	NA
Acetone	0.028	0	0.028	0.003271055	NA	NA	NA	NA

NA - Not Available

TABLE D-15
HAZARD QUOTIENT CALCULATIONS FOR AMERICAN WOODCOCK

Site 5, Burning Grounds
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Woodcock
(Conservataive Inputs)

Body Weight	0.1340000	kg	(USEPA, 1993)
Food Ingestion Rate	0.1500000	kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0200000	L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0075000	kg/day	(Beyer, 1994)

Mean Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	6.64	0	6.64	7.804477612	NA	NA	NA	NA
Aluminum	9240.00	0	9240	10860.44776	1.10E+02	4.45E+01	9.90E+01	2.44E+02
Antimony	0.76	0	0.763333	0.897201101	NA	NA	NA	NA
Barium	249.14	0	249.14	292.8324627	2.08E+01	4.17E+01	1.41E+01	7.02E+00
Beryllium	0.65	0	0.653	0.767518657	NA	NA	NA	NA
Cadmium	1.00	0	0.999444	1.174719627	1.45E+00	2.00E+01	8.10E-01	5.87E-02
Chromium	24.80	0	24.8	29.14925373	1.00E+00	5.00E+00	2.91E+01	5.83E+00
Copper	697.29	0	697.29	819.5759328	4.70E+01	6.17E+01	1.74E+01	1.33E+01
Cyanide	0.42	0	0.424	0.498358209	4.50E+00	4.50E+01	1.11E-01	1.11E-02
Iron	28520.00	0	28520	33521.64179	1.00E+02	1.00E+03	3.35E+02	3.35E+01
Lead	1020.51	0	1020.51	1199.480037	1.13E+00	1.13E+01	1.06E+03	1.06E+02
Manganese	234.77	0	234.77	275.9423507	9.97E+02	9.97E+03	2.77E-01	2.77E-02
Mercury	0.41	0	0.411111	0.483208825	4.50E-01	9.00E-01	1.07E+00	5.37E-01
Nickel	19.04	0	19.04444	22.38432313	7.74E+01	1.07E+02	2.89E-01	2.09E-01
Silver	1.45	0	1.453333	1.708208563	NA	NA	NA	NA
Thallium	1.66	0	1.6605	1.95170709	NA	NA	NA	NA
Vanadium	30.71	0	30.71	36.09570896	1.14E+01	1.14E+02	3.17E+00	3.17E-01
Zinc	983.60	0	983.6	1156.097015	1.45E+01	1.31E+02	7.97E+01	8.83E+00
4,4'-DDD	0.05	0	0.053	0.062294776	3.00E-03	2.80E-02	2.08E+01	2.22E+00
4,4'-DDE	0.37	0	0.37	0.43488806	3.00E-03	2.80E-02	1.45E+02	1.55E+01
4,4'-DDT	0.29	0	0.29	0.340858209	3.00E-03	2.80E-02	1.14E+02	1.22E+01
2,4-Dinitrotoluene	0.55	0	0.55	0.646455224	NA	NA	NA	NA
2,6-Dinitrotoluene	0.039	0	0.039	0.045839552	NA	NA	NA	NA
2-Methylnaphthalene	0.042	0	0.042	0.049365672	1.00E+01	1.00E+02	4.94E-03	4.94E-04
Benzo(a)anthracene	0.28	0	0.28	0.329104478	1.00E+01	1.00E+02	3.29E-02	3.29E-03
Benzo(a)pyrene	0.23	0	0.23	0.270335821	1.00E+01	1.00E+02	2.70E-02	2.70E-03
Benzo(b)fluoranthene	0.65	0	0.65	0.763992537	1.00E+01	1.00E+02	7.64E-02	7.64E-03
Benzo(g,h,i)perylene	0.16	0	0.16	0.188059701	1.00E+01	1.00E+02	1.88E-02	1.88E-03
Benzo(k)fluoranthene	0.23	0	0.23	0.270335821	1.00E+01	1.00E+02	2.70E-02	2.70E-03
Carbazole	0.061	0	0.061	0.071697761	1.00E+01	1.00E+02	7.17E-03	7.17E-04
Chrysene	0.40	0	0.4	0.470149254	1.00E+01	1.00E+02	4.70E-02	4.70E-03
Di-n-Butylphthalate	0.61	0	0.61	0.716977612	1.10E-01	1.10E+00	6.52E+00	6.52E-01
Fluoranthene	0.43	0	0.43	0.505410448	1.00E+01	1.00E+02	5.05E-02	5.05E-03
Indeno(1,2,3-cd)pyrene	0.19	0	0.19	0.223320896	1.00E+01	1.00E+02	2.23E-02	2.23E-03
N-Nitrosodiphenylamine	0.21	0	0.21	0.246828358	NA	NA	NA	NA
Phenanthrene	0.20	0	0.2	0.235074627	1.00E+01	1.00E+02	2.35E-02	2.35E-03
Pyrene	0.46	0	0.46	0.540671642	1.00E+01	1.00E+02	5.41E-02	5.41E-03
2-Butanone	0.21	0	0.21	0.246828358	NA	NA	NA	NA
Acetone	0.01	0	0.012	0.014104478	NA	NA	NA	NA

NA - Not Available

Site 5, Burning Grounds
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Woodcock
(Conservataive Inputs)

Body Weight	0.1340000	kg	(USEPA, 1993)
Food Ingestion Rate	0.1500000	kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0200000	L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0075000	kg/day	(Beyer, 1994)

Maximum Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	18.8	0	18.8	22.09701493	NA	NA	NA	NA
Aluminum	20200	0	20200	23742.53731	1.10E+02	4.45E+01	2.16E+02	5.34E+02
Antimony	1.1	0	1.1	1.292910448	NA	NA	NA	NA
Barium	1040	0	1040	1222.38806	2.08E+01	4.17E+01	5.88E+01	2.93E+01
Beryllium	1.2	0	1.2	1.410447761	NA	NA	NA	NA
Cadmium	6	0	6	7.052238806	1.45E+00	2.00E+01	4.86E+00	3.53E-01
Chromium	74.6	0	74.6	87.68283582	1.00E+00	5.00E+00	8.77E+01	1.75E+01
Copper	6470	0	6470	7604.664179	4.70E+01	6.17E+01	1.62E+02	1.23E+02
Cyanide	1.45	0	1.45	1.704291045	4.50E+00	4.50E+01	3.79E-01	3.79E-02
Iron	120000	0	120000	141044.7761	1.00E+02	1.00E+03	1.41E+03	1.41E+02
Lead	7210	0	7210	8474.440299	1.13E+00	1.13E+01	7.50E+03	7.50E+02
Manganese	852	0	852	1001.41791	9.97E+02	9.97E+03	1.00E+00	1.00E-01
Mercury	0.98	0	0.98	1.151865672	4.50E-01	9.00E-01	2.56E+00	1.28E+00
Nickel	91.5	0	91.5	107.5466418	7.74E+01	1.07E+02	1.39E+00	1.01E+00
Silver	3.5	0	3.5	4.11380597	NA	NA	NA	NA
Thallium	5.3	0	5.3	6.229477612	NA	NA	NA	NA
Vanadium	55.7	0	55.7	65.46828358	1.14E+01	1.14E+02	5.74E+00	5.74E-01
Zinc	8490	0	8490	9978.91791	1.45E+01	1.31E+02	6.88E+02	7.62E+01
4,4'-DDD	0.31	0	0.31	0.364365672	3.00E-03	2.80E-02	1.21E+02	1.30E+01
4,4'-DDE	2.2	0	2.2	2.585820896	3.00E-03	2.80E-02	8.62E+02	9.24E+01
4,4'-DDT	1.2	0	1.2	1.410447761	3.00E-03	2.80E-02	4.70E+02	5.04E+01
2,4-Dinitrotoluene	3.2	0	3.2	3.76119403	NA	NA	NA	NA
2,6-Dinitrotoluene	0.039	0	0.039	0.045839552	NA	NA	NA	NA
2-Methylnaphthalene	0.042	0	0.042	0.049365672	1.00E+01	1.00E+02	4.94E-03	4.94E-04
Benzo(a)anthracene	0.81	0	0.81	0.952052239	1.00E+01	1.00E+02	9.52E-02	9.52E-03
Benzo(a)pyrene	0.48	0	0.48	0.564179104	1.00E+01	1.00E+02	5.64E-02	5.64E-03
Benzo(b)fluoranthene	1.9	0	1.9	2.233208955	1.00E+01	1.00E+02	2.23E-01	2.23E-02
Benzo(g,h,i)perylene	0.35	0	0.35	0.411380597	1.00E+01	1.00E+02	4.11E-02	4.11E-03
Benzo(k)fluoranthene	0.7	0	0.7	0.822761194	1.00E+01	1.00E+02	8.23E-02	8.23E-03
Carbazole	0.061	0	0.061	0.071697761	1.00E+01	1.00E+02	7.17E-03	7.17E-04
Chrysene	1.1	0	1.1	1.292910448	1.00E+01	1.00E+02	1.29E-01	1.29E-02
Di-n-Butylphthalate	4.7	0	4.7	5.524253731	1.10E-01	1.10E+00	5.02E+01	5.02E+00
Fluoranthene	0.79	0	0.79	0.928544776	1.00E+01	1.00E+02	9.29E-02	9.29E-03
Indeno(1,2,3-cd)pyrene	0.54	0	0.54	0.634701493	1.00E+01	1.00E+02	6.35E-02	6.35E-03
N-Nitrosodiphenylamine	0.53	0	0.53	0.622947761	NA	NA	NA	NA
Phenanthrene	0.33	0	0.33	0.387873134	1.00E+01	1.00E+02	3.88E-02	3.88E-03
Pyrene	1.2	0	1.2	1.410447761	1.00E+01	1.00E+02	1.41E-01	1.41E-02
2-Butanone	0.21	0	0.21	0.246828358	NA	NA	NA	NA
Acetone	0.028	0	0.028	0.032910448	NA	NA	NA	NA

NA - Not Available

TABLE D-16
HAZARD QUOTIENT CALCULATIONS FOR RED FOX

Site 5, Burning Grounds
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red Fox
(Conservative Inputs)

Body Weight	3.9400000 kg	(USEPA, 1993)
Food Ingestion Rate	0.4500000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.3800000 L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0165074 kg/day	(Beyer, 1994)

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	6.64	0	6.64	0.78619521	NA	NA	NA	NA
Aluminum	9240.00	0	9240	1094.04274	5.51E-01	5.52E+00	1.99E+03	1.98E+02
Antimony	0.76	0	0.763333	0.09038084	3.60E-02	3.57E-01	2.51E+00	2.53E-01
Barium	249.14	0	249.14	29.4988969	2.80E+00	1.05E+01	1.05E+01	2.81E+00
Beryllium	0.65	0	0.653	0.07731709	3.50E-01	3.50E+00	2.21E-01	2.21E-02
Cadmium	1.00	0	0.999444	0.11833706	5.09E-01	5.09E+00	2.32E-01	2.32E-02
Chromium	24.80	0	24.8	2.93639176	8.00E+00	1.06E+01	3.67E-01	2.77E-01
Copper	697.29	0	697.29	82.5611535	8.00E+00	1.06E+01	1.03E+01	7.79E+00
Cyanide	0.42	0	0.424	0.05020283	3.41E+01	3.41E+02	1.47E-03	1.47E-04
Iron	28520.00	0	28520	3376.85052	5.00E+01	5.00E+02	6.75E+01	6.75E+00
Lead	1020.51	0	1020.51	120.831337	4.22E+00	4.23E+01	2.86E+01	2.86E+00
Manganese	234.77	0	234.77	27.7974473	4.60E+01	1.50E+02	6.04E-01	1.85E-01
Mercury	0.41	0	0.411111	0.04867673	3.77E+00	3.77E+01	1.29E-02	1.29E-03
Nickel	19.04	0	19.04444	2.2549168	2.11E+01	4.23E+01	1.07E-01	5.34E-02
Silver	1.45	0	1.453333	0.17207883	1.81E+02	1.81E+03	9.50E-04	9.50E-05
Thallium	1.66	0	1.6605	0.196608	4.00E-03	3.90E-02	4.92E+01	5.04E+00
Vanadium	30.71	0	30.71	3.63615286	1.03E-01	1.03E+00	3.53E+01	3.53E+00
Zinc	983.60	0	983.6	116.461086	8.45E+01	1.69E+02	1.38E+00	6.89E-01
4,4'-DDD	0.05	0	0.053	0.00627535	4.20E-01	2.11E+00	1.49E-02	2.97E-03
4,4'-DDE	0.37	0	0.37	0.04380907	4.20E-01	2.11E+00	1.04E-01	2.08E-02
4,4'-DDT	0.29	0	0.29	0.03433684	4.20E-01	2.11E+00	8.18E-02	1.63E-02
2,4-Dinitrotoluene	0.55	0	0.55	0.06512159	2.00E-01	1.50E+00	3.26E-01	4.34E-02
2,6-Dinitrotoluene	0.039	0	0.039	0.00461771	NA	NA	NA	NA
2-Methylnaphthalene	0.042	0	0.042	0.00497292	1.30E+00	2.60E+00	3.83E-03	1.91E-03
Benzo(a)anthracene	0.28	0	0.28	0.03315281	1.30E+00	2.60E+00	2.55E-02	1.28E-02
Benzo(a)pyrene	0.23	0	0.23	0.02723267	2.90E-01	2.86E+00	9.39E-02	9.52E-03
Benzo(b)fluoranthene	0.65	0	0.65	0.07696188	1.30E+00	2.60E+00	5.92E-02	2.96E-02
Benzo(g,h,i)perylene	0.16	0	0.16	0.01894446	1.30E+00	2.60E+00	1.46E-02	7.29E-03
Benzo(k)fluoranthene	0.23	0	0.23	0.02723267	1.30E+00	2.60E+00	2.09E-02	1.05E-02
Carbazole	0.061	0	0.061	0.00722258	1.30E+00	2.60E+00	5.56E-03	2.78E-03
Chrysene	0.40	0	0.4	0.04736116	1.30E+00	2.60E+00	3.64E-02	1.82E-02
Di-n-Butylphthalate	0.61	0	0.61	0.07222576	1.57E+02	5.24E+02	4.60E-04	1.38E-04
Fluoranthene	0.43	0	0.43	0.05091324	1.30E+00	2.60E+00	3.92E-02	1.96E-02
Indeno(1,2,3-cd)pyrene	0.19	0	0.19	0.02249655	1.30E+00	2.60E+00	1.73E-02	8.65E-03
N-Nitrosodiphenylamine	0.21	0	0.21	0.02486461	1.65E+00	1.65E+01	1.51E-02	1.51E-03
Phenanthrene	0.20	0	0.2	0.02368058	1.30E+00	2.60E+00	1.82E-02	9.11E-03
Pyrene	0.46	0	0.46	0.05446533	1.30E+00	2.60E+00	4.19E-02	2.09E-02
2-Butanone	0.21	0	0.21	0.02486461	NA	NA	NA	NA
Acetone	0.01	0	0.012	0.00142083	5.30E+00	2.64E+01	2.68E-04	5.38E-05

NA - Not Available

Site 5, Burning Grounds
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red Fox
(Conservative Inputs)

Body Weight	3.9400000 kg	(USEPA, 1993)
Food Ingestion Rate	0.4500000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.3800000 L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0165074 kg/day	(Beyer, 1994)

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	18.8	0	18.8	2.225974396	NA	NA	NA	NA
Aluminum	20200	0	20200	2391.738447	5.51E-01	5.52E+00	4.34E+03	4.34E+02
Antimony	1.1	0	1.1	0.130243183	3.60E-02	3.57E-01	3.62E+00	3.65E-01
Barium	1040	0	1040	123.1390091	2.80E+00	1.05E+01	4.40E+01	1.17E+01
Beryllium	1.2	0	1.2	0.142083472	3.50E-01	3.50E+00	4.06E-01	4.06E-02
Cadmium	6	0	6	0.71041736	5.09E-01	5.09E+00	1.40E+00	1.40E-01
Chromium	74.6	0	74.6	8.832855848	8.00E+00	1.06E+01	1.10E+00	8.33E-01
Copper	6470	0	6470	766.0667203	8.00E+00	1.06E+01	9.58E+01	7.23E+01
Cyanide	1.45	0	1.45	0.171684195	3.41E+01	3.41E+02	5.03E-03	5.03E-04
Iron	120000	0	120000	14208.34721	5.00E+01	5.00E+02	2.84E+02	2.84E+01
Lead	7210	0	7210	853.6848614	4.22E+00	4.23E+01	2.02E+02	2.02E+01
Manganese	852	0	852	100.8792652	4.60E+01	1.50E+02	2.19E+00	6.73E-01
Mercury	0.98	0	0.98	0.116034836	3.77E+00	3.77E+01	3.08E-02	3.08E-03
Nickel	91.5	0	91.5	10.83386475	2.11E+01	4.23E+01	5.13E-01	2.56E-01
Silver	3.5	0	3.5	0.414410127	1.81E+02	1.81E+03	2.29E-03	2.29E-04
Thallium	5.3	0	5.3	0.627535335	4.00E-03	3.90E-02	1.57E+02	1.61E+01
Vanadium	55.7	0	55.7	6.595041162	1.03E-01	1.03E+00	6.40E+01	6.40E+00
Zinc	8490	0	8490	1005.240565	8.45E+01	1.69E+02	1.19E+01	5.95E+00
4,4'-DDD	0.31	0	0.31	0.036704897	4.20E-01	2.11E+00	8.74E-02	1.74E-02
4,4'-DDE	2.2	0	2.2	0.260486365	4.20E-01	2.11E+00	6.20E-01	1.23E-01
4,4'-DDT	1.2	0	1.2	0.142083472	4.20E-01	2.11E+00	3.38E-01	6.73E-02
2,4-Dinitrotoluene	3.2	0	3.2	0.378889259	2.00E-01	1.50E+00	1.89E+00	2.53E-01
2,6-Dinitrotoluene	0.039	0	0.039	0.004617713	NA	NA	NA	NA
2-Methylnaphthalene	0.042	0	0.042	0.004972922	1.30E+00	2.60E+00	3.83E-03	1.91E-03
Benzo(a)anthracene	0.81	0	0.81	0.095906344	1.30E+00	2.60E+00	7.38E-02	3.69E-02
Benzo(a)pyrene	0.48	0	0.48	0.056833389	2.90E-01	2.86E+00	1.96E-01	1.99E-02
Benzo(b)fluoranthene	1.9	0	1.9	0.224965497	1.30E+00	2.60E+00	1.73E-01	8.65E-02
Benzo(g,h,i)perylene	0.35	0	0.35	0.041441013	1.30E+00	2.60E+00	3.19E-02	1.59E-02
Benzo(k)fluoranthene	0.7	0	0.7	0.082882025	1.30E+00	2.60E+00	6.38E-02	3.19E-02
Carbazole	0.061	0	0.061	0.007222576	1.30E+00	2.60E+00	5.56E-03	2.78E-03
Chrysene	1.1	0	1.1	0.130243183	1.30E+00	2.60E+00	1.00E-01	5.01E-02
Di-n-Butylphthalate	4.7	0	4.7	0.556493599	1.57E+02	5.24E+02	3.54E-03	1.06E-03
Fluoranthene	0.79	0	0.79	0.093538286	1.30E+00	2.60E+00	7.20E-02	3.60E-02
Indeno(1,2,3-cd)pyrene	0.54	0	0.54	0.063937562	1.30E+00	2.60E+00	4.92E-02	2.46E-02
N-Nitrosodiphenylamine	0.53	0	0.53	0.062753534	1.65E+00	1.65E+01	3.80E-02	3.80E-03
Phenanthrene	0.33	0	0.33	0.039072955	1.30E+00	2.60E+00	3.01E-02	1.50E-02
Pyrene	1.2	0	1.2	0.142083472	1.30E+00	2.60E+00	1.09E-01	5.46E-02
2-Butanone	0.21	0	0.21	0.024864608	NA	NA	NA	NA
Acetone	0.028	0	0.028	0.003315281	5.30E+00	2.64E+01	6.26E-04	1.26E-04

NA - Not Available

TABLE D-17
HAZARD QUOTIENT CALCULATIONS FOR DEER MOUSE

Site 5, Burning Grounds
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Deer Mouse
(Conservative Inputs)

Body Weight	0.0148000	kg	(USEPA, 1993)
Food Ingestion Rate	0.0066600	kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0028120	L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0000700	kg/day	(Beyer, 1994)

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertabrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	6.64	0	2.656	3.984	3.01940541	NA	NA	NA	NA
Aluminum	9240.00	0	3696	5544	4201.7027	1.93E+00	1.93E+01	2.18E+03	2.18E+02
Antimony	0.76	0	0.3053332	0.4579998	0.34711021	1.25E-01	1.25E+00	2.78E+00	2.78E-01
Barium	249.14	0	99.656	149.484	113.291365	5.10E+00	1.98E+01	2.22E+01	5.72E+00
Beryllium	0.65	0	0.2612	0.3918	0.29693851	6.60E-01	6.60E+00	4.50E-01	4.50E-02
Cadmium	1.00	0	0.3997776	0.5996664	0.4544769	1.00E+00	1.00E+01	4.54E-01	4.54E-02
Chromium	24.80	0	9.92	14.88	11.2772973	1.17E+01	1.54E+01	9.64E-01	7.32E-01
Copper	697.29	0	278.916	418.374	317.078493	1.17E+01	1.54E+01	2.71E+01	2.06E+01
Cyanide	0.42	0	0.1696	0.2544	0.19280541	6.87E+01	6.87E+02	2.81E-03	2.81E-04
Iron	28520.00	0	11408	17112	12968.8919	5.00E+01	5.00E+02	2.59E+02	2.59E+01
Lead	1020.51	0	408.204	612.306	464.056236	8.00E+00	8.00E+01	5.80E+01	5.80E+00
Manganese	234.77	0	93.908	140.862	106.756899	8.80E+01	2.84E+02	1.21E+00	3.76E-01
Mercury	0.41	0	0.1644444	0.2466666	0.18694439	1.32E+01	1.32E+02	1.42E-02	1.42E-03
Nickel	19.04	0	7.617776	11.426664	8.66007305	4.00E+01	8.00E+01	2.17E-01	1.08E-01
Silver	1.45	0	0.5813332	0.8719998	0.66087372	1.81E+02	1.81E+03	3.65E-03	3.65E-04
Thallium	1.66	0	0.6642	0.9963	0.75507872	7.40E-03	7.40E-02	1.02E+02	1.02E+01
Vanadium	30.71	0	12.284	18.426	13.96475	2.10E-01	2.10E+00	6.65E+01	6.65E+00
Zinc	983.60	0	393.44	590.16	447.272162	1.60E+02	3.20E+02	2.80E+00	1.40E+00
4,4'-DDD	0.05	0	0.0212	0.0318	0.02410068	8.00E-01	4.00E+00	3.01E-02	6.03E-03
4,4'-DDE	0.37	0	0.148	0.222	0.16825	8.00E-01	4.00E+00	2.10E-01	4.21E-02
4,4'-DDT	0.29	0	0.116	0.174	0.13187162	8.00E-01	4.00E+00	1.65E-01	3.30E-02
2,4-Dinitrotoluene	0.55	0	0.22	0.33	0.25010135	2.00E-01	1.50E+00	1.25E+00	1.67E-01
2,6-Dinitrotoluene	0.039	0	0.0156	0.0234	0.01773446	NA	NA	NA	NA
2-Methylnaphthalene	0.042	0	0.0168	0.0252	0.01909865	1.30E+00	2.60E+00	1.47E-02	7.35E-03
Benzo(a)anthracene	0.28	0	0.112	0.168	0.12732432	1.30E+00	2.60E+00	9.79E-02	4.90E-02
Benzo(a)pyrene	0.23	0	0.092	0.138	0.10458784	1.00E+00	1.00E+01	1.05E-01	1.05E-02
Benzo(b)fluoranthene	0.65	0	0.26	0.39	0.29557432	1.30E+00	2.60E+00	2.27E-01	1.14E-01
Benzo(g,h,i)perylene	0.16	0	0.064	0.096	0.07275676	1.30E+00	2.60E+00	5.60E-02	2.80E-02
Benzo(k)fluoranthene	0.23	0	0.092	0.138	0.10458784	1.30E+00	2.60E+00	8.05E-02	4.02E-02
Carbazole	0.061	0	0.0244	0.0366	0.02773851	1.30E+00	2.60E+00	2.13E-02	1.07E-02
Chrysene	0.40	0	0.16	0.24	0.18189189	1.30E+00	2.60E+00	1.40E-01	7.00E-02
Di-n-Butylphthalate	0.61	0	0.244	0.366	0.27738514	5.50E+02	1.83E+03	5.04E-04	1.51E-04
Fluoranthene	0.43	0	0.172	0.258	0.19553378	1.30E+00	2.60E+00	1.50E-01	7.52E-02
Indeno(1,2,3-cd)pyrene	0.19	0	0.076	0.114	0.08639865	1.30E+00	2.60E+00	6.65E-02	3.32E-02
N-Nitrosodiphenylamine	0.21	0	0.084	0.126	0.09549324	1.65E+00	1.65E+01	5.79E-02	5.79E-03
Phenanthrene	0.20	0	0.08	0.12	0.09094595	1.30E+00	2.60E+00	7.00E-02	3.50E-02
Pyrene	0.46	0	0.184	0.276	0.20917568	1.30E+00	2.60E+00	1.61E-01	8.05E-02
2-Butanone	0.21	0	0.084	0.126	0.09549324	NA	NA	NA	NA
Acetone	0.01	0	0.0048	0.0072	0.00545676	1.00E+01	5.00E+01	5.46E-04	1.09E-04

NA - Not Available

Site 5, Burning Grounds
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Deer Mouse
(Conservative Inputs)

Body Weight	0.0148000	kg	(USEPA, 1993)
Food Ingestion Rate	0.0066600	kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0028120	L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0000700	kg/day	(Beyer, 1994)

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	18.8	0	7.52	11.28	8.54891892	NA	NA	NA	NA
Aluminum	20200	0	8080	12120	9185.54054	1.93E+00	1.93E+01	4.76E+03	4.76E+02
Antimony	1.1	0	0.44	0.66	0.5002027	1.25E-01	1.25E+00	4.00E+00	4.00E-01
Barium	1040	0	416	624	472.918919	5.10E+00	1.98E+01	9.27E+01	2.39E+01
Beryllium	1.2	0	0.48	0.72	0.54567568	6.60E-01	6.60E+00	8.27E-01	8.27E-02
Cadmium	6	0	2.4	3.6	2.72837838	1.00E+00	1.00E+01	2.73E+00	2.73E-01
Chromium	74.6	0	29.84	44.76	33.9228378	1.17E+01	1.54E+01	2.90E+00	2.20E+00
Copper	6470	0	2588	3882	2942.10135	1.17E+01	1.54E+01	2.51E+02	1.91E+02
Cyanide	1.45	0	0.58	0.87	0.65935811	6.87E+01	6.87E+02	9.60E-03	9.60E-04
Iron	120000	0	48000	72000	54567.5676	5.00E+01	5.00E+02	1.09E+03	1.09E+02
Lead	7210	0	2884	4326	3278.60135	8.00E+00	8.00E+01	4.10E+02	4.10E+01
Manganese	852	0	340.8	511.2	387.42973	8.80E+01	2.84E+02	4.40E+00	1.36E+00
Mercury	0.98	0	0.392	0.588	0.44563514	1.32E+01	1.32E+02	3.38E-02	3.38E-03
Nickel	91.5	0	36.6	54.9	41.6077703	4.00E+01	8.00E+01	1.04E+00	5.20E-01
Silver	3.5	0	1.4	2.1	1.59155405	1.81E+02	1.81E+03	8.78E-03	8.78E-04
Thallium	5.3	0	2.12	3.18	2.41006757	7.40E-03	7.40E-02	3.26E+02	3.26E+01
Vanadium	55.7	0	22.28	33.42	25.3284459	2.10E-01	2.10E+00	1.21E+02	1.21E+01
Zinc	8490	0	3396	5094	3860.65541	1.60E+02	3.20E+02	2.41E+01	1.21E+01
4,4'-DDD	0.31	0	0.124	0.186	0.14096622	8.00E-01	4.00E+00	1.76E-01	3.52E-02
4,4'-DDE	2.2	0	0.88	1.32	1.00040541	8.00E-01	4.00E+00	1.25E+00	2.50E-01
4,4'-DDT	1.2	0	0.48	0.72	0.54567568	8.00E-01	4.00E+00	6.82E-01	1.36E-01
2,4-Dinitrotoluene	3.2	0	1.28	1.92	1.45513514	2.00E-01	1.50E+00	7.28E+00	9.70E-01
2,6-Dinitrotoluene	0.039	0	0.0156	0.0234	0.01773446	NA	NA	NA	NA
2-Methylnaphthalene	0.042	0	0.0168	0.0252	0.01909865	1.30E+00	2.60E+00	1.47E-02	7.35E-03
Benzo(a)anthracene	0.81	0	0.324	0.486	0.36833108	1.30E+00	2.60E+00	2.83E-01	1.42E-01
Benzo(a)pyrene	0.48	0	0.192	0.288	0.21827027	1.00E+00	1.00E+01	2.18E-01	2.18E-02
Benzo(b)fluoranthene	1.9	0	0.76	1.14	0.86398649	1.30E+00	2.60E+00	6.65E-01	3.32E-01
Benzo(g,h,i)perylene	0.35	0	0.14	0.21	0.15915541	1.30E+00	2.60E+00	1.22E-01	6.12E-02
Benzo(k)fluoranthene	0.7	0	0.28	0.42	0.31831081	1.30E+00	2.60E+00	2.45E-01	1.22E-01
Carbazole	0.061	0	0.0244	0.0366	0.02773851	1.30E+00	2.60E+00	2.13E-02	1.07E-02
Chrysene	1.1	0	0.44	0.66	0.5002027	1.30E+00	2.60E+00	3.85E-01	1.92E-01
Di-n-Butylphthalate	4.7	0	1.88	2.82	2.13722973	5.50E+02	1.83E+03	3.89E-03	1.17E-03
Fluoranthene	0.79	0	0.316	0.474	0.35923649	1.30E+00	2.60E+00	2.76E-01	1.38E-01
Indeno(1,2,3-cd)pyrene	0.54	0	0.216	0.324	0.24555405	1.30E+00	2.60E+00	1.89E-01	9.44E-02
N-Nitrosodiphenylamine	0.53	0	0.212	0.318	0.24100676	1.65E+00	1.65E+01	1.46E-01	1.46E-02
Phenanthrene	0.33	0	0.132	0.198	0.15006081	1.30E+00	2.60E+00	1.15E-01	5.77E-02
Pyrene	1.2	0	0.48	0.72	0.54567568	1.30E+00	2.60E+00	4.20E-01	2.10E-01
2-Butanone	0.21	0	0.084	0.126	0.09549324	NA	NA	NA	NA
Acetone	0.028	0	0.0112	0.0168	0.01273243	1.00E+01	5.00E+01	1.27E-03	2.55E-04

NA - Not Available

TABLE D-18
HAZARD QUOTIENT CALCULATIONS FOR RACCOON

Site 5, Burning Grounds
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Raccoon
(Conservative Inputs)

Body Weight	3.6700000	kg	(USEPA, 1993)
Food Ingestion Rate	0.8000000	kg/day	(USEPA, 1993, using placental mammal equation)
Water Ingestion Rate	0.3000000	L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0400000	kg/day	(estimated)
Sed. Ingestion Rate	0.0400000	kg/day	(estimated)

Mean Concentrations ECOC	Soil Concentration (mg/kg)	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	6.64	74.35	0	3.32	37.175	9.7099728	NA	NA	NA	NA
Aluminum	9240.00	15400	0	4620	7700	2954.1144	1.93E+00	1.93E+01	1.53E+03	1.53E+02
Antimony	0.76	0	0	0.3816665	0	0.0915168	1.25E-01	1.25E+00	7.32E-01	7.32E-02
Arsenic	0	6.465	0	0	3.2325	0.7750954	1.26E-01	1.26E+00	6.15E+00	6.15E-01
Barium	249.14	93.05	0	124.57	46.525	41.025504	5.10E+00	1.98E+01	8.04E+00	2.07E+00
Beryllium	0.65	1.57	0	0.3265	0.785	0.2665177	6.60E-01	6.60E+00	4.04E-01	4.04E-02
Cadmium	1.00	0	0	0.499722	0	0.1198243	1.00E+00	1.00E+01	1.20E-01	1.20E-02
Chromium	24.80	24.6	0	12.4	12.3	5.9226158	1.17E+01	1.54E+01	5.06E-01	3.85E-01
Cobalt	0	2.9725	0	0	1.48625	0.356376	1.00E+00	1.00E+01	3.56E-01	3.56E-02
Copper	697.29	39.35	0	348.645	19.675	88.316512	1.17E+01	1.54E+01	7.55E+00	5.73E+00
Cyanide	0.42	0.825	0	0.212	0.4125	0.1497439	6.87E+01	6.87E+02	2.18E-03	2.18E-04
Iron	28520.00	95050	0	14260	47525	14814.932	5.00E+01	5.00E+02	2.96E+02	2.96E+01
Lead	1020.51	208.5	0	510.255	104.25	147.34725	8.00E+00	8.00E+01	1.84E+01	1.84E+00
Manganese	234.77	62.05	0	117.385	31.025	35.586049	8.80E+01	2.84E+02	4.04E-01	1.25E-01
Mercury	0.41	0.23	0	0.2055555	0.115	0.0768634	1.32E+01	1.32E+02	5.82E-03	5.82E-04
Nickel	19.04	0	0	9.52222	0	2.2832571	4.00E+01	8.00E+01	5.71E-02	2.85E-02
Silver	1.45	0.9025	0	0.7266665	0.45125	0.2824432	1.81E+02	1.81E+03	1.56E-03	1.56E-04
Thallium	1.66	3.055	0	0.83025	1.5275	0.565346	7.40E-03	7.40E-02	7.64E+01	7.64E+00
Vanadium	30.71	39.95	0	15.355	19.975	8.4714986	2.10E-01	2.10E+00	4.03E+01	4.03E+00
Zinc	983.60	0	0	491.8	0	117.9248	1.60E+02	3.20E+02	7.37E-01	3.69E-01
4,4'-DDD	0.05	0.065	0	0.0265	0.0325	0.0141471	8.00E-01	4.00E+00	1.77E-02	3.54E-03
4,4'-DDE	0.37	0.033	0	0.185	0.0165	0.0483161	8.00E-01	4.00E+00	6.04E-02	1.21E-02
4,4'-DDT	0.29	0.032	0	0.145	0.016	0.0386049	8.00E-01	4.00E+00	4.83E-02	9.65E-03
Dieldrin	0	0.012	0	0	0.006	0.0014387	2.00E-02	2.00E-01	7.19E-02	7.19E-03
Endrin Aldehyde	0	0.0062	0	0	0.0031	0.0007433	NA	NA	NA	NA
2,4-Dinitrotoluene	0.55	0.065	0	0.275	0.0325	0.073733	2.00E-01	1.50E+00	3.69E-01	4.92E-02
2,6-Dinitrotoluene	0.039	0	0	0.0195	0	0.0046757	NA	NA	NA	NA
2-Methylnaphthalene	0.042	0	0	0.021	0	0.0050354	1.30E+00	2.60E+00	3.87E-03	1.94E-03
Acenaphthene	0	0.065	0	0	0.0325	0.0077929	1.30E+00	2.60E+00	5.99E-03	3.00E-03
Anthracene	0	0.099	0	0	0.0495	0.0118692	1.30E+00	2.60E+00	9.13E-03	4.57E-03
Benzo(a)anthracene	0.28	0.3	0	0.14	0.15	0.0695368	1.30E+00	2.60E+00	5.35E-02	2.67E-02
Benzo(a)pyrene	0.23	0	0	0.115	0	0.0275749	1.00E+00	1.00E+01	2.76E-02	2.76E-03
Benzo(b)fluoranthene	0.65	0	0	0.325	0	0.0779292	1.30E+00	2.60E+00	5.99E-02	3.00E-02
Benzo(g,h,i)perylene	0.16	0	0	0.08	0	0.0191826	1.30E+00	2.60E+00	1.48E-02	7.38E-03
Benzo(k)fluoranthene	0.23	0.16	0	0.115	0.08	0.0467575	1.30E+00	2.60E+00	3.60E-02	1.80E-02
Carbazole	0.061	0	0	0.0305	0	0.0073134	1.30E+00	2.60E+00	5.63E-03	2.81E-03
Chrysene	0.40	0.43	0	0.2	0.215	0.0995095	1.30E+00	2.60E+00	7.65E-02	3.83E-02
Diethylphthalate	0	0.52	0	0	0.26	0.0623433	4.58E+03	4.58E+04	1.36E-05	1.36E-06
Di-n-Butylphthalate	0.61	0	0	0.305	0	0.0731335	5.50E+02	1.83E+03	1.33E-04	3.99E-05
Fluoranthene	0.43	0	0	0.215	0	0.0515531	1.30E+00	2.60E+00	3.97E-02	1.98E-02
Fluorene	0	0.063	0	0	0.0315	0.0075531	1.30E+00	2.60E+00	5.81E-03	2.91E-03
Indeno(1,2,3-cd)pyrene	0.19	0	0	0.095	0	0.0227793	1.30E+00	2.60E+00	1.75E-02	8.76E-03
N-Nitrosodiphenylamine	0.21	0.061	0	0.105	0.0305	0.0324905	1.65E+00	1.65E+01	1.97E-02	1.97E-03
Phenanthrene	0.20	0.52	0	0.1	0.26	0.0863215	1.30E+00	2.60E+00	6.64E-02	3.32E-02
Pyrene	0.46	0.68	0	0.23	0.34	0.1366757	1.30E+00	2.60E+00	1.05E-01	5.26E-02
2-Butanone	0.21	0	0	0.105	0	0.0251771	NA	NA	NA	NA
Acetone	0.01	0.03	0	0.006	0.015	0.0050354	1.00E+01	5.00E+01	5.04E-04	1.01E-04
Chloroform	0	0.003	0	0	0.0015	0.0003597	1.50E+01	4.10E+01	2.40E-05	8.77E-06

NA - Not Available

Site 5, Burning Grounds
St. Juliens Creek Annex Facility
Chesapeake, Virginia

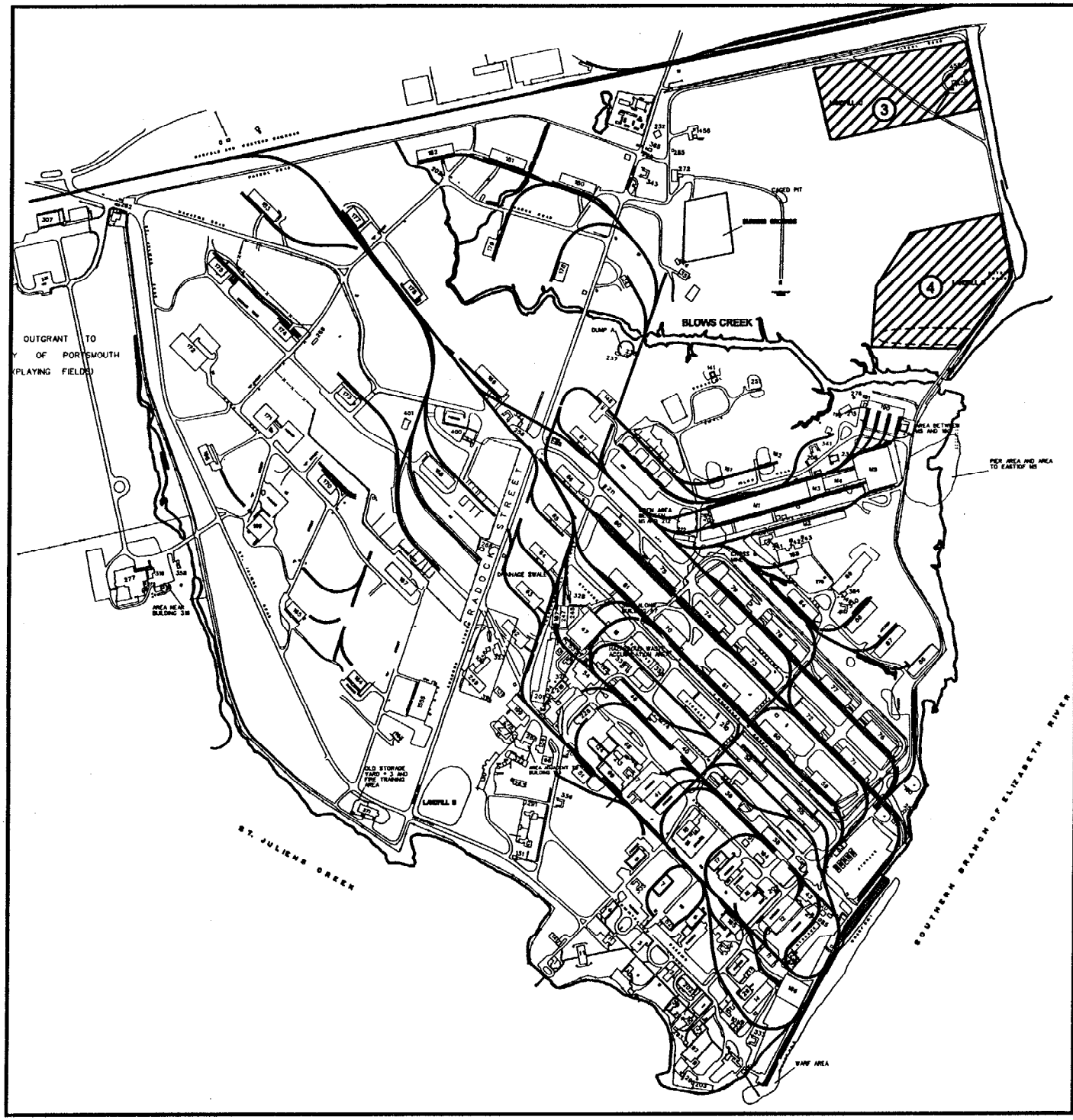
Raccoon
(Conservative Inputs)

Body Weight	3.6700000	kg	(USEPA, 1993)
Food Ingestion Rate	0.8000000	kg/day	(USEPA, 1993, using placental mammal equation)
Water Ingestion Rate	0.3000000	L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0400000	kg/day	(estimated)
Sed. Ingestion Rate	0.0400000	kg/day	(estimated)

Maximum Concentrations ECOC	Soil Concentration (mg/kg)	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	18.8	128	0	9.4	64	17.6	NA	NA	NA	NA
Aluminum	20200	17000	0	10100	8500	4459.9455	1.93E+00	1.93E+01	2.31E+03	2.31E+02
Antimony	1.1	0	0	0.55	0	0.13188011	1.25E-01	1.25E+00	1.06E+00	1.06E-01
Arsenic	0	12.5	0	0	6.25	1.4986376	1.26E-01	1.26E+00	1.19E+01	1.19E+00
Barium	1040	133	0	520	66.5	140.632153	5.10E+00	1.98E+01	2.76E+01	7.10E+00
Beryllium	1.2	2.4	0	0.6	1.2	0.43160763	6.60E-01	6.60E+00	6.54E-01	6.54E-02
Cadmium	6	0	0	3	0	0.71934605	1.00E+00	1.00E+01	7.19E-01	7.19E-02
Chromium	74.6	32.2	0	37.3	16.1	12.8043597	1.17E+01	1.54E+01	1.09E+00	8.31E-01
Cobalt	0	4.3	0	0	2.15	0.51553134	1.00E+00	1.00E+01	5.16E-01	5.16E-02
Copper	6470	39.7	0	3235	19.85	780.454496	1.17E+01	1.54E+01	6.67E+01	5.07E+01
Cyanide	1.45	1.1	0	0.725	0.55	0.30572207	6.87E+01	6.87E+02	4.45E-03	4.45E-04
Iron	120000	161000	0	60000	80500	33689.3733	5.00E+01	5.00E+02	6.74E+02	6.74E+01
Lead	7210	302	0	3605	151	900.621253	8.00E+00	8.00E+01	1.13E+02	1.13E+01
Manganese	852	76	0	426	38	111.258856	8.80E+01	2.84E+02	1.26E+00	3.92E-01
Mercury	0.98	0.29	0	0.49	0.145	0.15226158	1.32E+01	1.32E+02	1.15E-02	1.15E-03
Nickel	91.5	0	0	45.75	0	10.9700272	4.00E+01	8.00E+01	2.74E-01	1.37E-01
Silver	3.5	1.6	0	1.75	0.8	0.61144414	1.81E+02	1.81E+03	3.37E-03	3.37E-04
Thallium	5.3	5.7	0	2.65	2.85	1.31880109	7.40E-03	7.40E-02	1.78E+02	1.78E+01
Vanadium	55.7	42.2	0	27.85	21.1	11.7373297	2.10E-01	2.10E+00	5.59E+01	5.59E+00
Zinc	8490	0	0	4245	0	1017.87466	1.60E+02	3.20E+02	6.36E+00	3.18E+00
4,4'-DDD	0.31	0.11	0	0.155	0.055	0.05035422	8.00E-01	4.00E+00	6.29E-02	1.26E-02
4,4'-DDE	2.2	0.054	0	1.1	0.027	0.27023433	8.00E-01	4.00E+00	3.38E-01	6.76E-02
4,4'-DDT	1.2	0.038	0	0.6	0.019	0.14842507	8.00E-01	4.00E+00	1.86E-01	3.71E-02
Dieldrin	0	0.021	0	0	0.0105	0.00251771	2.00E-02	2.00E-01	1.26E-01	1.26E-02
Endrin Aldehyde	0	0.0089	0	0	0.00445	0.00106703	NA	NA	NA	NA
2,4-Dinitrotoluene	3.2	0.065	0	1.6	0.0325	0.39144414	2.00E-01	1.50E+00	1.96E+00	2.61E-01
2,6-Dinitrotoluene	0.039	0	0	0.0195	0	0.00467575	NA	NA	NA	NA
2-Methylnaphthalene	0.042	0	0	0.021	0	0.00503542	1.30E+00	2.60E+00	3.87E-03	1.94E-03
Acenaphthene	0	0.065	0	0	0.0325	0.00779292	1.30E+00	2.60E+00	5.99E-03	3.00E-03
Anthracene	0	0.099	0	0	0.0495	0.01186921	1.30E+00	2.60E+00	9.13E-03	4.57E-03
Benzo(a)anthracene	0.81	0.3	0	0.405	0.15	0.13307902	1.30E+00	2.60E+00	1.02E-01	5.12E-02
Benzo(a)pyrene	0.48	0	0	0.24	0	0.05754768	1.00E+00	1.00E+01	5.75E-02	5.75E-03
Benzo(b)fluoranthene	1.9	0	0	0.95	0	0.22779292	1.30E+00	2.60E+00	1.75E-01	8.76E-02
Benzo(g,h,i)perylene	0.35	0	0	0.175	0	0.04196185	1.30E+00	2.60E+00	3.23E-02	1.61E-02
Benzo(k)fluoranthene	0.7	0.16	0	0.35	0.08	0.10310627	1.30E+00	2.60E+00	7.93E-02	3.97E-02
Carbazole	0.061	0	0	0.0305	0	0.00731335	1.30E+00	2.60E+00	5.63E-03	2.81E-03
Chrysene	1.1	0.45	0	0.55	0.225	0.18583106	1.30E+00	2.60E+00	1.43E-01	7.15E-02
Diethylphthalate	0	0.72	0	0	0.36	0.08632153	4.58E+03	4.58E+04	1.88E-05	1.88E-06
Di-n-Butylphthalate	4.7	0	0	2.35	0	0.56348774	5.50E+02	1.83E+03	1.02E-03	3.07E-04
Fluoranthene	0.79	0	0	0.395	0	0.0947139	1.30E+00	2.60E+00	7.29E-02	3.64E-02
Fluorene	0	0.063	0	0	0.0315	0.00755313	1.30E+00	2.60E+00	5.81E-03	2.91E-03
Indeno(1,2,3-cd)pyrene	0.54	0	0	0.27	0	0.06474114	1.30E+00	2.60E+00	4.98E-02	2.49E-02
N-Nitrosodiphenylamine	0.53	0.061	0	0.265	0.0305	0.07085559	1.65E+00	1.65E+01	4.29E-02	4.29E-03
Phenanthrene	0.33	0.52	0	0.165	0.26	0.10190736	1.30E+00	2.60E+00	7.84E-02	3.92E-02
Pyrene	1.2	0.68	0	0.6	0.34	0.2253951	1.30E+00	2.60E+00	1.73E-01	8.67E-02
2-Butanone	0.21	0	0	0.105	0	0.02517711	NA	NA	NA	NA
Acetone	0.028	0.052	0	0.014	0.026	0.00959128	1.00E+01	5.00E+01	9.59E-04	1.92E-04
Chloroform	0	0.003	0	0	0.0015	0.00035967	1.50E+01	4.10E+01	2.40E-05	8.77E-06

NA - Not Available

SITES 3 (LANDFILL C) AND 4 (LANDFILL D)



N

0 300 600 900

SCALE IN FEET

LOCATION OF SITE 3 (LANDFILL C)
AND SITE 4 (LANDFILL D)
SAINT JULIENS CREEK ANNEX

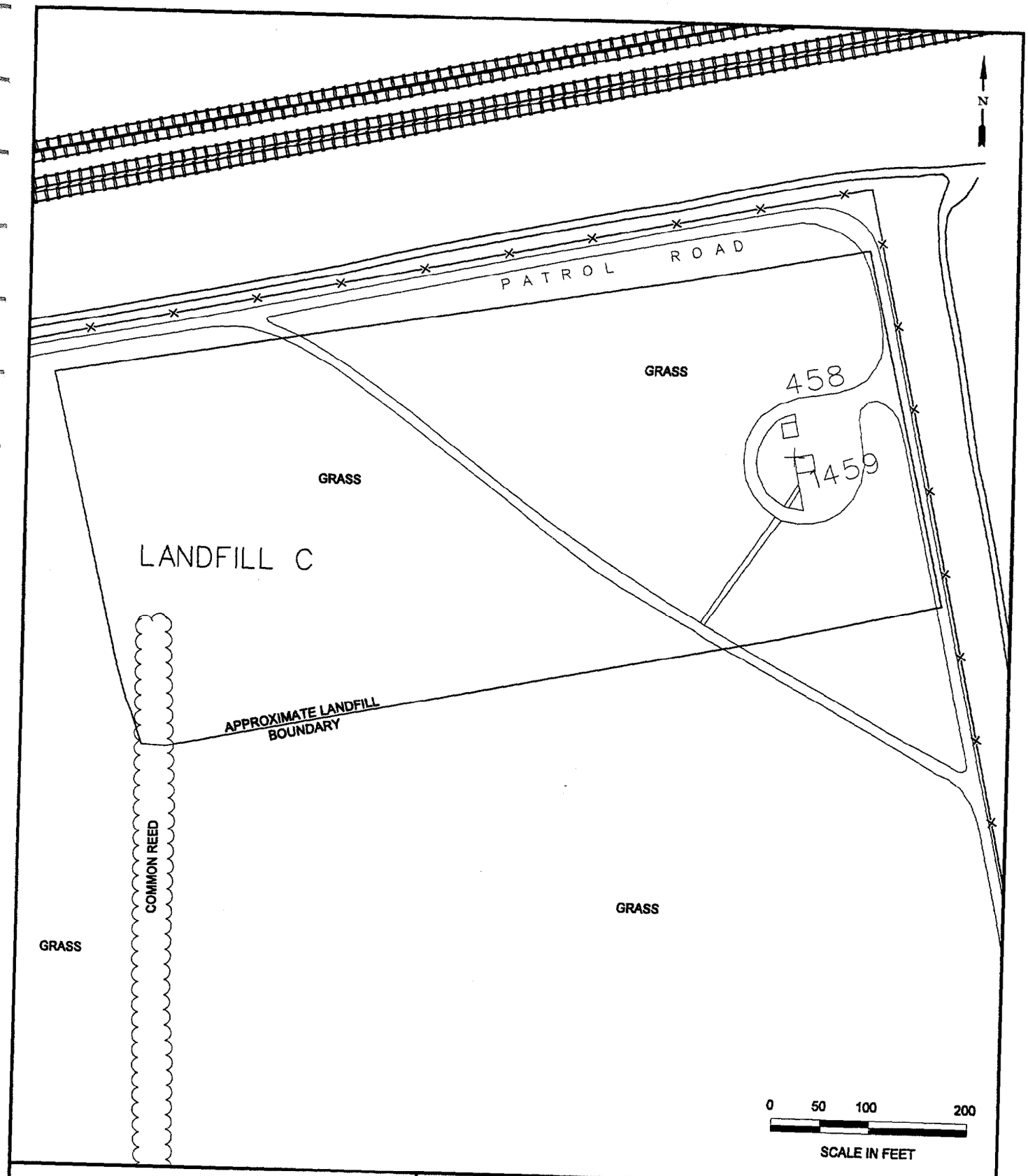
FIGURE 1-1

LEGEND

NUMBER	SITE NAME/DESCRIPTION
3	LANDFILL C
4	LANDFILL D

CDM Federal Programs Corporation

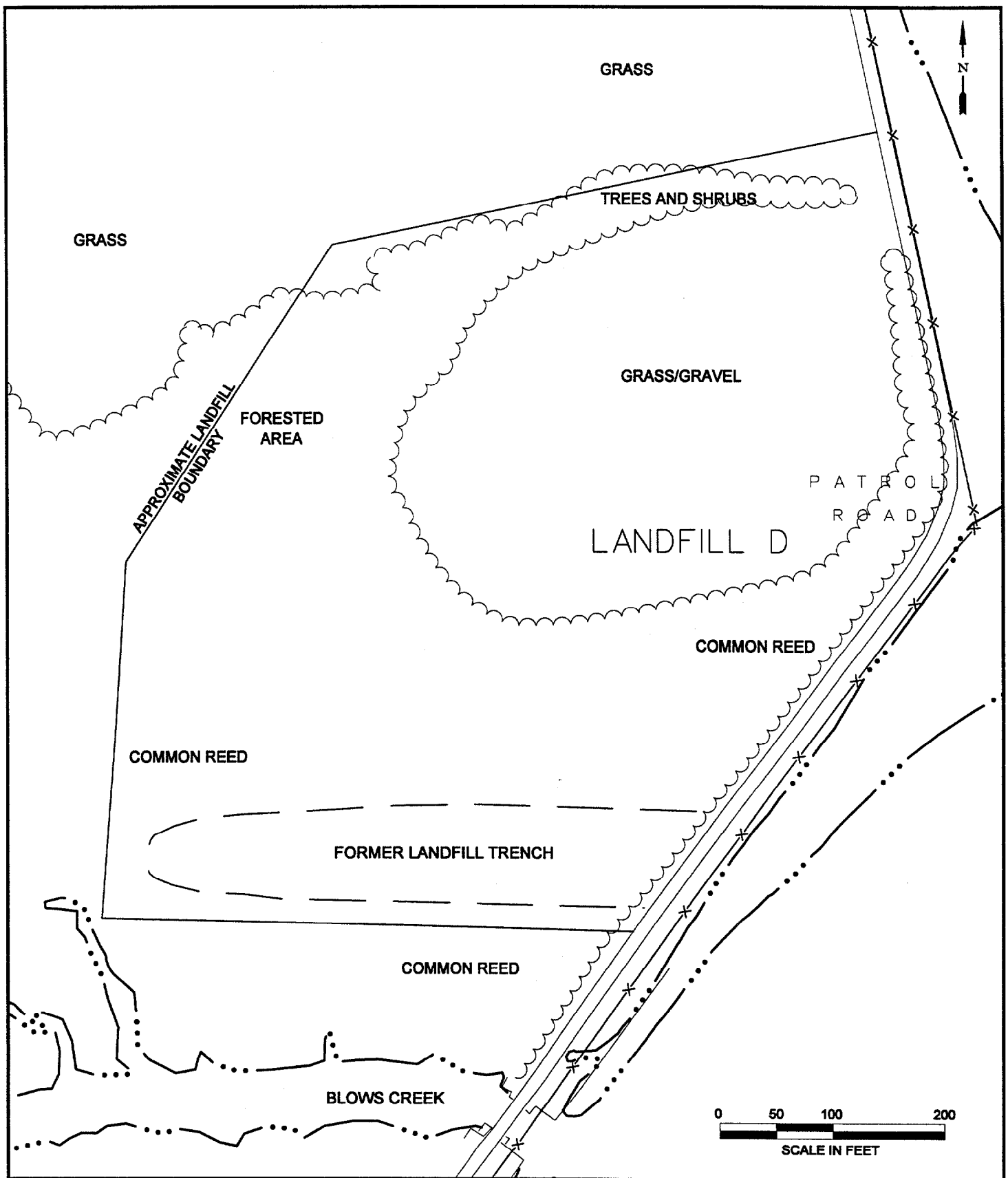
A Subsidiary of Camp Dresser & McKee Inc.



CDM Federal Programs Corporation
A Subsidiary of Camp Dresser & McKee Inc.

LANDFILL C, SITE 3
SAINT JULIENS CREEK ANNEX

FIGURE
2-1

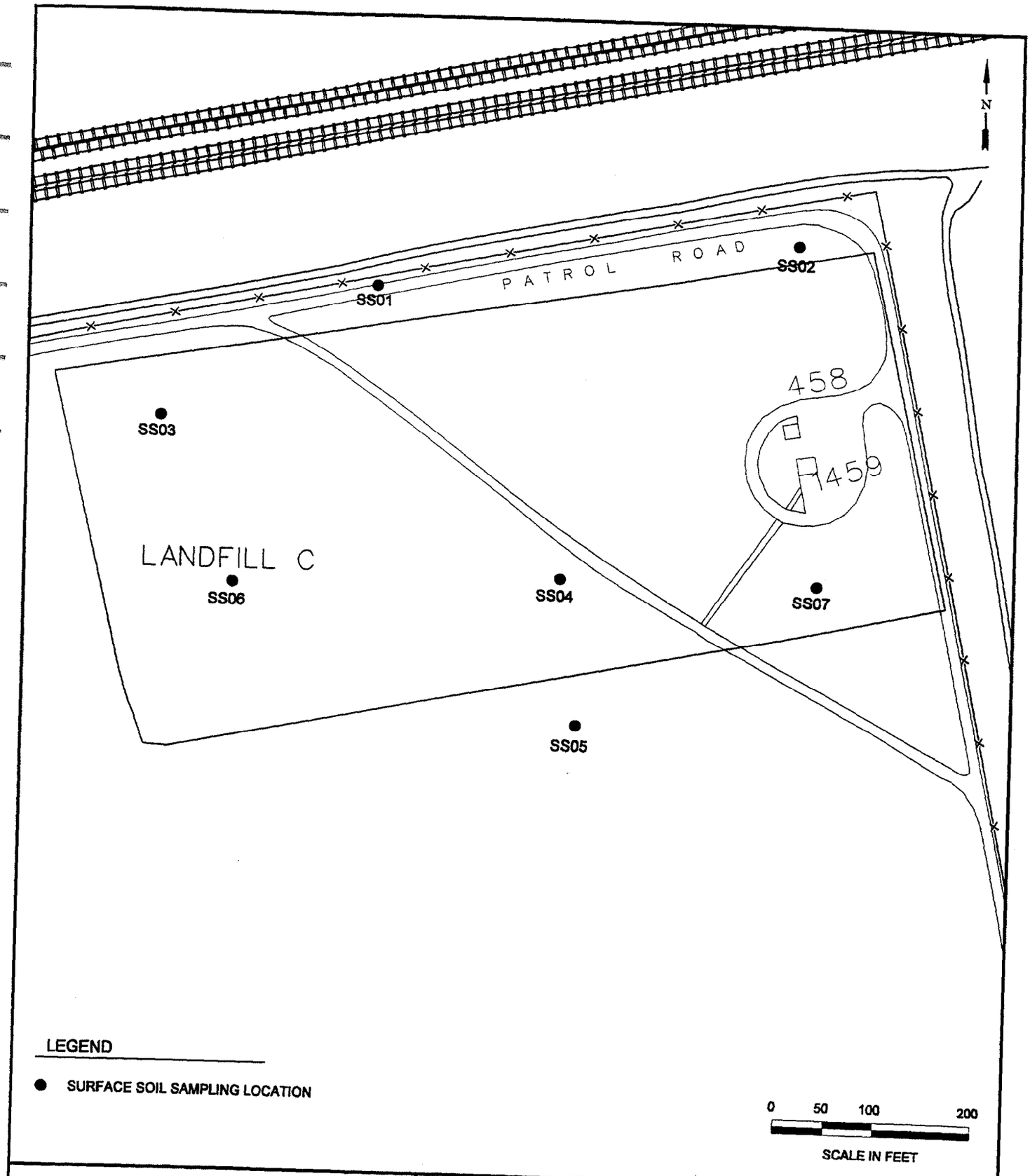


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

LANDFILL D, SITE 4
SAINT JULIENS CREEK ANNEX

FIGURE 2-2

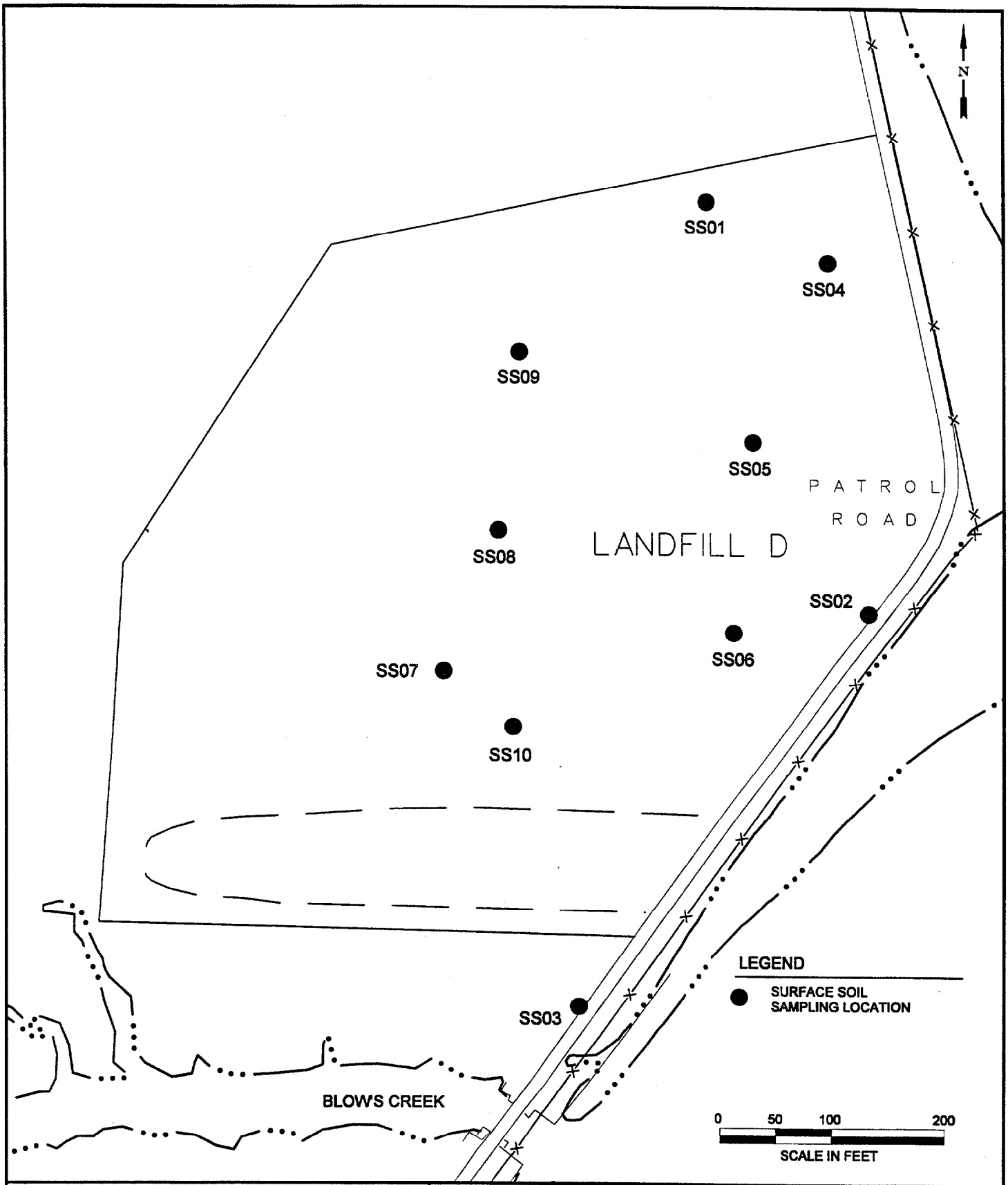


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

SURFACE SOIL SAMPLING LOCATIONS, SITE 3
SAINT JULIENS CREEK ANNEX

FIGURE 2-3

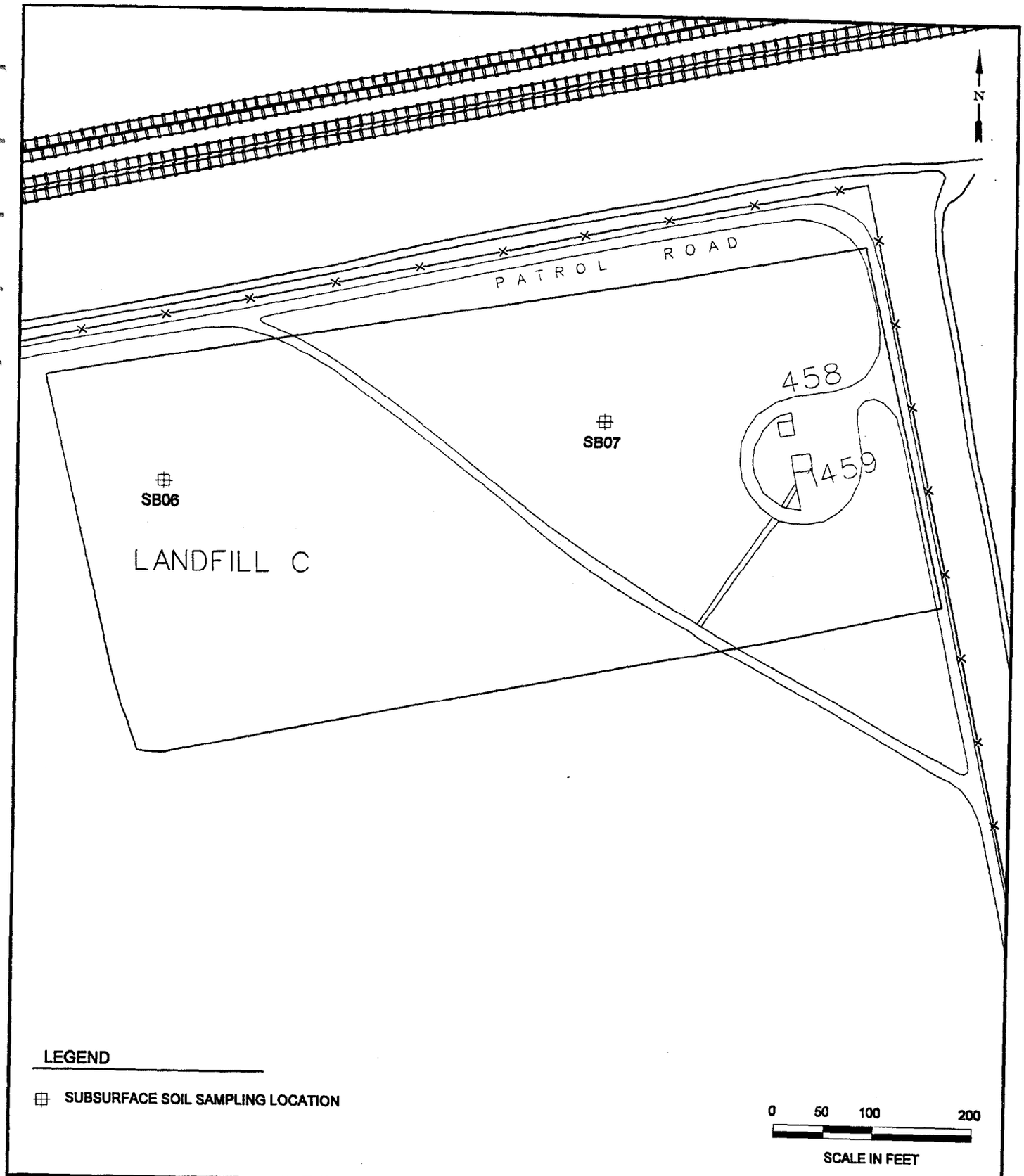


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

SURFACE SOIL SAMPLING
LOCATIONS, SITE 4
SAINT JULIENS CREEK ANNEX

FIGURE
2-4

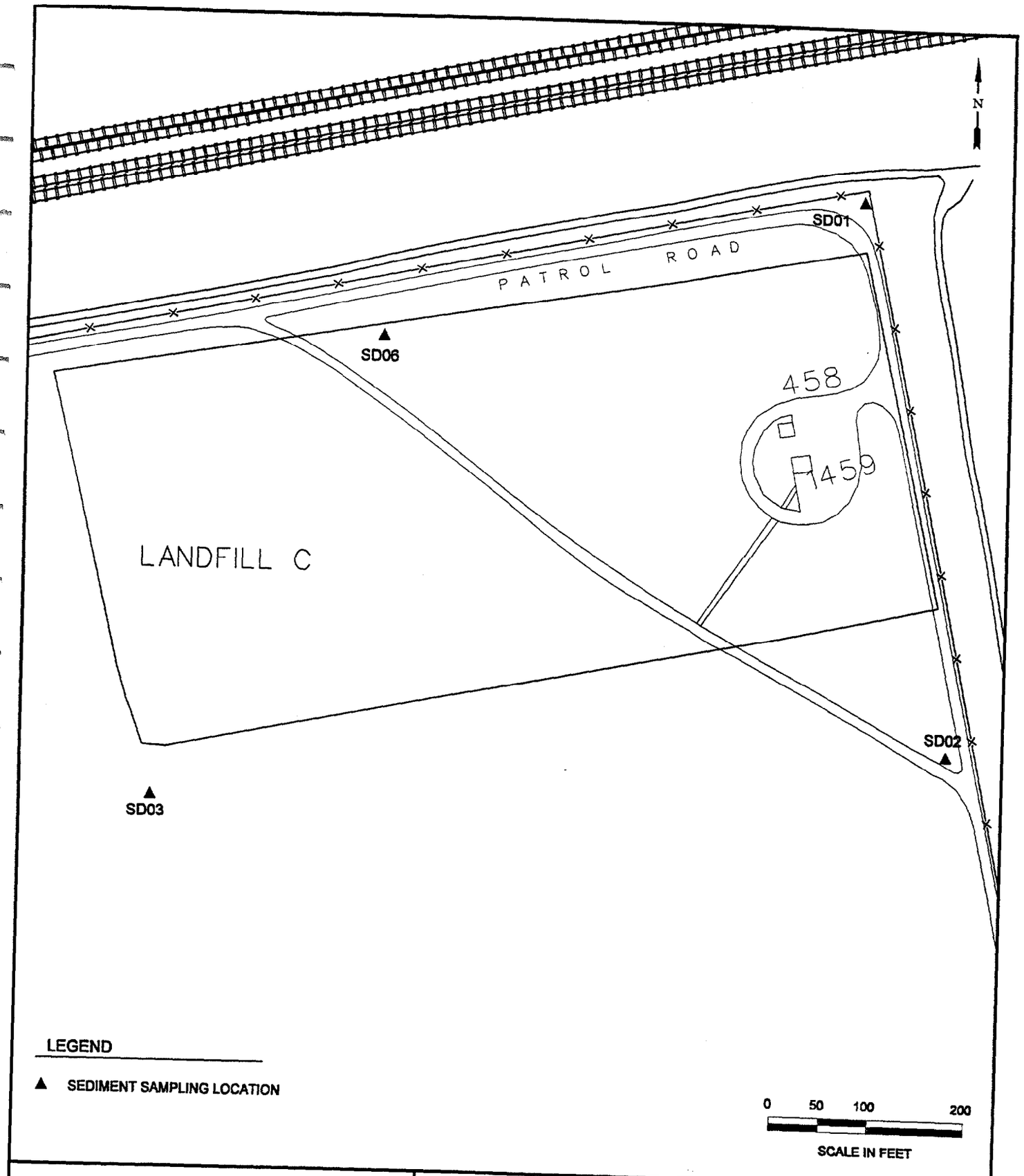


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

ECOLOGICAL SUBSURFACE SOIL SAMPLING LOCATIONS, SITE 3
SAINT JULIENS CREEK ANNEX

FIGURE 2-5

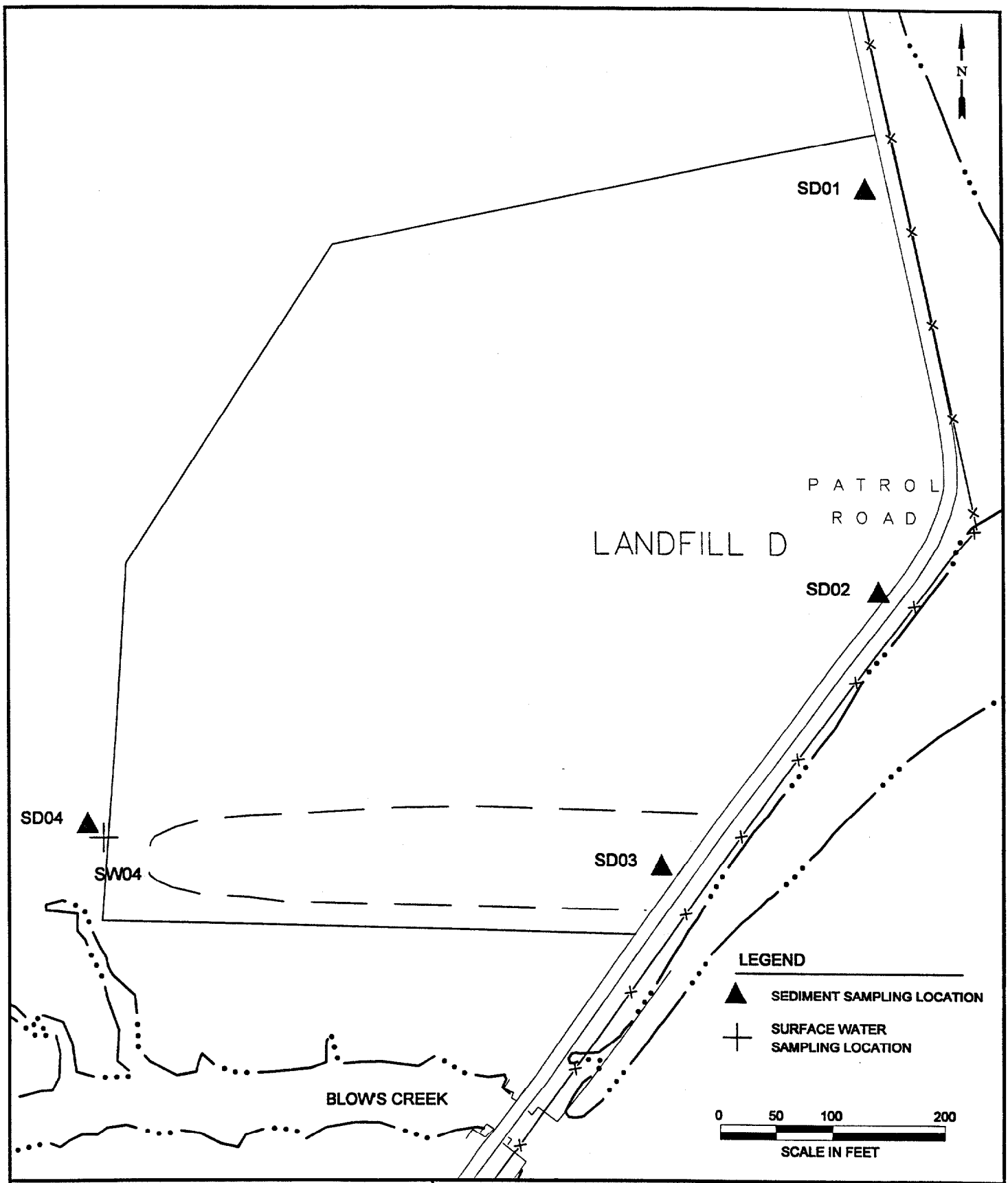


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

SEDIMENT SAMPLING LOCATIONS, SITE 3
SAINT JULIENS CREEK ANNEX

FIGURE 2-6

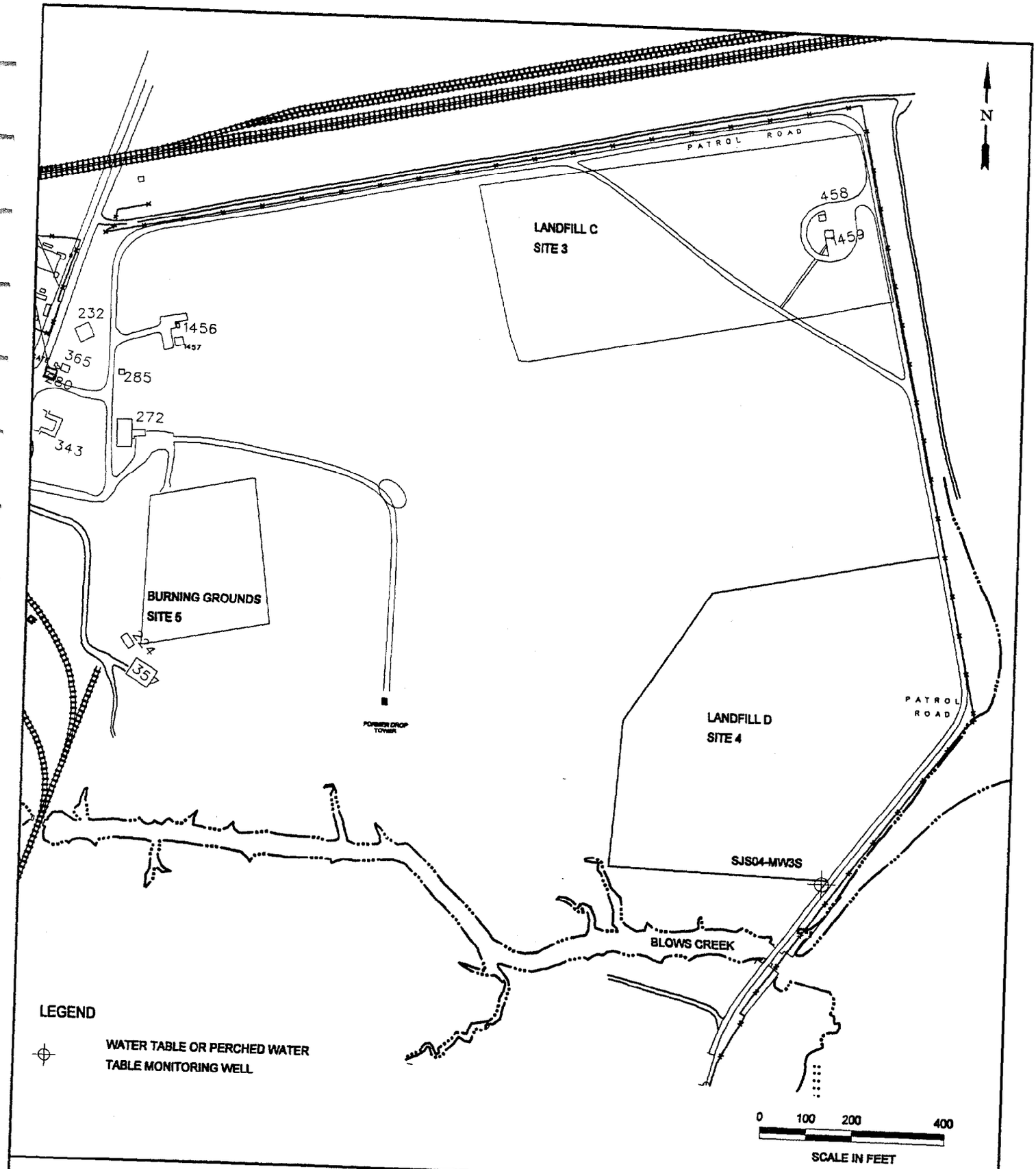


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

SEDIMENT AND SURFACE WATER SAMPLING LOCATIONS, SITE 4
SAINT JULIENS CREEK ANNEX

FIGURE 2-7

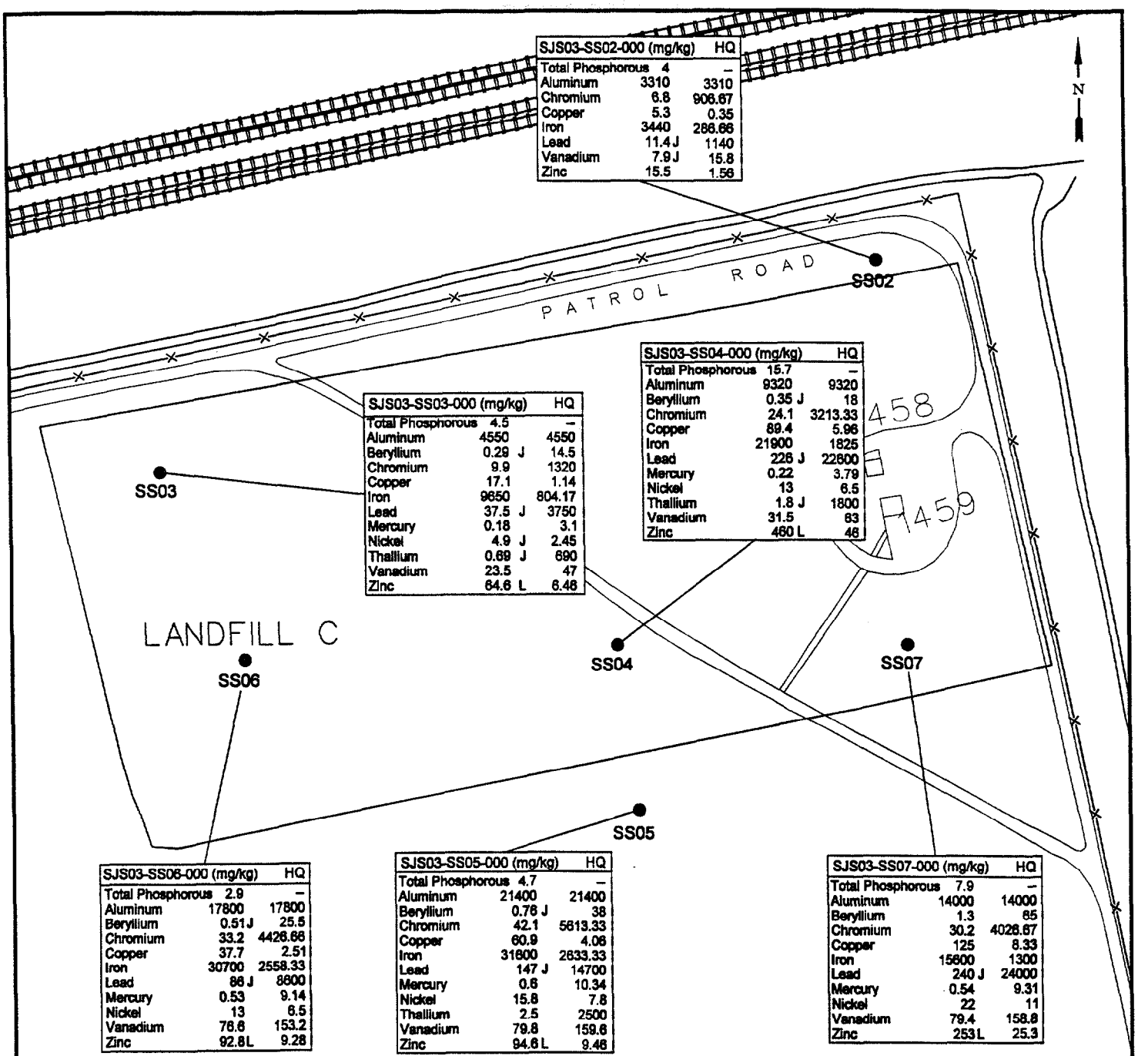


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

MONITORING WELL MOST DOWNGRADIENT OF SITES 3 AND 4
SAINT JULIENS CREEK ANNEX

FIGURE 2-8



SJS03-SS02-000 (mg/kg)		HQ
Total Phosphorous	4	–
Aluminum	3310	3310
Chromium	6.8	906.67
Copper	5.3	0.35
Iron	3440	286.66
Lead	11.4 J	1140
Vanadium	7.9 J	15.8
Zinc	15.5	1.56

SJS03-SS03-000 (mg/kg)		HQ
Total Phosphorous	4.5	–
Aluminum	4550	4550
Beryllium	0.29 J	14.5
Chromium	9.9	1320
Copper	17.1	1.14
Iron	9650	804.17
Lead	37.5 J	3750
Mercury	0.18	3.1
Nickel	4.9 J	2.45
Thallium	0.69 J	690
Vanadium	23.5	47
Zinc	64.6 L	6.46

SJS03-SS04-000 (mg/kg)		HQ
Total Phosphorous	15.7	–
Aluminum	9320	9320
Beryllium	0.35 J	18
Chromium	24.1	3213.33
Copper	89.4	5.96
Iron	21900	1825
Lead	226 J	22600
Mercury	0.22	3.79
Nickel	13	6.5
Thallium	1.8 J	1800
Vanadium	31.5	63
Zinc	460 L	46

SJS03-SS06-000 (mg/kg)		HQ
Total Phosphorous	2.9	–
Aluminum	17800	17800
Beryllium	0.51 J	25.5
Chromium	33.2	4426.66
Copper	37.7	2.51
Iron	30700	2558.33
Lead	86 J	8600
Mercury	0.53	9.14
Nickel	13	6.5
Vanadium	76.6	153.2
Zinc	92.8 L	9.28

SJS03-SS05-000 (mg/kg)		HQ
Total Phosphorous	4.7	–
Aluminum	21400	21400
Beryllium	0.76 J	38
Chromium	42.1	5613.33
Copper	60.9	4.06
Iron	31600	2633.33
Lead	147 J	14700
Mercury	0.6	10.34
Nickel	15.8	7.8
Thallium	2.5	2500
Vanadium	79.8	159.6
Zinc	94.6 L	9.46

SJS03-SS07-000 (mg/kg)		HQ
Total Phosphorous	7.9	–
Aluminum	14000	14000
Beryllium	1.3	85
Chromium	30.2	4026.67
Copper	125	8.33
Iron	15600	1300
Lead	240 J	24000
Mercury	0.54	9.31
Nickel	22	11
Vanadium	79.4	158.8
Zinc	253 L	25.3

LEGEND

● SURFACE SOIL SAMPLING LOCATION

0 50 100 200

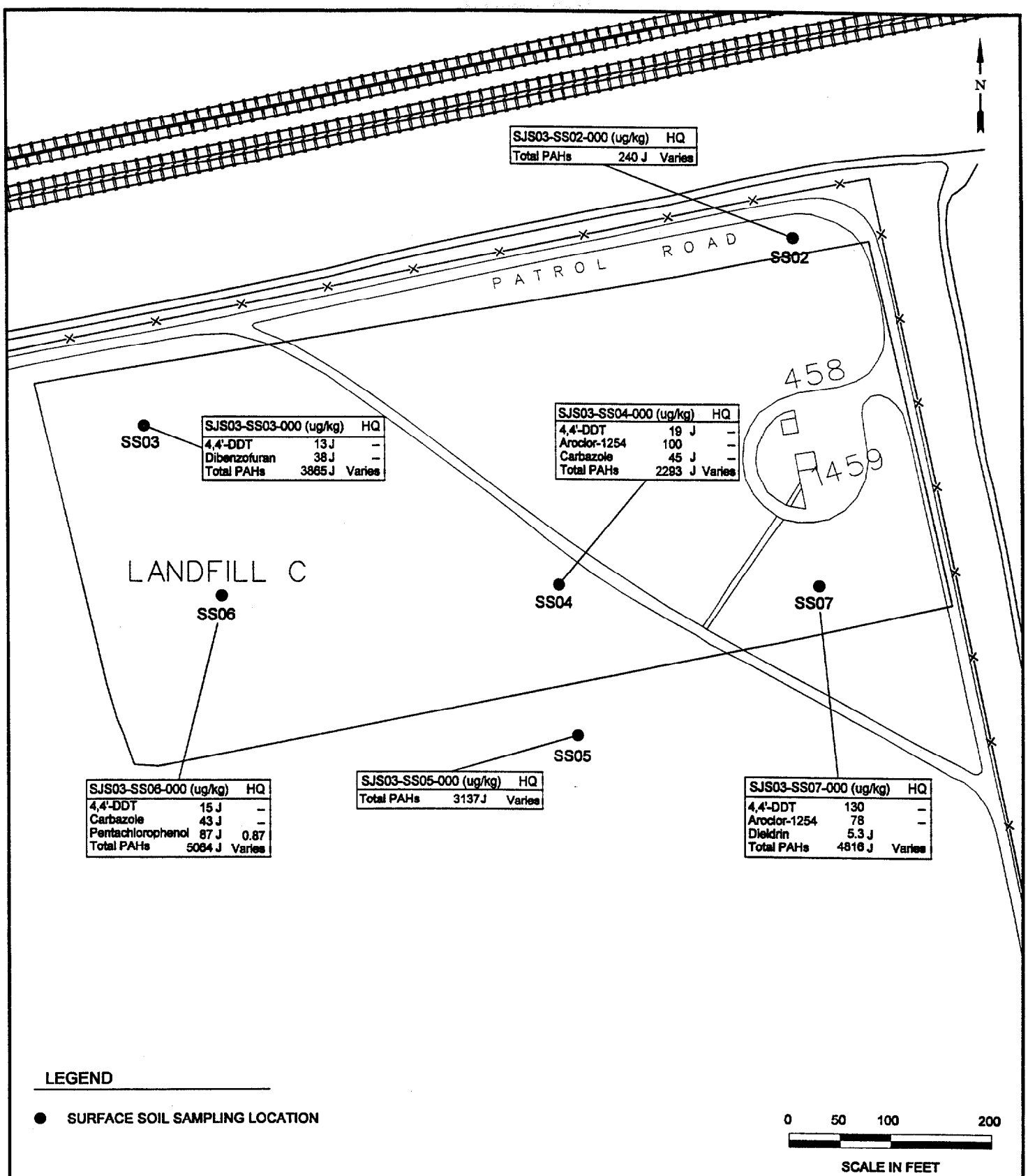
SCALE IN FEET

CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF INORGANIC COPCs, SURFACE SOIL, SITE 3
SAINT JULIENS CREEK ANNEX

FIGURE C-1



LEGEND

● SURFACE SOIL SAMPLING LOCATION

0 50 100 200

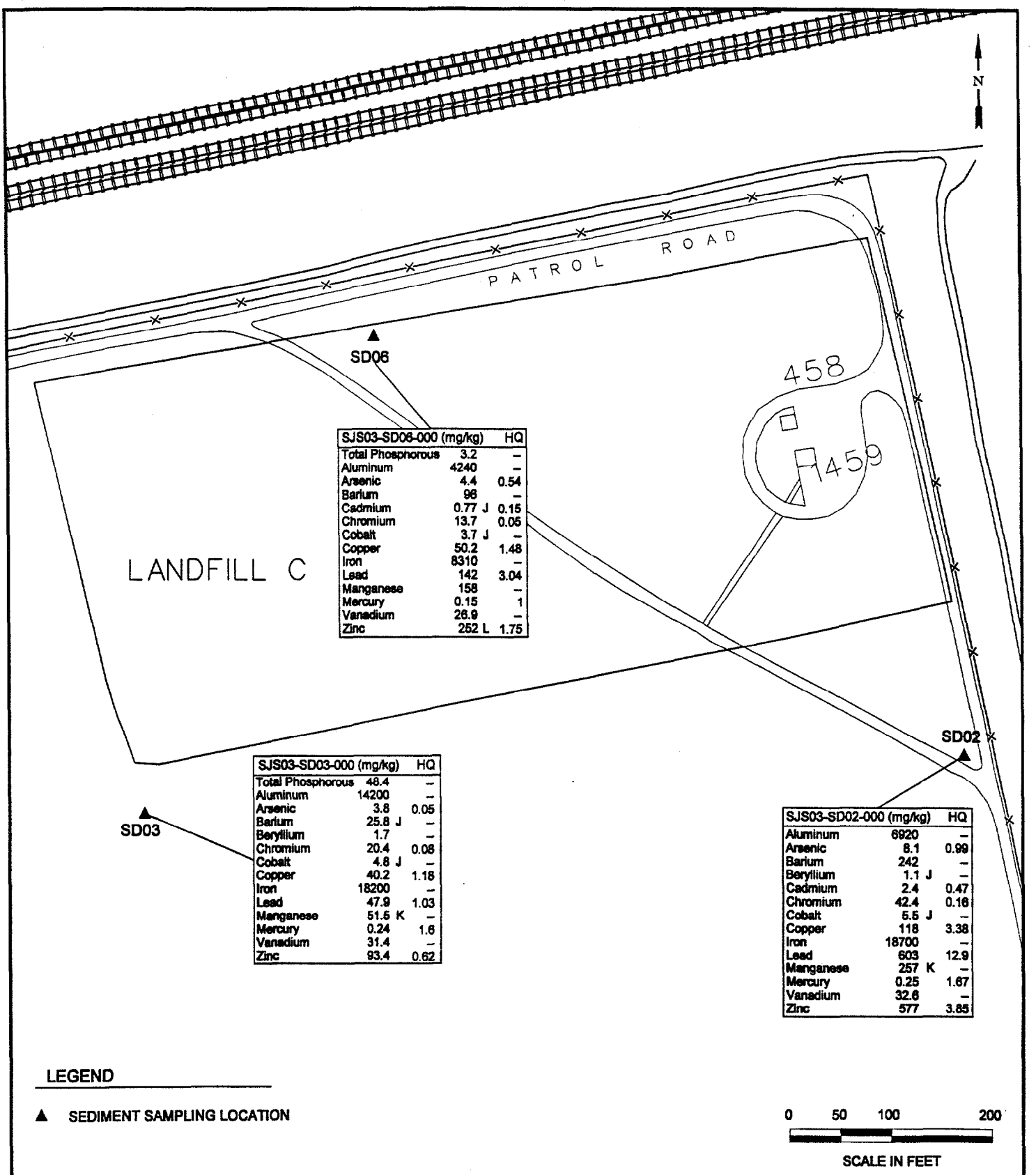
SCALE IN FEET

CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF ORGANIC COPCs, SURFACE SOIL, SITE 3
SAINT JULIENS CREEK ANNEX

FIGURE C-2



SJS03-SD06-000 (mg/kg)		HQ
Total Phosphorous	3.2	–
Aluminum	4240	–
Arsenic	4.4	0.54
Barium	96	–
Cadmium	0.77 J	0.15
Chromium	13.7	0.05
Cobalt	3.7 J	–
Copper	50.2	1.48
Iron	8310	–
Lead	142	3.04
Manganese	158	–
Mercury	0.15	1
Vanadium	26.9	–
Zinc	252 L	1.75

SJS03-SD03-000 (mg/kg)		HQ
Total Phosphorous	48.4	–
Aluminum	14200	–
Arsenic	3.8	0.05
Barium	25.8 J	–
Beryllium	1.7	–
Chromium	20.4	0.08
Cobalt	4.8 J	–
Copper	40.2	1.18
Iron	18200	–
Lead	47.9	1.03
Manganese	51.6 K	–
Mercury	0.24	1.6
Vanadium	31.4	–
Zinc	93.4	0.62

SJS03-SD02-000 (mg/kg)		HQ
Aluminum	6920	–
Arsenic	8.1	0.99
Barium	242	–
Beryllium	1.1 J	–
Cadmium	2.4	0.47
Chromium	42.4	0.16
Cobalt	5.5 J	–
Copper	118	3.38
Iron	18700	–
Lead	603	12.9
Manganese	257 K	–
Mercury	0.25	1.67
Vanadium	32.6	–
Zinc	577	3.85

LEGEND

▲ SEDIMENT SAMPLING LOCATION

0 50 100 200

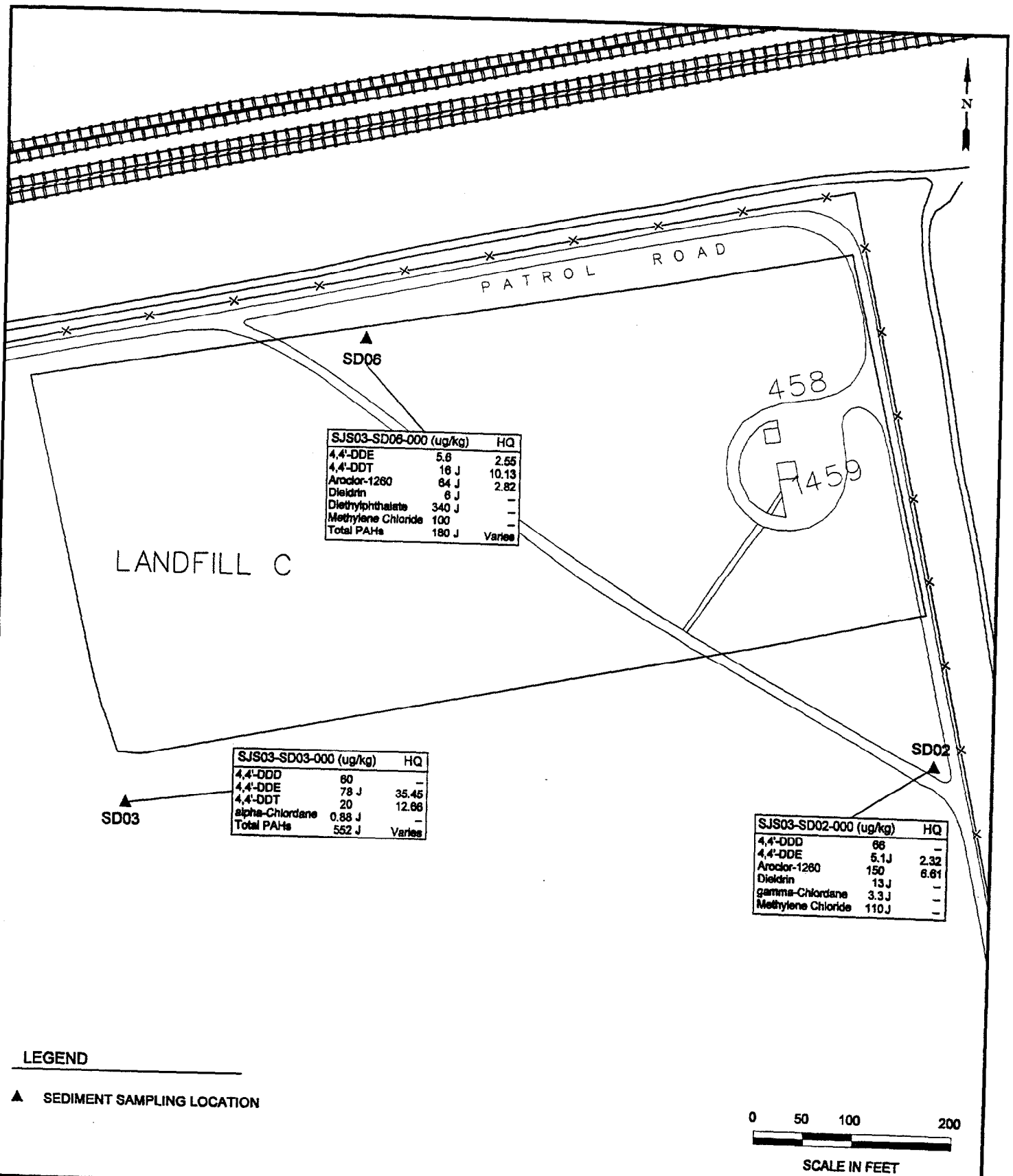
SCALE IN FEET

CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF INORGANIC COPCs, SEDIMENT, SITE 3
SAINT JULIENS CREEK ANNEX

FIGURE C-3

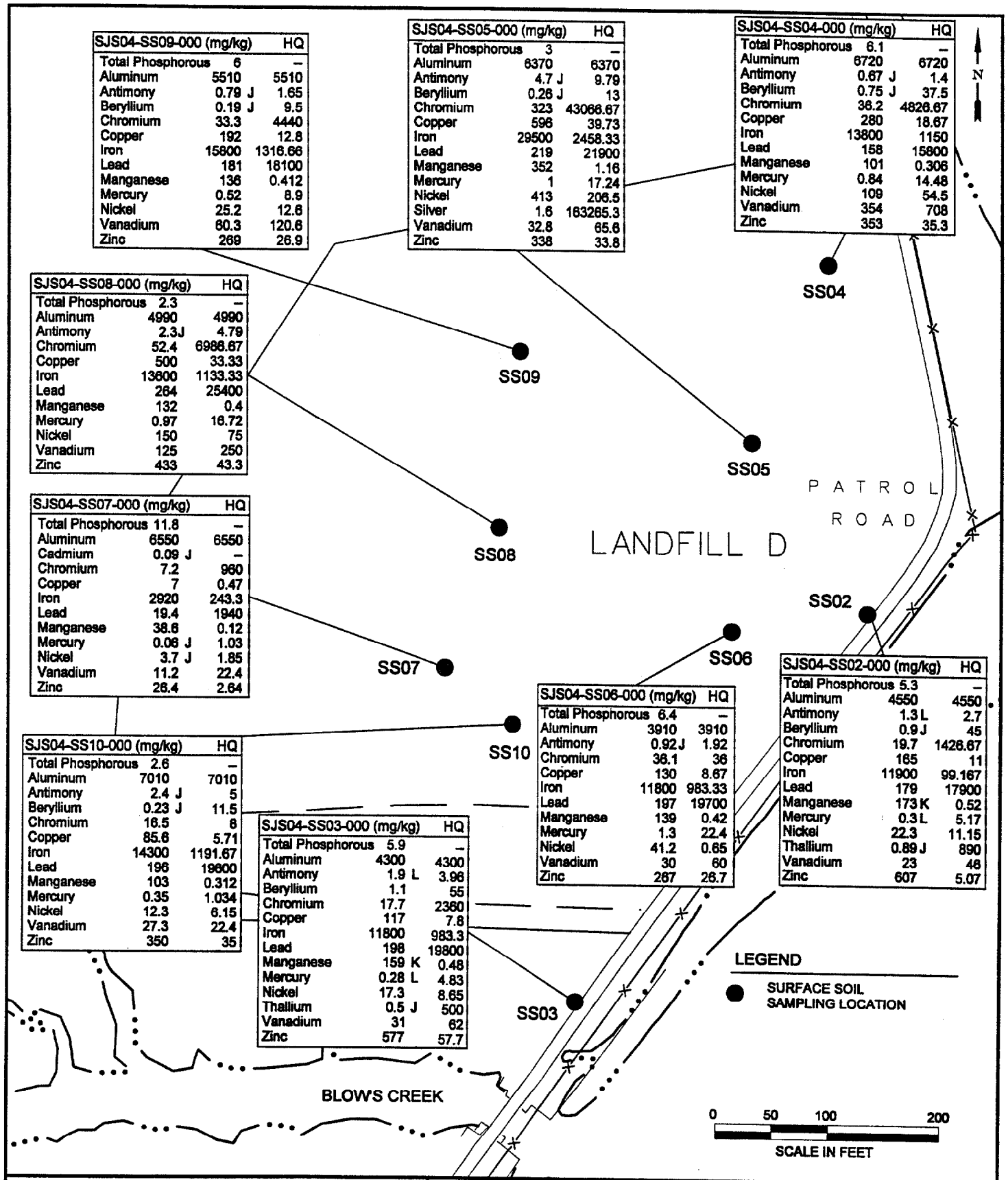


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF ORGANIC COPCs, SEDIMENT, SITE 3
SAINT JULIENS CREEK ANNEX

FIGURE C-4

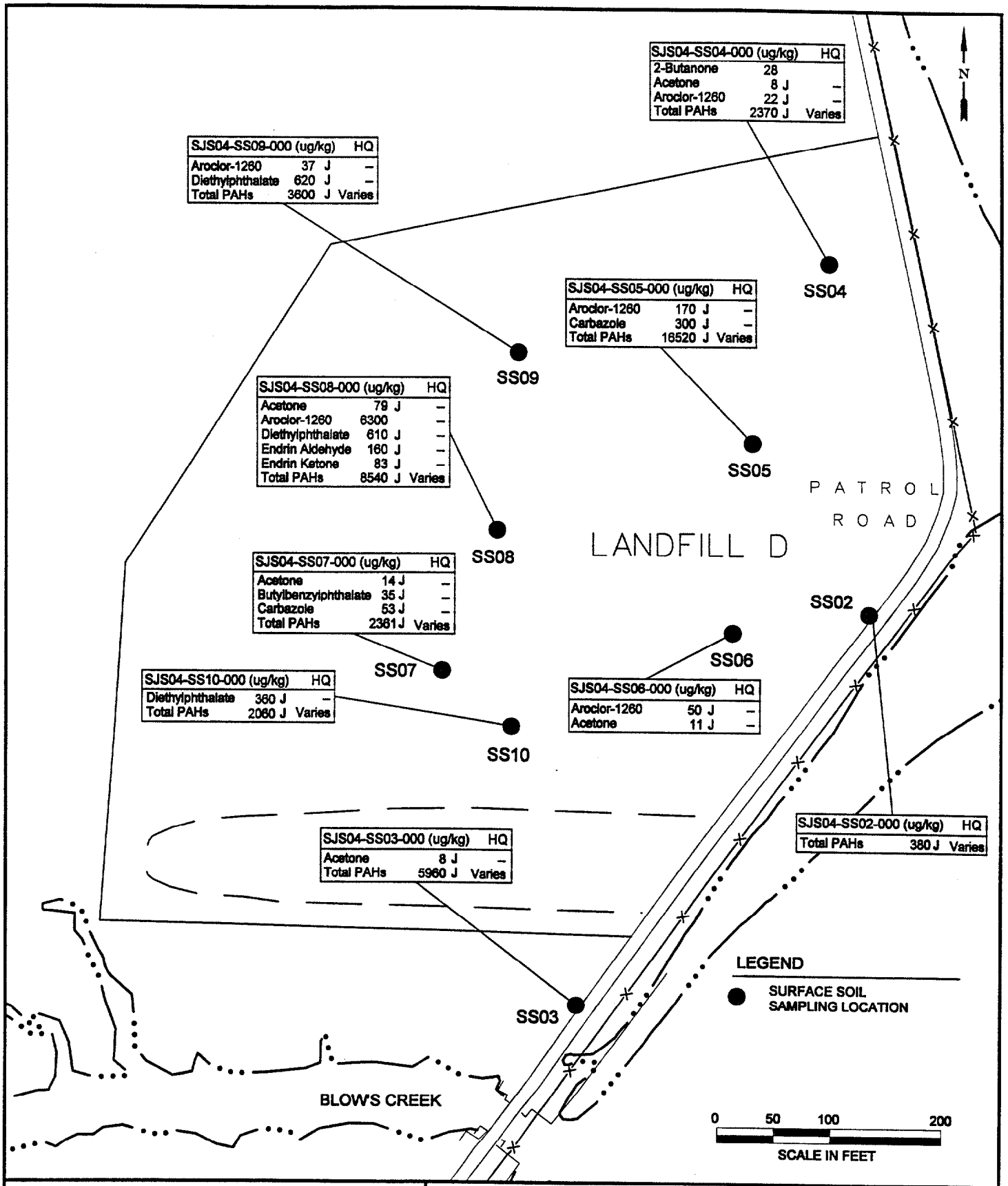


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF INORGANIC COPCs, SURFACE SOIL, SITE 4
SAINT JULIENS CREEK ANNEX

FIGURE C-5

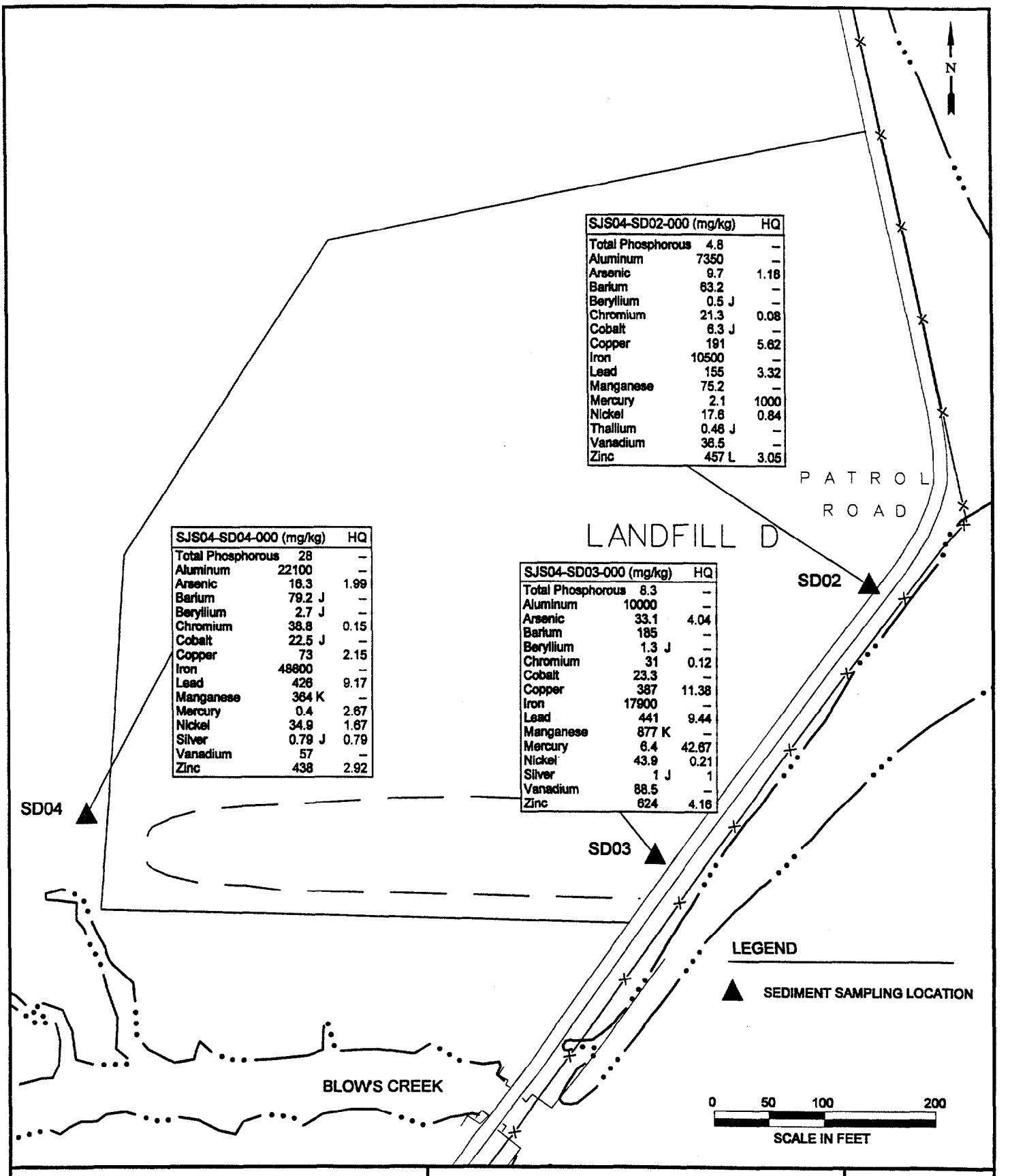


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF ORGANIC CPOCs, SURFACE SOIL, SITE 4
SAINT JULIENS CREEK ANNEX

FIGURE C-6

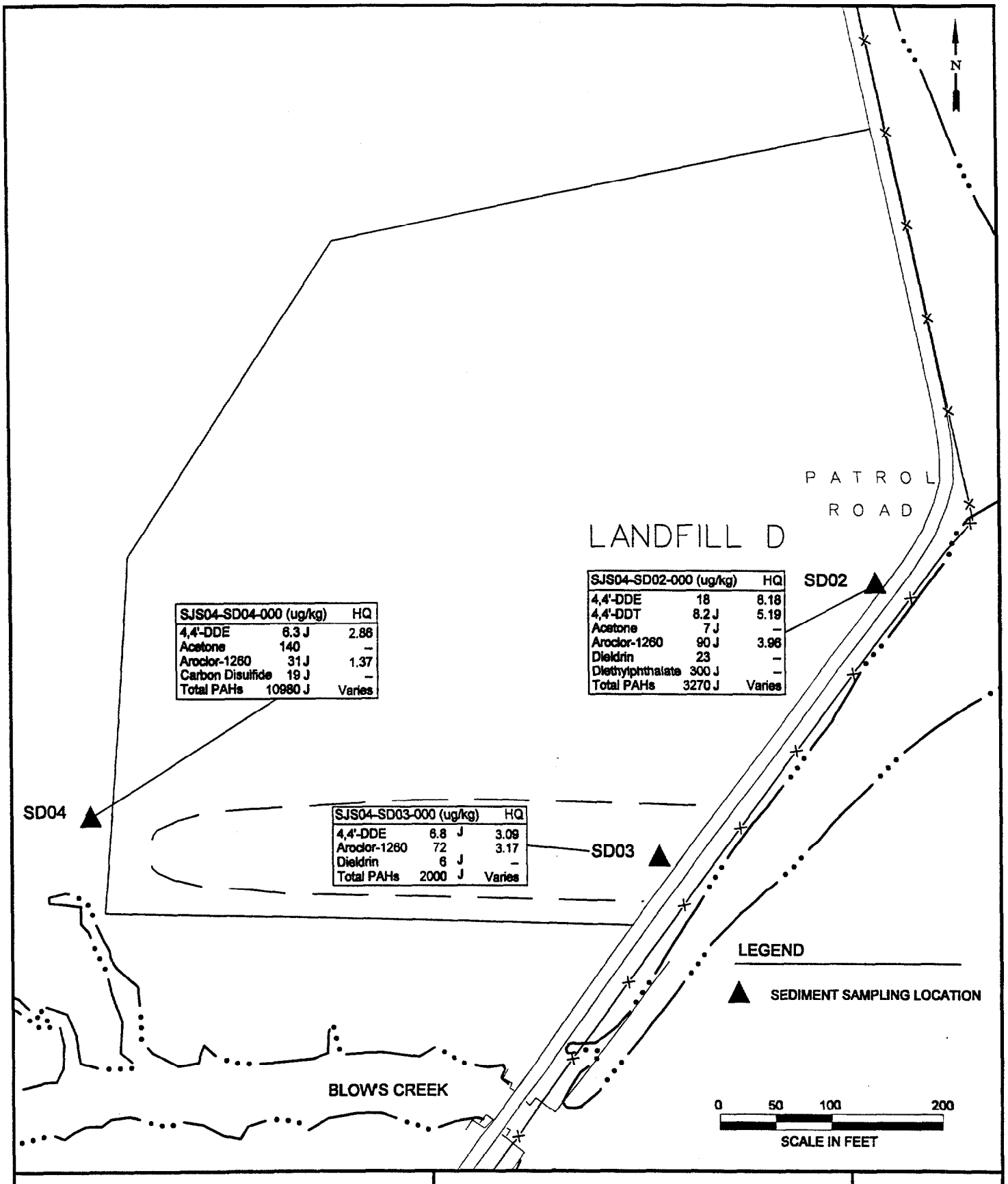


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF INORGANIC COPCs, SEDIMENT, SITE 4
SAINT JULIENS CREEK ANNEX

FIGURE C-7

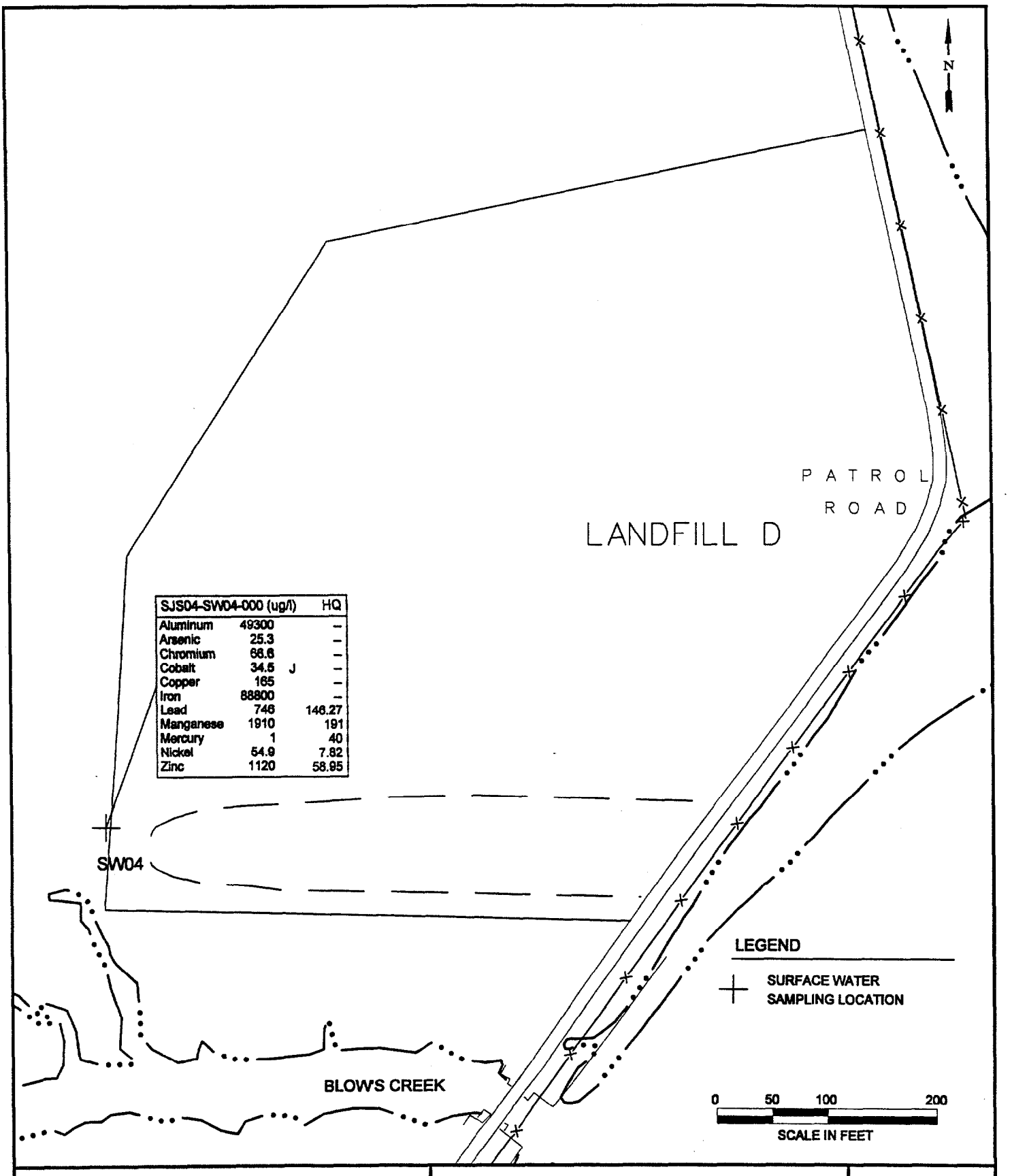


CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF ORGANIC COPCs, SEDIMENT, SITE 4
SAINT JULIENS CREEK ANNEX

FIGURE C-8



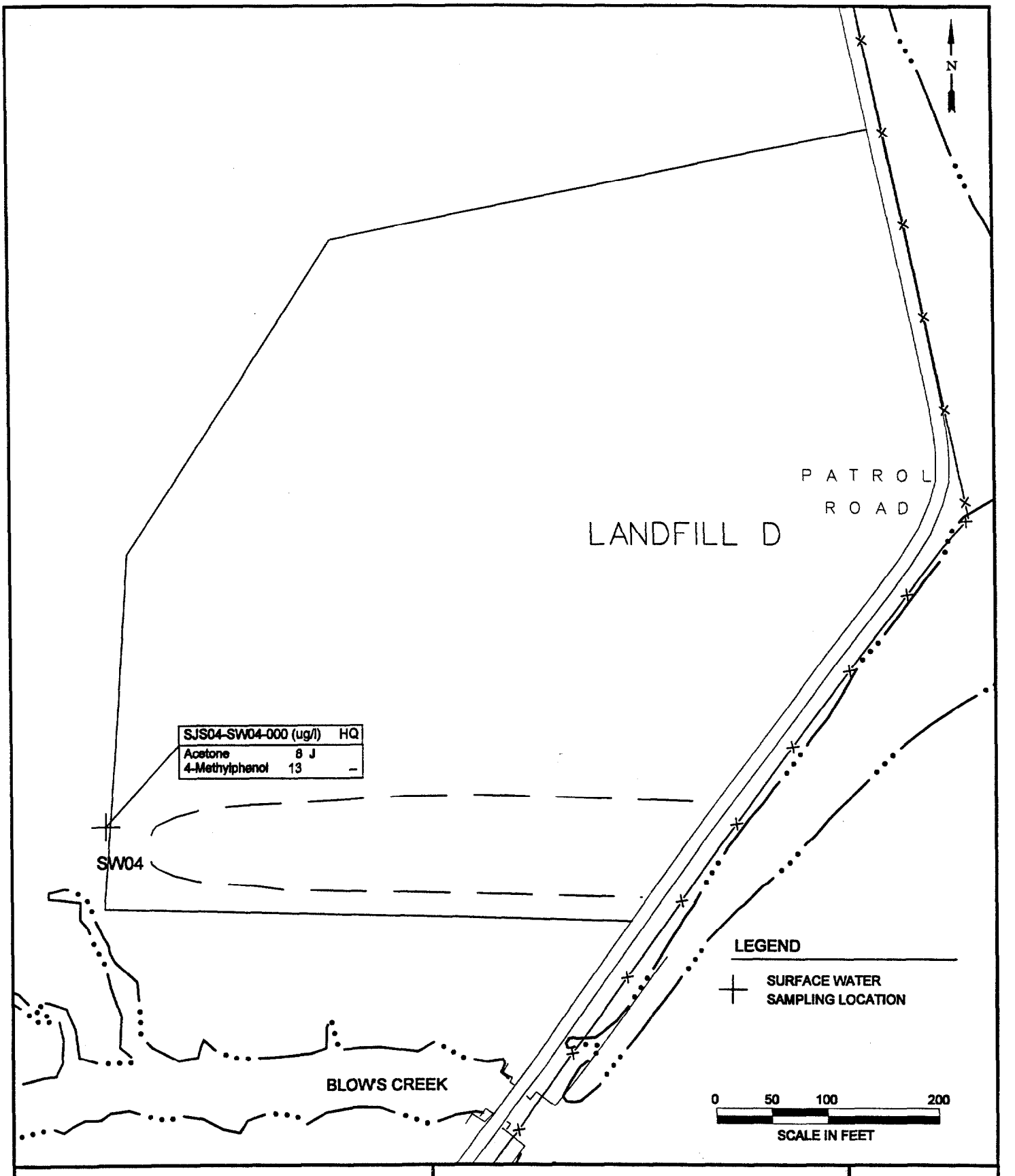
SJS04-SW04-000 (ug/l)			HQ
Aluminum	49300		–
Arsenic	25.3		–
Chromium	66.6		–
Cobalt	34.5	J	–
Copper	165		–
Iron	88800		–
Lead	746		146.27
Manganese	1910		191
Mercury	1		40
Nickel	54.9		7.82
Zinc	1120		58.95

CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF INORGANIC COPCs, SURFACE WATER, SITE 4
SAINT JULIENS CREEK ANNEX

FIGURE C-9



CDM Federal Programs Corporation

A Subsidiary of Camp Dresser & McKee Inc.

DISTRIBUTION OF ORGANIC COPCs, SURFACE WATER, SITE 4
SAINT JULIENS CREEK ANNEX

FIGURE C-10

Table 2 - 1
Ecological Screening Values for Site 3 Surface Soil
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG Hazard Quotient
General Chemistry (mg/kg)	Total Phosphorous	6 / 6	1.2 - 19	114	25.13	--	--
TAL Inorganics (mg/kg)	Aluminum	6 / 6	8.27 - 10.81	21400	11730.00	1	21400.00
	Arsenic	6 / 6	0.56 - 0.74	13.9	9.17	328	0.04
	Barium	6 / 6	0.38 - 0.49	211	108.45	440	0.48
	Beryllium	5 / 6	0.19 - 0.25	1.3	0.55	0.02	65.00
	Cadmium	3 / 6	0.09 - 0.12	0.47	0.22	2.5	0.19
	Chromium	6 / 6	1.32 - 1.72	42.1	24.50	0.0075	5613.33
	Cobalt	5 / 6	1.5 - 1.97	6.7	4.94	100	0.07
	Copper	6 / 6	1.13 - 1.47	125	55.90	15	8.33
	Iron	6 / 6	3.2 - 4.18	34000	19365.00	12	2833.33
	Lead	6 / 6	0.19 - 0.25	240	128.15	0.01	24000.00
	Manganese	6 / 6	0.38 - 0.49	246	126.17	330	0.75
	Mercury	5 / 6	0.05 - 0.06	0.6	0.35	0.058	10.34
	Nickel	5 / 6	1.32 - 1.72	22	11.56	2	11.00
	Selenium	2 / 6	0.56 - 0.74	0.74	0.44	1.8	0.41
	Thallium	3 / 4	0.38 - 0.49	2.5	1.30	0.001	2500.00
	Vanadium	6 / 6	1.69 - 2.21	79.8	49.78	0.05	1596.00
	Zinc	6 / 6	0.94 - 1.23	460	163.70	10	46.00
TCL Pesticides/PCBs (ug/kg)	4,4'-DDD	4 / 6	3.4 - 4.3	43	11.23	100	0.43
	4,4'-DDE	4 / 6	3.4 - 4.3	34	12.38	100	0.34
	4,4'-DDT	4 / 6	3.4 - 4.3	130	30.31	100	1.30
	Aroclor-1254	2 / 6	34 - 54	100	42.50	100	1.00
	Dieldrin	1 / 6	3.4 - 5.4	5.3	2.47	100	0.05
TCL Semivolatiles (ug/kg)	Acenaphthylene	4 / 6	340 - 430	86	101.50	100	0.86
	Anthracene	5 / 6	340 - 430	120	89.67	100	1.20
	Benzo(a)Anthracene	6 / 6	340 - 430	390	244.33	100	3.90
	Benzo(a)Pyrene	6 / 6	340 - 430	350	239.67	100	3.50
	Benzo(b)Fluoranthene	6 / 6	340 - 430	1500	805.33	100	15.00
	Benzo(g,h,i)Perylene	5 / 6	340 - 430	340	203.33	100	3.40
	Benzo(k)Fluoranthene	5 / 6	340 - 430	460	306.67	100	4.60
	Carbazole	2 / 6	340 - 430	130	155.00	--	--
	Chrysene	6 / 6	340 - 430	730	436.83	100	7.30
	Dibenzofuran	2 / 6	340 - 430	58	141.83	--	--

Table 2 - 1
Ecological Screening Values for Site 3 Surface Soil
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG Hazard Quotient
	Diethylphthalate	1 / 6	340 - 430	79	171.50	--	--
	Fluoranthene	6 / 6	340 - 430	640	407.17	100	6.40
	Fluorene	1 / 6	340 - 430	48	163.83	100	0.48
	Indeno(1,2,3-cd)Pyrene	5 / 6	340 - 430	440	246.67	100	4.40
	Naphthalene	3 / 6	340 - 430	130	136.17	100	1.30
	Pentachlorophenol	1 / 6	840 - 1100	160	418.33	100	1.60
	Phenanthrene	5 / 6	340 - 430	420	206.67	100	4.20
	Pyrene	6 / 6	340 - 430	560	304.00	100	5.60
TCL Volatile (ug/kg)	Tetrachloroethene	1 / 6	10 - 12	2	5.17	300	0.01
	Toluene	1 / 6	10 - 13	2	5.00	100	0.02

Sample locations represented: SJS03-SS02-000, SJS03-SS03-000, SJS03-SS04-000, SJS03-SS05-000, SJS03-SS06-000/00P, SJS03-SS07-000.

Table 2 - 2
Ecological Screening Values for Site 4 Surface Soil
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG Hazard Quotient
General Chemistry (mg/kg)	Total Phosphorous	9 / 9	1.2 - 1.3	11.8	5.49	---	---
TAL Inorganics (mg/kg)	Aluminum	9 / 9	6.63 - 8.51	7010	5545.56	1	7010.00
	Antimony	8 / 9	0.31 - 0.39	9.1	2.17	0.48	18.96
	Arsenic	9 / 9	0.46 - 0.58	10.9	4.69	328	0.03
	Barium	9 / 9	0.31 - 0.39	105	69.19	440	0.24
	Beryllium	6 / 9	0.15 - 0.19	1.1	0.41	0.02	55.00
	Cadmium	7 / 9	0.08 - 0.1	0.88	0.26	2.5	0.35
	Chromium	9 / 9	1.07 - 1.35	680	99.9	0.0075	90666.67
	Cobalt	8 / 9	1.23 - 1.55	10.6	5.18	100	0.11
	Copper	9 / 9	0.9 - 1.16	596	230.29	15	39.73
	Iron	9 / 9	2.56 - 3.29	29500	13935.56	12	2458.33
	Lead	9 / 9	0.15 - 0.19	264	181.71	0.01	26400.00
	Manganese	9 / 9	0.3 - 0.39	352	148.18	330	1.07
	Mercury	9 / 9	0.04 - 0.05	1.3	0.64	0.058	22.41
	Nickel	9 / 9	1.07 - 1.35	546	103	2	273.00
	Silver	1 / 2	0.15 - 0.19	1.6	0.8475	0.0000098	163265.31
	Thallium	2 / 3	0.31 - 0.39	0.89	0.515	0.001	890.00
	Vanadium	9 / 9	1.36 - 1.74	354	77.18	0.05	7080.00
	Zinc	9 / 9	0.75 - 0.97	607	357.82	10	60.70
TCL Pesticides/PCBs (ug/kg)	4,4'-DDD	4 / 9	3.3 - 21	15	5.11	100	0.15
	4,4'-DDE	4 / 9	3.3 - 21	37	8.14	100	0.37
	4,4'-DDT	7 / 9	3.3 - 21	40	16.16	100	0.40
	alpha-Chlordane	4 / 9	1.7 - 11	42	7.69	100	0.42
	Aroclor-1260	5 / 9	33 - 1700	6300	741.72	100	63.00
	Dieldrin	6 / 9	3.3 - 21	72	15.46	100	0.72
	Endrin	1 / 9	3.3 - 21	3.9	3.69	100	0.04
	Endrin Aldehyde	1 / 9	3.3 - 21	160	20.28	---	---
	Endrin Ketone	1 / 9	3.3 - 21	83	11.72	---	---
	gamma-Chlordane	4 / 9	1.7 - 11	33	6.12	100	0.33
TCL Semivolatiles (ug/kg)	Acenaphthene	1 / 9	340 - 40000	54	2836	100	0.54
	Anthracene	2 / 9	340 - 40000	200	2766	100	2.00
	Benzo(a)Anthracene	8 / 9	340 - 40000	1400	2669.89	100	14.00
	Benzo(a)Pyrene	8 / 9	340 - 40000	1300	2613.89	100	13.00
	Benzo(b)Fluoranthene	8 / 9	340 - 40000	1900	2773.22	100	19.00
	Benzo(g,h,i)Perylene	6 / 9	340 - 40000	770	2635	100	7.70
	Benzo(k)Fluoranthene	6 / 9	340 - 40000	770	2634.11	100	7.70
	Butylbenzylphthalate	1 / 9	340 - 40000	35	2833.89	---	---
	Carbazole	2 / 9	340 - 40000	300	2752.56	---	---
	Chrysene	8 / 9	340 - 40000	1800	2738.78	100	18.00
	Diethylphthalate	3 / 9	340 - 40000	620	2742.22	---	---
	Fluoranthene	8 / 9	340 - 40000	3300	3139.89	100	33.00
	Fluorene	1 / 9	340 - 40000	47	2835.22	100	0.47
	Indeno(1,2,3-cd)Pyrene	6 / 9	340 - 40000	750	2616.22	100	7.50
	Phenanthrene	7 / 9	340 - 40000	2200	2851.11	100	22.00

Table 2 - 2
Ecological Screening Values for Site 4 Surface Soil
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG Hazard Quotient
	Pyrene	7 / 9	340 - 40000	3100	3031.78	100	31.00
TCL Volatile (ug/kg)	2-Butanone	2 / 9	340 - 40000	28	8.61	---	---
	4-Methyl-2-Pentanone	1 / 9	340 - 40000	2	5.06	100000	0.00
	Acetone	6 / 9	340 - 40000	79	16.33	---	---
	Toluene	2 / 9	340 - 40000	2	4.61	100	0.02

Sample locations represented: SJS04-SS02-000, SJS04-SS03-000, SJS04-SS04-000, SJS04-SS05-000/000P, SJS04-SS06-000, SJS04-SS07-000, SJS04-SS08-000, SJS04-SS09-000, SJS04-SS10-000.

Table 2-3
Site 3 Subsurface Soil Screening
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Concentration	Average Concentration	BTAG Value	BTAG Hazard Quotient
General Chemistry (mg/kg	Total Phosphorous (as P)	2 / 2	1.7 - 1.8	9.6	6.50	---	---
TAL Inorganics (mg/kg)	Aluminum	2 / 2	11.47 - 11.97	17100	12645.00	1	17100.00
	Arsenic	2 / 2	0.78 - 0.82	12.3	10.05	328	0.04
	Barium	2 / 2	0.52 - 0.54	67.7	48.45	440	0.15
	Beryllium	2 / 2	0.26 - 0.27	0.51	0.50	0.02	25.50
	Chromium	2 / 2	1.82 - 1.9	34.4	25.15	0.0075	4586.67
	Cobalt	2 / 2	2.08 - 2.18	7.7	6.85	100	0.08
	Copper	1 / 1	1.56 - 1.56	43.5	43.50	15	2.90
	Iron	2 / 2	4.43 - 4.63	34300	25600.00	12	2858.33
	Lead	2 / 2	0.26 - 0.27	77.9	73.90	0.01	7790.00
	Manganese	2 / 2	0.52 - 0.54	133	123.50	330	0.40
	Mercury	1 / 2	0.07 - 0.07	0.88	0.46	0.058	15.17
	Thallium	2 / 2	0.52 - 0.54	2.8	2.60	0.001	2800.00
	Vanadium	2 / 2	2.35 - 2.45	40.9	30.95	0.05	818.00
	Zinc	2 / 2	1.3 - 1.36	533	308.45	10	53.30
TCL Semivolatiles (ug/kg)	Anthracene	2 / 2	430 - 480	65	60.00	100	0.65
	Benzo(a)Anthracene	2 / 2	430 - 480	220	205.00	100	2.20
	Benzo(a)Pyrene	2 / 2	430 - 480	200	170.00	100	2.00
	Benzo(b)Fluoranthene	2 / 2	430 - 480	840	690.00	100	8.40
	Benzo(g,h,i)Perylene	2 / 2	430 - 480	170	155.00	100	1.70
	Benzo(k)Fluoranthene	2 / 2	430 - 480	230	215.00	100	2.30
	Chrysene	2 / 2	430 - 480	400	385.00	100	4.00
	Fluoranthene	2 / 2	430 - 480	250	230.00	100	2.50
	Indeno(1,2,3-cd)Pyrene	2 / 2	430 - 480	220	200.00	100	2.20
	Naphthalene	1 / 2	430 - 480	60	137.50	100	0.60
	Phenanthrene	2 / 2	430 - 480	97	76.50	100	0.97
	Pyrene	2 / 2	430 - 480	210	195.00	100	2.10
TCL Volatiles (ug/kg)	Tetrachloroethene	1 / 2	13 - 16	3	5.50	300	0.01
	Toluene	1 / 2	13 - 16	3	5.50	100	0.03

Table 2 - 4
Ecological Screening Values for Site 3 Sediment
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG Hazard Quotient
General Chemistry (mg/kg)	Total Phosphorous	3 / 3	1.3 - 24.5	48.4		---	---
TAL Inorganics (mg/kg)	Aluminum	3 / 3	8.54 - 14.33	14200	8523.33	---	---
	Antimony	1 / 2	0.39 - 0.65	2.4	1.36	150	0.02
	Arsenic	3 / 3	0.58 - 0.98	9.1	5.77	8.2	1.11
	Barium	3 / 3	0.39 - 0.65	300	140.6	---	---
	Beryllium	2 / 3	0.19 - 0.33	1.7	1	---	---
	Cadmium	2 / 3	0.1 - 0.16	2.5	1.12	1.2	2.08
	Chromium	3 / 3	1.36 - 2.28	63.3	32.47	0.005	12660.00
	Cobalt	3 / 3	1.55 - 2.61	5.6	4.7	---	---
	Copper	3 / 3	1.16 - 1.95	126	72.13	34	3.71
	Iron	3 / 3	3.3 - 5.54	18700	15070	---	---
	Lead	3 / 3	0.19 - 0.33	734	307.97	46.7	15.72
	Manganese	3 / 3	0.39 - 0.65	257	155.5	---	---
	Mercury	3 / 3	0.05 - 0.08	0.27	0.22	0.15	1.80
	Nickel	3 / 3	1.36 - 2.28	15.4	12.5	20.9	0.74
	Silver	1 / 1	0.33 - 0.33	0.37	0.37	1	0.37
	Vanadium	3 / 3	1.75 - 2.93	32.6	30.3	---	---
	Zinc	3 / 3	0.97 - 1.63	577	307.47	150	3.85
TCL Pesticides/PCBs (ug/kg)	4,4'-DDD	2 / 3	3.3 - 5.3	66	42.55	16	4.13
	4,4'-DDE	3 / 3	3.3 - 5.3	78	29.93	2.2	35.45
	4,4'-DDT	2 / 3	3.3 - 5.3	20	12.72	1.58	12.66
	alpha-Chlordane	1 / 3	1.7 - 2.7	0.88	0.94		---
	Aroclor-1260	2 / 3	33 - 53	150	80.17	22.7	6.61
	Dieldrin	2 / 3	3.3 - 5.3	13	7.22	---	---
	gamma-Chlordane	1 / 3	1.7 - 2.7	3.3	1.83	---	---
TCL Semivolatiles (ug/kg)	Acenaphthylene	1 / 3	530 - 4300	66	1005.33	44	1.50
	Anthracene	1 / 3	530 - 4300	56	1002	85.3	0.66
	Benzo(a)Anthracene	2 / 3	530 - 4300	250	860	261	0.96
	Benzo(a)Pyrene	1 / 3	530 - 4300	220	1056.67	430	0.51
	Benzo(b)Fluoranthene	2 / 3	530 - 4300	450	960	3200	0.14
	Benzo(g,h,i)Perylene	1 / 3	530 - 4300	150	1033.33	670	0.22
	Benzo(k)fluoranthene	2 / 3	530 - 4300	470	480	---	---
	Chrysene	2 / 3	530 - 4300	270	886.67	384	0.70
	Dibenz(a,h)Anthracene	1 / 3	530 - 4300	66	1005.33	63.4	1.04
	Diethylphthalate	1 / 3	530 - 4300	340	918.33	200	1.70
	Fluoranthene	2 / 3	530 - 4300	320	890	600	0.53
	Indeno(1,2,3-cd)Pyrene	1 / 3	530 - 4300	180	1043.33	600	0.30
	Naphthalene	1 / 3	530 - 4300	110	1020	160	0.69
	Phenanthrene	1 / 3	530 - 4300	120	1023.33	240	0.50
	Pyrene	3 / 3	530 - 4300	460	323.33	665	0.69
TCL Volatile (ug/kg)	Methylene Chloride	2 / 2	11 - 14	110	105	---	---
	Toluene	1 / 3	11 - 24	4	7.67	---	---

Sample locations represented: SJS03-SD02-000/00P, SJS03-SD03-000, SJS03-SD06-000.

Table 2 - 5
Ecological Screening Values for Site 4 Sediment
St. Juliens Creek Annex Facility

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG Hazard Quotient
General Chemistry (mg/kg)	Total Phosphorous (as P)	3 / 3	1.6 / 4.1	28	13.7	---	---
TAL Inorganics (mg/kg)	Aluminum	3 / 3	8.76 / 29.44	22100	13150	---	---
	Antimony	1 / 1	0.4 / 0.4	2.1	2.1	150	0.01
	Arsenic	3 / 3	0.6 / 2.01	33.1	19.7	8.2	4.04
	Barium	3 / 3	0.4 / 1.34	185	109.13	---	---
	Beryllium	3 / 3	0.2 / 0.67	2.7	1.5	---	---
	Cadmium	2 / 3	0.1 / 0.33	0.84	0.42	1.2	0.70
	Chromium	3 / 3	1.39 / 4.68	38.8	30.37	0.005	7760.00
	Cobalt	3 / 3	1.59 / 5.35	23.3	17.37	---	---
	Copper	3 / 3	1.19 / 4.01	387	217	34	11.38
	Iron	3 / 3	3.38 / 11.37	48600	25666.67	---	---
	Lead	3 / 3	0.2 / 0.67	441	340.67	46.7	9.44
	Manganese	3 / 3	0.4 / 1.34	877	438.73	---	---
	Mercury	3 / 3	0.06 / 0.15	6.4	2.99	0.15	42.67
	Nickel	3 / 3	1.39 / 4.68	43.9	32.13	20.9	2.10
	Silver	2 / 3	0.3 / 0.67	1	0.895	1	1.00
	Thallium	1 / 3	0.4 / 1.34	0.46	0.48	---	---
	Vanadium	3 / 3	1.79 / 6.02	88.5	60.67	---	---
	Zinc	3 / 3	1 / 3.34	624	506.33	150	4.16
TCL Pesticides/PCBs (ug/kg)	4,4'-DDD	2 / 3	4 / 5.7	5.7	4.48	16	0.36
	4,4'-DDE	3 / 3	4 / 5.7	18	10.37	2.2	8.18
	4,4'-DDT	1 / 3	4 / 5.7	8.2	4.617	1.58	5.19
	Aroclor-1260	3 / 3	40 / 57	90	64.33	22.7	3.96
	Dieldrin	2 / 3	4 / 5.7	23	10.6	---	---
TCL Semivolatiles (ug/kg)	2-Methylnaphthalene	1 / 3	570 / 2000	140	475	70	2.00
	Acenaphthylene	1 / 3	570 / 2000	70	451.67	44	1.59
	Anthracene	1 / 3	570 / 2000	200	495	85.3	2.34
	Benzo(a)Anthracene	3 / 3	570 / 2000	1300	623.33	261	4.98
	Benzo(a)Pyrene	3 / 3	570 / 2000	1200	590	430	2.79
	Benzo(b)Fluoranthene	3 / 3	570 / 2000	1900	896.67	3200	0.59
	Benzo(g,h,i)Perylene	3 / 3	570 / 2000	290	204.33	670	0.43
	Benzo(k)Fluoranthene	3 / 3	570 / 2000	1100	530	---	---
	Butylbenzylphthalate	1 / 3	570 / 2000	58	447.67	63	0.92
	Chrysene	3 / 3	570 / 2000	1200	643.33	384	3.13
	Di-n-Butylphthalate	1 / 3	570 / 2000	67	450.67	1400	0.05
	Dibenz(a,h)Anthracene	1 / 3	570 / 2000	150	478.33	63.4	2.37
	Dibenzofuran	1 / 3	570 / 2000	63	449.33	540	0.12
	Diethylphthalate	1 / 3	570 / 2000	300	290	200	1.50
	Fluoranthene	3 / 3	570 / 2000	2800	1293.33	600	4.67
	Indeno(1,2,3-cd)Pyrene	3 / 3	570 / 2000	370	228.33	600	0.62
	Naphthalene	2 / 3	570 / 2000	100	400	160	0.63
	Phenanthrene	3 / 3	570 / 2000	400	276.67	240	1.67
	Pyrene	3 / 3	570 / 2000	2800	1320	665	4.21
TCL Volatile (ug/kg)	Acetone	2 / 3	1 / 31	140	51.17	---	---
	Carbon Disulfide	1 / 3	1 / 31	19	10.17	---	---

Sample locations represented: SJS04-SD02-000, SJS04-SD03-000, SJS04-SD04-000.

Table 2 - 6
Ecological Screening Values for Site 4 Surface Water
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Frequency of Detection	Detection Limits	Maximum Detected Concentration	Average Detected Concentration	BTAG Value	BTAG HazardQuotient
General Chemistry (mg/L)	Total Phosphorous	1 / 1	0.05 - 0.05	0.21	0.21	0.0001	2100.00
TAL Inorganics (ug/L)	Aluminum	1 / 1	29 - 29	50000	50000	---	---
	Antimony	1 / 1	1 - 1	3.7	3.7	500	0.01
	Arsenic	1 / 1	3 - 3	26.6	26.6	---	---
	Barium	1 / 1	1 - 1	313	313	10000	0.03
	Beryllium	1 / 1	1 - 1	6.8	6.8	1500	0.00
	Chromium	1 / 1	4 - 4	66.6	66.6	---	---
	Cobalt	1 / 1	3 - 3	43.9	43.9	---	---
	Copper	1 / 1	2 - 2	179	179	2.9	61.72
	Iron	1 / 1	5 - 5	93100	93100	---	---
	Lead	1 / 1	1 - 1	822	822	5.1	161.18
	Manganese	1 / 1	1 - 1	1910	1910	10	191.00
	Mercury	1 / 1	0.1 - 0.1	1.2	1.2	0.025	48.00
	Nickel	1 / 1	4 - 4	64	64	8.3	7.71
	Vanadium	1 / 1	4 - 4	117	117	10000	0.01
	Zinc	1 / 1	3 - 3	1160	1160	19	61.05
TCL Semivolatiles (ug/L)	4-Methylphenol	1 / 1	10 - 10	13	13	---	---
	Phenol	1 / 1	10 - 10	2	2	5800	0.00
TCL Volatile (ug/L)	Acetone	1 / 1	10 - 10	8	8	---	---

Sample locations represented: SJS04-SW04-000/000P.
Note: BTAG screening values are for marine conditions, since the surface water collected can be classified as brackish.

Table 2-7
Groundwater Screening for Downgradient Well for Sites 3 and 4 (MW3S)
St. Juliens Creek Annex Facility
Chesapeake, VA

ROUND 1								
Sample Analysis	Chemical Name	Detection Frequency	Detection Limit	Maximum Concentration	BTAG Value	BTAG Hazard Quotient	AWQC Value	AWQC Hazard Quotient
General Chemistry (mg/L)	Total Phosphorous (as P)	1/1	0.05	0.093	0.0001	930.00	0.001	93.00
TAL Inorganics (ug/L)	Barium	1/1	1	424	10000	0.04	---	---
	Iron	1/1	5	6910	---	---	---	---
	Manganese	1/1	1	449	10	44.90	---	---
Low Conc. Volatiles (ug/L)	Acetone	1/1	5	12	---	---	---	---

ROUND 2								
Sample Analysis	Chemical Name	Detection Frequency	Detection Limit	Maximum Concentration	BTAG Value	BTAG Hazard Quotient	AWQC Value (1)	AWQC Hazard Quotient
General Chemistry (mg/L)	Total Phosphorous (as P)	1/1	0.05	0.107	0.0001	1070.00	0.001	107.00
TAL Inorganics (ug/L)	Barium	1/1	1	59.6	10000	0.01	---	---
	Cadmium	1/1	0.3	6.1	9.3	0.66	9.3	0.66
	Chromium	1/1	4	6.1	---	---	50	0.12
	Copper	1/1	2	25.2	2.9	8.69	2.9	8.69
	Iron	1/1	5	339	---	---	---	---
	Lead	1/1	1	2.3	5.6	0.41	8.5	0.27
TCL Semivolatiles (ug/L)	bis(2-Ethylhexyl)phthalate	1/1	7	13	360	0.04	3.4	3.82

Note: BTAG Region III screening values (USEPA, 1995) and USEPA Ambient Water Quality Criteria (AWQC) (USEPA, 1986) are for marine conditions since the groundwater would be discharging to brackish conditions.

(1) Chromium AWQC is for Chromium (VI).

Table 2-8
Contaminant of Potential Concern Summary for Site 3
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Soil COPC	Sediment COPC
General Chemistry	Total Phosphorous (as P)	X	X
TAL Inorganics	Aluminum	X	X
	Arsenic		X
	Barium		X
	Beryllium	X	X
	Cadmium		X
	Chromium	X	X
	Cobalt		X
	Copper	X	X
	Iron	X	X
	Lead	X	X
	Manganese		X
	Mercury	X	X
	Nickel	X	
	Thallium	X	
	Vanadium	X	X
	Zinc	X	X
TCL Pesticides/PCBs	4,4'-DDD		X
	4,4-'DDE		X
	4,4'-DDT	X	X
	alpha-Chlordane		X
	Aroclor-1254	X	
	Aroclor-1260		X
	Dieldrin		X
	gamma-Chlordane		X
TCL Semivolatiles	Acenaphthylene		X
	Anthracene	X	
	Benzo(a)Anthracene	X	
	Benzo(a)Pyrene	X	
	Benzo(b)Fluoranthene	X	
	Benzo(g,h,i)Perylene	X	
	Benzo(k)Fluoranthene	X	X
	Carbazole	X	
	Chrysene	X	
	Dibenzo(a,h)Anthracene		X
	Dibenzofuran	X	
	Diethylphthalate	X	X
	Fluoranthene	X	
	Indeno(1,2,3-cd)Pyrene	X	
	Naphthalene	X	
	Pentachlorophenol	X	
	Phenanthrene	X	
	Pyrene	X	
TCL Volatiles	Methylene Chloride		X
	Toluene		X

Table 2-9
Contaminant of Potential Concern Summary for Site 4
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Soil COPC	Sediment COPC	Surface Water COPC
General Chemistry	Total Phosphorous (as P)	X	X	X
TAL Inorganics	Aluminum	X	X	X
	Antimony	X		
	Arsenic		X	X
	Barium		X	
	Beryllium	X	X	
	Chromium	X	X	X
	Cobalt		X	X
	Copper	X	X	X
	Iron	X	X	X
	Lead	X	X	X
	Manganese	X	X	X
	Mercury	X	X	X
	Nickel	X	X	X
	Silver	X	X	
	Thallium	X	X	
	Vanadium	X	X	
	Zinc	X	X	X
TCL Pesticides/PCBs	4,4'-DDE		X	
	4,4'-DDT		X	
	Aroclor-1260	X	X	
	Dieldrin		X	
	Endrin Aldehyde	X		
	Endrin Ketone	X		
TCL Semivolatiles	2-Methylnaphthalene		X	
	4-Methylphenol			X
	Acenaphthylene		X	
	Anthracene	X	X	
	Benzo(a)Anthracene	X	X	
	Benzo(a)Pyrene	X	X	
	Benzo(k)Fluoranthene	X	X	
	Butylbenzylphthalate	X		
	Carbazole	X		
	Chrysene	X	X	
	Dibenz(a,h)Anthracene		X	
	Diethylphthalate	X	X	
	Fluoranthene	X	X	
	Indeno(1,2,3-cd)Pyrene	X		
	Phenanthrene	X	X	
	Pyrene	X	X	
TCL Volatiles	2-Butanone	X		
	Acetone	X	X	X
	Carbon Disulfide		X	

Table 4-1
Site 3 Maximum and Mean Values Used in Receptor Exposure Models
St. Juliens Creek Annex Facility
Chesapeake, VA

Chemical	Surface Soil Mean (mg/kg)	Surface Soil Maximum (mg/kg)	Surface Water Mean (mg/L)	Surface Water Maximum (mg/L)	Sediment Mean (mg/kg)	Sediment Maximum (mg/kg)
Total Phosphorous	25.13	114	NA	NA	20.87	48.4
Aluminum	11730.00	21400	NA	NA	8523.33	14200
Arsenic	NA	NA	NA	NA	5.77	9.1
Barium	NA	NA	NA	NA	140.6	300
Beryllium	0.55	1.3	NA	NA	1	1.7
Cadmium	NA	NA	NA	NA	1.12	2.5
Chromium	24.50	42.1	NA	NA	32.47	63.3
Cobalt	NA	NA	NA	NA	4.7	5.6
Copper	55.90	125	NA	NA	72.13	126
Iron	19365.00	34000	NA	NA	15070	18700
Lead	128.15	240	NA	NA	307.97	734
Manganese	NA	NA	NA	NA	155.5	257
Mercury	0.35	0.6	NA	NA	0.22	0.27
Nickel	11.56	22	NA	NA	NA	NA
Thallium	1.30	2.5	NA	NA	NA	NA
Vanadium	49.78	79.8	NA	NA	30.3	32.6
Zinc	163.70	460	NA	NA	307.47	577
4,4'-DDD	NA	NA	NA	NA	0.043	0.066
4,4'-DDE	NA	NA	NA	NA	0.03	0.078
4,4'-DDT	0.03	0.13	NA	NA	0.013	0.02
alpha-Chlordane	NA	NA	NA	NA	0.00088	0.00088
Aroclor-1254	0.043	0.1	NA	NA	NA	NA
Aroclor-1260	NA	NA	NA	NA	0.08	0.15
Dieldrin	NA	NA	NA	NA	0.0072	0.013
gamma-Chlordane	NA	NA	NA	NA	0.0018	0.0033
Acenaphthylene	NA	NA	NA	NA	0.066	0.066
Anthracene	0.12	0.12	NA	NA	NA	NA
Benzo(a)anthracene	0.24	0.39	NA	NA	NA	NA
Benzo(a)pyrene	0.24	0.35	NA	NA	NA	NA
Benzo(b)fluoranthene	0.81	1.5	NA	NA	NA	NA
Benzo(g,h,i)perylene	0.20	0.34	NA	NA	NA	NA
Benzo(k)fluoranthene	0.31	0.46	NA	NA	0.47	0.47
Carbazole	0.13	0.13	NA	NA	NA	NA
Chrysene	0.44	0.73	NA	NA	NA	NA
Dibenz(a,h)anthracene	NA	NA	NA	NA	0.066	0.066
Dibenzofuran	0.058	0.058	NA	NA	NA	NA
Diethylphthalate	0.079	0.079	NA	NA	0.34	0.34
Fluoranthene	0.41	0.64	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.25	0.44	NA	NA	NA	NA
Naphthalene	0.13	0.13	NA	NA	NA	NA
Pentachlorophenol	0.16	0.16	NA	NA	NA	NA
Phenanthrene	0.21	0.42	NA	NA	NA	NA
Pyrene	0.30	0.56	NA	NA	NA	NA
Methylene Chloride	NA	NA	NA	NA	0.11	0.11
Toluene	NA	NA	NA	NA	0.004	0.004

Notes: NA means that parameter is not being addressed as a COPC for that media. It does not mean that it was not detected in that media.

Table 4-2
Site 4 Maximum and Mean Values Used in Receptor Exposure Models
St. Juliens Creek Annex Facility

Chemical	Surface Soil Mean (mg/kg)	Surface Soil Maximum (mg/kg)	Surface Water Mean (mg/L)	Surface Water Maximum (mg/L)	Sediment Mean (mg/kg)	Sediment Maximum (mg/kg)
Total Phosphorous	5.49	11.8	0.21	0.21	13.7	28
Aluminum	5545.56	7010	50	50	13150	22100
Antimony	2.17	9.1	NA	NA	NA	NA
Arsenic	NA	NA	0.027	0.027	19.7	33.1
Barium	NA	NA	NA	NA	109.13	185
Beryllium	0.41	1.1	NA	NA	1.5	2.7
Chromium	99.9	680	0.067	0.067	30.37	38.8
Cobalt	NA	NA	0.044	0.044	17.37	23.3
Copper	230.29	596	0.179	0.179	217	387
Iron	13935.56	29500	93.1	93.1	25666.67	48600
Lead	181.71	264	0.82	0.82	340.67	441
Manganese	148.18	352	1.91	1.91	438.73	877
Mercury	0.64	1.3	0.0012	0.0012	2.99	6.4
Nickel	103	546	0.064	0.064	32.13	43.9
Silver	0.85	1.6	NA	NA	0.895	1
Thallium	0.52	0.89	NA	NA	0.48	0.46
Vanadium	77.18	354	NA	NA	60.67	88.5
Zinc	357.82	607	1.16	1.16	506.33	624
4,4'-DDE	NA	NA	NA	NA	0.01	0.018
4,4'-DDT	NA	NA	NA	NA	0.0046	0.0082
Aroclor-1260	0.74	6.3	NA	NA	0.064	0.09
Dieldrin	NA	NA	NA	NA	0.011	0.023
Endrin Aldehyde	0.02	0.16	NA	NA	NA	NA
Endrin Ketone	0.012	0.083	NA	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA	NA	0.048	0.14
4-Methylphenol	NA	NA	0.013	0.013	NA	NA
Acenaphthylene	NA	NA	NA	NA	0.45	0.07
Anthracene	0.2	0.2	NA	NA	0.5	0.2
Benzo(a)anthracene	1.4	1.4	NA	NA	0.62	1.3
Benzo(a)pyrene	1.3	1.3	NA	NA	0.59	1.2
Benzo(k)fluoranthene	0.77	0.77	NA	NA	0.53	1.1
Butylbenzylphthalate	0.035	0.035	NA	NA	NA	NA
Carbazole	0.3	0.3	NA	NA	NA	NA
Chrysene	1.8	1.8	NA	NA	0.64	1.2
Dibenz(a,h)anthracene	NA	NA	NA	NA	0.48	0.15
Diethylphthalate	0.62	0.62	NA	NA	0.29	0.3
Fluoranthene	3.14	3.3	NA	NA	1.29	2.8
Indeno(1,2,3-cd)pyrene	0.75	0.75	NA	NA	NA	NA
Phenanthrene	2.2	2.2	NA	NA	0.28	0.4
Pyrene	3.03	3.1	NA	NA	1.32	2.8
2-Butanone	0.0086	0.028	NA	NA	NA	NA
Acetone	0.016	0.079	0.008	0.008	0.051	0.14
Carbon Disulfide	NA	NA	NA	NA	0.01	0.019

Notes: NA means that parameter is not being addressed as a COPC for that media. It does not mean that it was not detected in that media.

TABLE 4-3
NO OBSERVED ADVERSE EFFECT LEVELS AND LOWEST OBSERVED ADVERSE EFFECT LEVELS FOR SITES 3 AND 4
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	Muskrat		Shrew		Robin		Hawk		Woodcock		Raccoon		Fox		Mouse	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Total Phosphorous	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aluminum	1.93	19.3	2.295	22.952	109.7	44.5	109.7	44.5	109.7	44.5	1.93	19.3	0.551	5.515	1.93	19.3
Antimony	0.125	1.25	0.149	1.487	NA	NA	NA	NA	NA	NA	0.125	1.25	0.036	0.357	0.125	1.25
Arsenic	0.126	1.26	0.15	1.5	5.1	12.8	5.1	12.8	5.1	12.8	0.126	1.26	0.036	0.36	0.126	1.26
Barium	5.1	19.8	11.8	43.5	20.8	41.7	20.8	41.7	20.8	41.7	5.1	19.8	2.8	10.5	5.1	19.8
Beryllium	0.66	6.6	1.45	14.5	NA	NA	NA	NA	NA	NA	0.66	6.6	0.35	3.5	0.66	6.6
Cadmium	1	10	2.12	21.2	1.45	20	1.45	20	1.45	20	1	10	0.509	5.09	1	10
Chromium	11.7	15.4	33.4	44	1	5	1	5	1	5	11.7	15.4	8	10.6	11.7	15.4
Cobalt	1	10	1	10	1	10	1	10	1	10	1	10	1	10	1	10
Copper	11.7	15.4	33.4	44	47	61.7	47	61.7	47	61.7	11.7	15.4	8	10.6	11.7	15.4
Iron	50	500	50	500	100	1000	100	1000	100	1000	50	500	50	500	50	500
Lead	8	80	17.58	175.83	1.13	11.3	1.13	11.3	1.13	11.3	8	80	4.22	42.25	8	80
Manganese	88	284	193	624	997	9970	997	9970	997	9970	88	284	46	150	88	284
Mercury	13.2	132	15.7	157	0.45	0.9	0.45	0.9	0.45	0.9	13.2	132	3.77	37.7	13.2	132
Nickel	40	80	87.91	175.83	77.4	107	77.4	107	77.4	107	40	80	21.12	42.25	40	80
Silver	181.2	1812	181.2	1812	NA	NA	NA	NA	NA	NA	181.2	1812	181.2	1812	181.2	1812
Thallium	0.0074	0.074	0.016	0.164	NA	NA	NA	NA	NA	NA	0.0074	0.074	0.004	0.039	0.0074	0.074
Vanadium	0.21	2.1	0.428	4.285	11.4	114	11.4	114	11.4	114	0.21	2.1	0.103	1.03	0.21	2.1
Zinc	160	320	351.7	703.3	14.5	131	14.5	131	14.5	131	160	320	84.5	169	160	320
4,4'-DDD	0.8	4	1.76	8.79	0.003	0.028	0.003	0.028	0.003	0.028	0.8	4	0.42	2.11	0.8	4
4,4'-DDE	0.8	4	1.76	8.79	0.003	0.028	0.003	0.028	0.003	0.028	0.8	4	0.42	2.11	0.8	4
4,4'-DDT	0.8	4	1.76	8.79	0.003	0.028	0.003	0.028	0.003	0.028	0.8	4	0.42	2.11	0.8	4
alpha-Chlordane or gamma-Chlordane	4.6	9.2	5.5	10.9	2.1	10.7	2.1	10.7	2.1	10.7	4.6	9.2	1.3	2.6	4.6	9.2
Aroclor 1254	0.068	0.68	0.067	0.668	0.18	1.8	0.18	1.8	0.18	1.8	0.14	0.69	0.096	0.474	0.068	0.68
Aroclor 1260	0.39	3.9	0.39	3.9	NA	NA	NA	NA	NA	NA	0.39	3.9	0.39	3.9	0.39	3.9
Dieldrin	0.02	0.2	0.044	0.44	0.077	0.77	0.077	0.77	0.077	0.77	0.02	0.2	0.011	0.106	0.02	0.2
Endrin Aldehyde	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Ketone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	1.3	2.6	1.3	2.6	1.3	2.6

TABLE 4-3
NO OBSERVED ADVERSE EFFECT LEVELS AND LOWEST OBSERVED ADVERSE EFFECT LEVELS FOR SITES 3 AND 4
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	Muskrat		Shrew		Robin		Hawk		Woodcock		Raccoon		Fox		Mouse	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
4-Methylphenol	50	500	50	500	NA	NA	NA	NA	NA	NA	50	500	50	500	50	500
Acenaphthylene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	1.3	2.6	1.3	2.6	1.3	2.6
Anthracene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	1.3	2.6	1.3	2.6	1.3	2.6
Benzo(a)anthracene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	1.3	2.6	1.3	2.6	1.3	2.6
Benzo(a)pyrene	1	10	1.19	11.89	10	100	10	100	10	100	1	10	0.29	2.86	1	10
Benzo(b)fluoranthene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	1.3	2.6	1.3	2.6	1.3	2.6
Benzo(g,h,i)perylene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	1.3	2.6	1.3	2.6	1.3	2.6
Benzo(k)fluoranthene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	1.3	2.6	1.3	2.6	1.3	2.6
Butylbenzylphthalate	159	1590	159	1590	NA	NA	NA	NA	NA	NA	159	1590	159	1590	159	1590
Carbazole	1.3	2.6	1.3	2.6	10	100	10	100	10	100	1.3	2.6	1.3	2.6	1.3	2.6
Chrysene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	1.3	2.6	1.3	2.6	1.3	2.6
Dibenz(a,h)anthracene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	1.3	2.6	1.3	2.6	1.3	2.6
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	4583	45830	5450	54500	NA	NA	NA	NA	NA	NA	4583	45830	1310	13100	4583	45830
Fluoranthene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	1.3	2.6	1.3	2.6	1.3	2.6
Indeno(1,2,3-cd)pyrene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	1.3	2.6	1.3	2.6	1.3	2.6
Naphthalene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	1.3	2.6	1.3	2.6	1.3	2.6
Pentachlorophenol	2.1	2.07	2.1	2.07	NA	NA	NA	NA	NA	NA	2.1	2.07	2.1	2.07	2.1	2.07
Phenanthrene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	1.3	2.6	1.3	2.6	1.3	2.6
Pyrene	1.3	2.6	1.3	2.6	10	100	10	100	10	100	1.3	2.6	1.3	2.6	1.3	2.6
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	10	50	22	109.9	NA	NA	NA	NA	NA	NA	10	50	5.3	26.4	10	50
Methylene Chloride	5.85	50	12.9	109.9	NA	NA	NA	NA	NA	NA	5.85	50	3.1	26.4	5.85	50
Toluene	2.6	260	30.9	309.2	NA	NA	NA	NA	NA	NA	26	260	7.4	74.3	26	260
Carbon Disulfide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA -- Not Available

TABLE 4-3
NO OBSERVED ADVERSE EFFECT LEVELS AND LOWEST OBSERVED ADVERSE EFFECT LEVELS FOR SITES 3 AND 4
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

	REFERENCES FOR VALUES USED															
Ecological Contaminant of Concern	Muskrat		Shrew		Robin		Hawk		Woodcock		Raccoon		Fox		Mouse	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Total Phosphorous	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Aluminum	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Antimony	(1)	(1)	(1)	(1)	---	---	---	---	---	---	(1)	(1)	(1)	(1)	(1)	(1)
Arsenic	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Barium	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Beryllium	(1)	(2)	(1)	(2)	---	---	---	---	---	---	(1)	(2)	(1)	(2)	(1)	(2)
Cadmium	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Chromium	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Cobalt	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Copper	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Iron	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)
Lead	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Manganese	(1)	(1)	(1)	(1)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(1)	(1)	(1)	(1)	(1)
Mercury	(1)	(2)	(1)	(2)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(2)	(1)	(2)	(1)	(2)
Nickel	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Silver	(5)	(5)	(5)	(5)	---	---	---	---	---	---	(5)	(5)	(5)	(5)	(5)	(5)
Thallium	(1)	(1)	(1)	(1)	---	---	---	---	---	---	(1)	(1)	(1)	(1)	(1)	(1)
Vanadium	(1)	(1)	(1)	(1)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(1)	(1)	(1)	(1)	(1)
Zinc	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
4,4'-DDD	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
4,4'-DDE	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
4,4'-DDT	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
alpha-Chlordane or gamma-Chlordane	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Aroclor 1254	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Aroclor 1260	(6)	(6)	(6)	(6)	---	---	---	---	---	---	(6)	(6)	(6)	(6)	(6)	(6)
Dieldrin	(1)	(1)	(1)	(1)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(1)	(1)	(1)	(1)	(1)
Endrin Aldehyde	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Endrin Ketone	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Methylnaphthalene	(7)	(7)	(7)	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(7)	(7)	(7)	(7)	(7)

TABLE 4-3
NO OBSERVED ADVERSE EFFECT LEVELS AND LOWEST OBSERVED ADVERSE EFFECT LEVELS FOR SITES 3 AND 4
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

	REFERENCES FOR VALUES USED															
Ecological Contaminant of Concern	Muskrat		Shrew		Robin		Hawk		Woodcock		Raccoon		Fox		Mouse	
	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
4-Methylphenol	(9)	(9)	(9)	(9)	---	---	---	---	---	---	(9)	(9)	(9)	(9)	(9)	(9)
Acenaphthylene	(7)	(7)	(7)	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(7)	(7)	(7)	(7)	(7)
Anthracene	(7)	(7)	(7)	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(7)	(7)	(7)	(7)	(7)
Benzo(a)anthracene	(7)	(7)	(7)	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(7)	(7)	(7)	(7)	(7)
Benzo(a)pyrene	(1)	(1)	(1)	(1)	(8)	(8)	(8)	(8)	(8)	(8)	(1)	(1)	(1)	(1)	(1)	(1)
Benzo(b)fluoranthene	(7)	(7)	(7)	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(7)	(7)	(7)	(7)	(7)
Benzo(g,h,i)perylene	(7)	(7)	(7)	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(7)	(7)	(7)	(7)	(7)
Benzo(k)fluoranthene	(7)	(7)	(7)	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(7)	(7)	(7)	(7)	(7)
Butylbenzylphthalate	(3)	(3)	(3)	(3)	---	---	---	---	---	---	(3)	(3)	(3)	(3)	(3)	(3)
Carbazole	(7)	(7)	(7)	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(7)	(7)	(7)	(7)	(7)
Chrysene	(7)	(7)	(7)	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(7)	(7)	(7)	(7)	(7)
Dibenz(a,h)anthracene	(7)	(7)	(7)	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(7)	(7)	(7)	(7)	(7)
Dibenzofuran	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Diethylphthalate	(1)	(2)	(1)	(2)	---	---	---	---	---	---	(1)	(2)	(1)	(2)	(1)	(2)
Fluoranthene	(7)	(7)	(7)	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(7)	(7)	(7)	(7)	(7)
Indeno(1,2,3-cd)pyrene	(7)	(7)	(7)	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(7)	(7)	(7)	(7)	(7)
Naphthalene	(7)	(7)	(7)	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(7)	(7)	(7)	(7)	(7)
Pentachlorophenol	(10)	(10)	(10)	(10)	---	---	---	---	---	---	(10)	(10)	(10)	(10)	(10)	(10)
Phenanthrene	(7)	(7)	(7)	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(7)	(7)	(7)	(7)	(7)
Pyrene	(7)	(7)	(7)	(7)	(8)	(8)	(8)	(8)	(8)	(8)	(7)	(7)	(7)	(7)	(7)	(7)
2-Butanone	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Acetone	(1)	(1)	(1)	(1)	---	---	---	---	---	---	(1)	(1)	(1)	(1)	(1)	(1)
Methylene Chloride	(1)	(1)	(1)	(1)	---	---	---	---	---	---	(1)	(1)	(1)	(1)	(1)	(1)
Toluene	(1)	(1)	(1)	(1)	---	---	---	---	---	---	(1)	(1)	(1)	(1)	(1)	(1)
Carbon Disulfide	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

(1) USDOE, 1996
(2) 10 x NOAEL = LOAEL
(3) CH2MHILL, 1997
(4) Baker Corp., 1997
(5) CIC, 1990
(6) RTI, 1995
(7) Neal and Rigdon, 1967
(8) Trust et al., 1983
(9) Converted from LD50 reported in Lewis, Sr., 1992
(10) USEPA, 1995a

TABLE 5-1
MAXIMUM CONCENTRATION HAZARD QUOTIENT VALUES
SITE 3, LANDFILL C
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	Shrew		Robin		Hawk		Woodcock		Raccoon		Fox		Mouse	
	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aluminum	6.38E+03	6.38E+02	3.85E+02	9.50E+02	2.28E+01	5.62E+01	2.29E+02	5.65E+02	2.21E+03	2.21E+02	4.60E+03	4.59E+02	5.04E+03	5.04E+02
Arsenic	NC	NC	NC	NC	NC	NC	NC	NC	8.66E+00	8.66E-01	NC	NC	NC	NC
Barium	NC	NC	NC	NC	NC	NC	NC	NC	7.05E+00	1.82E+00	NC	NC	NC	NC
Beryllium	6.14E-01	6.14E-02	NA	NA	NA	NA	NA	NA	5.45E-01	5.45E-02	4.40E-01	4.40E-02	8.96E-01	8.96E-02
Cadmium	NC	NC	NC	NC	NC	NC	NC	NC	3.00E-01	3.00E-02	NC	NC	NC	NC
Chromium	8.63E-01	6.55E-01	8.32E+01	1.66E+01	4.92E+00	9.84E-01	4.95E+01	9.90E+00	1.08E+00	8.21E-01	6.23E-01	4.70E-01	1.64E+00	1.24E+00
Cobalt	NC	NC	NC	NC	NC	NC	NC	NC	6.71E-01	6.71E-02	NC	NC	NC	NC
Copper	2.56E+00	1.94E+00	5.26E+00	4.00E+00	3.11E-01	2.37E-01	3.13E+00	2.38E+00	2.57E+00	1.95E+00	1.85E+00	1.40E+00	4.86E+00	3.69E+00
Iron	4.65E+02	4.65E+01	6.72E+02	6.72E+01	3.97E+01	3.97E+00	4.00E+02	4.00E+01	1.26E+02	1.26E+01	8.05E+01	8.05E+00	3.09E+02	3.09E+01
Lead	9.34E+00	9.34E-01	4.20E+02	4.20E+01	2.48E+01	2.48E+00	2.50E+02	2.50E+01	1.46E+01	1.46E+00	6.73E+00	6.73E-01	1.36E+01	1.36E+00
Manganese	NC	NC	NC	NC	NC	NC	NC	NC	3.50E-01	1.08E-01	NC	NC	NC	NC
Mercury	2.62E-02	2.62E-03	2.63E+00	1.32E+00	1.56E-01	7.79E-02	1.57E+00	7.84E-01	7.90E-03	7.90E-04	1.88E-02	1.88E-03	2.07E-02	2.07E-03
Nickel	1.71E-01	8.56E-02	5.62E-01	4.06E-01	3.32E-02	2.40E-02	3.34E-01	2.42E-01	6.59E-02	3.30E-02	1.23E-01	6.17E-02	2.50E-01	1.25E-01
Thallium	1.07E+02	1.04E+01	NA	NA	NA	NA	NA	NA	4.05E+01	4.05E+00	7.40E+01	7.59E+00	1.54E+02	1.54E+01
Vanadium	1.20E+01	1.20E+00	1.38E+01	1.38E+00	8.18E-01	8.18E-02	8.23E+00	8.23E-01	6.42E+01	6.42E+00	9.17E+01	9.17E+00	1.73E+02	1.73E+01
Zinc	8.95E-01	4.48E-01	6.27E+01	6.94E+00	3.71E+00	4.10E-01	3.73E+01	4.13E+00	7.77E-01	3.89E-01	6.45E-01	3.22E-01	1.31E+00	6.54E-01
4,4'-DDD	NC	NC	NC	NC	NC	NC	NC	NC	9.89E-03	1.98E-03	NC	NC	NC	NC
4,4'-DDE	NC	NC	NC	NC	NC	NC	NC	NC	1.17E-02	2.34E-03	NC	NC	NC	NC
4,4'-DDT	5.06E-02	1.01E-02	8.56E+01	9.17E+00	5.06E+00	5.42E-01	5.09E+01	5.46E+00	2.25E-02	4.50E-03	3.66E-02	7.29E-03	7.39E-02	1.48E-02
alpha-Chlordane	NC	NC	NC	NC	NC	NC	NC	NC	2.29E-05	1.15E-05	NC	NC	NC	NC
Aroclor-1254	1.02E+00	1.02E-01	1.10E+00	1.10E-01	6.49E-02	6.49E-03	6.53E-01	6.53E-02	8.56E-02	1.74E-02	1.23E-01	2.50E-02	6.69E-01	6.69E-02
Aroclor-1260	NC	NC	NC	NC	NC	NC	NC	NC	4.61E-02	4.61E-03	NC	NC	NC	NC
Dieldrin	NC	NC	NC	NC	NC	NC	NC	NC	7.79E-02	7.79E-03	NC	NC	NC	NC
gamma-Chlordane	NC	NC	NC	NC	NC	NC	NC	NC	8.60E-05	4.30E-05	NC	NC	NC	NC
Acenaphthylene	NC	NC	NC	NC	NC	NC	NC	NC	6.09E-03	3.04E-03	NC	NC	NC	NC
Anthracene	6.32E-02	3.16E-02	2.37E-02	2.37E-03	1.40E-03	1.40E-04	1.41E-02	1.41E-03	1.11E-02	5.53E-03	1.09E-02	5.46E-03	4.20E-02	2.10E-02
Benzo(a)anthracene	2.05E-01	1.03E-01	7.71E-02	7.71E-03	4.56E-03	4.56E-04	4.58E-02	4.58E-03	3.60E-02	1.80E-02	3.55E-02	1.78E-02	1.36E-01	6.82E-02
Benzo(a)pyrene	2.01E-01	2.01E-02	6.92E-02	6.92E-03	4.09E-03	4.09E-04	4.11E-02	4.11E-03	4.20E-02	4.20E-03	1.43E-01	1.45E-02	1.59E-01	1.59E-02
Benzo(b)fluoranthene	7.90E-01	3.95E-01	2.96E-01	2.96E-02	1.75E-02	1.75E-03	1.76E-01	1.76E-02	1.38E-01	6.92E-02	1.37E-01	6.83E-02	5.25E-01	2.62E-01
Benzo(g,h,i)perylene	1.79E-01	8.95E-02	6.72E-02	6.72E-03	3.97E-03	3.97E-04	4.00E-02	4.00E-03	3.14E-02	1.57E-02	3.10E-02	1.55E-02	1.19E-01	5.95E-02
Benzo(k)fluoranthene	2.42E-01	1.21E-01	9.09E-02	9.09E-03	5.37E-03	5.37E-04	5.41E-02	5.41E-03	8.58E-02	4.29E-02	4.19E-02	2.09E-02	1.61E-01	8.05E-02
Carbazole	6.84E-02	3.42E-02	2.57E-02	2.57E-03	1.52E-03	1.52E-04	1.53E-02	1.53E-03	1.20E-02	5.99E-03	1.18E-02	5.92E-03	4.55E-02	2.27E-02
Chrysene	3.84E-01	1.92E-01	1.44E-01	1.44E-02	8.53E-03	8.53E-04	8.58E-02	8.58E-03	6.73E-02	3.37E-02	6.65E-02	3.32E-02	2.55E-01	1.28E-01
Dibenz(a,h)anthracene	NC	NC	NC	NC	NC	NC	NC	NC	6.09E-03	3.04E-03	NC	NC	NC	NC
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	9.92E-06	9.92E-07	NA	NA	NA	NA	NA	NA	1.10E-05	1.10E-06	7.14E-06	7.14E-07	7.84E-06	7.84E-07
Fluoranthene	3.37E-01	1.68E-01	1.26E-01	1.26E-02	7.48E-03	7.48E-04	7.52E-02	7.52E-03	5.90E-02	2.95E-02	5.83E-02	2.91E-02	2.24E-01	1.12E-01
Indeno(1,2,3-cd)pyrene	2.32E-01	1.16E-01	8.69E-02	8.69E-03	5.14E-03	5.14E-04	5.17E-02	5.17E-03	4.06E-02	2.03E-02	4.01E-02	2.00E-02	1.54E-01	7.70E-02
Naphthalene	6.84E-02	3.42E-02	2.57E-02	2.57E-03	1.52E-03	1.52E-04	1.53E-02	1.53E-03	1.20E-02	5.99E-03	1.18E-02	5.92E-03	4.55E-02	2.27E-02
Pentachlorophenol	5.22E-01	5.29E-02	NA	NA	NA	NA	NA	NA	9.13E-02	9.27E-03	9.02E-02	9.15E-03	3.46E-01	3.51E-02
Phenanthrene	2.21E-01	1.11E-01	8.30E-02	8.30E-03	4.91E-03	4.91E-04	4.94E-02	4.94E-03	3.87E-02	1.94E-02	3.83E-02	1.91E-02	1.47E-01	7.35E-02
Pyrene	2.95E-01	1.47E-01	1.11E-01	1.11E-02	6.54E-03	6.54E-04	6.58E-02	6.58E-03	5.16E-02	2.58E-02	5.10E-02	2.55E-02	1.96E-01	9.79E-02
Methylene Chloride	NC	NC	NC	NC	NC	NC	NC	NC	2.25E-03	2.64E-04	NC	NC	NC	NC
Toluene	NC	NC	NC	NC	NC	NC	NC	NC	1.84E-05	1.84E-06	NC	NC	NC	NC

NA denotes that benchmark values (NOAEL and LOAEL) were unavailable.
NC denotes not a contaminant of concern.

TABLE 5-2
MEAN CONCENTRATION HAZARD QUOTIENT VALUES
SITE 3, LANDFILL C
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	Shrew		Robin		Hawk		Woodcock		Raccoon		Fox		Mouse	
	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aluminum	3.50E+03	3.50E+02	2.11E+02	5.21E+02	1.25E+01	3.08E+01	1.26E+02	3.10E+02	1.26E+03	1.26E+02	2.52E+03	2.52E+02	2.76E+03	2.76E+02
Arsenic	NC	NC	NC	NC	NC	NC	NC	NC	5.49E+00	5.49E-01	NC	NC	NC	NC
Barium	NC	NC	NC	NC	NC	NC	NC	NC	3.31E+00	8.51E-01	NC	NC	NC	NC
Beryllium	2.62E-01	2.62E-02	NA	NA	NA	NA	NA	NA	2.82E-01	2.82E-02	1.87E-01	1.87E-02	3.82E-01	3.82E-02
Cadmium	NC	NC	NC	NC	NC	NC	NC	NC	1.34E-01	1.34E-02	NC	NC	NC	NC
Chromium	5.02E-01	3.81E-01	4.84E+01	9.68E+00	2.86E+00	5.72E-01	2.88E+01	5.76E+00	5.84E-01	4.44E-01	3.63E-01	2.74E-01	9.52E-01	7.23E-01
Cobalt	NC	NC	NC	NC	NC	NC	NC	NC	5.63E-01	5.63E-02	NC	NC	NC	NC
Copper	1.15E+00	8.70E-01	2.35E+00	1.79E+00	1.39E-01	1.06E-01	1.40E+00	1.06E+00	1.31E+00	9.97E-01	8.27E-01	6.24E-01	2.17E+00	1.65E+00
Iron	2.65E+02	2.65E+01	3.83E+02	3.83E+01	2.26E+01	2.26E+00	2.28E+02	2.28E+01	8.26E+01	8.26E+00	4.59E+01	4.59E+00	1.76E+02	1.76E+01
Lead	4.99E+00	4.99E-01	2.24E+02	2.24E+01	1.32E+01	1.32E+00	1.33E+02	1.33E+01	6.54E+00	6.54E-01	3.60E+00	3.59E-01	7.28E+00	7.28E-01
Manganese	NC	NC	NC	NC	NC	NC	NC	NC	2.12E-01	6.56E-02	NC	NC	NC	NC
Mercury	1.52E-02	1.52E-03	1.53E+00	7.67E-01	9.06E-02	4.53E-02	9.12E-01	4.56E-01	5.17E-03	5.17E-04	1.10E-02	1.10E-03	1.20E-02	1.20E-03
Nickel	9.00E-02	4.50E-02	2.95E-01	2.13E-01	1.74E-02	1.26E-02	1.76E-01	1.27E-01	3.46E-02	1.73E-02	6.48E-02	3.24E-02	1.31E-01	6.57E-02
Thallium	5.54E+01	5.40E+00	NA	NA	NA	NA	NA	NA	2.10E+01	2.10E+00	3.83E+01	3.93E+00	7.96E+01	7.96E+00
Vanadium	7.96E+01	7.95E+00	8.63E+00	8.63E-01	5.10E-01	5.10E-02	5.13E+00	5.13E-01	4.57E+01	4.57E+00	5.72E+01	5.72E+00	1.08E+02	1.08E+01
Zinc	3.19E-01	1.59E-01	2.23E+01	2.47E+00	1.32E+00	1.46E-01	1.33E+01	1.47E+00	3.53E-01	1.77E-01	2.29E-01	1.15E-01	4.65E-01	2.33E-01
4,4'-DDD	NC	NC	NC	NC	NC	NC	NC	NC	6.44E-03	1.29E-03	NC	NC	NC	NC
4,4'-DDE	NC	NC	NC	NC	NC	NC	NC	NC	4.50E-03	8.99E-04	NC	NC	NC	NC
4,4'-DDT	1.17E-02	2.34E-03	1.98E+01	2.12E+00	1.17E+00	1.25E-01	1.18E+01	1.26E+00	6.44E-03	1.29E-03	8.46E-03	1.68E-03	1.71E-02	3.41E-03
alpha-Chlordane	NC	NC	NC	NC	NC	NC	NC	NC	2.29E-05	1.15E-05	NC	NC	NC	NC
Aroclor-1254	4.39E-01	4.41E-02	4.72E-01	4.72E-02	2.79E-02	2.79E-03	2.81E-01	2.81E-02	3.68E-02	7.47E-03	5.30E-02	1.07E-02	2.88E-01	2.88E-02
Aroclor-1260	NC	NC	NC	NC	NC	NC	NC	NC	2.46E-02	2.46E-03	NC	NC	NC	NC
Dieldrin	NC	NC	NC	NC	NC	NC	NC	NC	4.32E-02	4.32E-03	NC	NC	NC	NC
gamma-Chlordane	NC	NC	NC	NC	NC	NC	NC	NC	4.69E-05	2.35E-05	NC	NC	NC	NC
Acenaphthylene	NC	NC	NC	NC	NC	NC	NC	NC	6.09E-03	3.04E-03	NC	NC	NC	NC
Anthracene	6.32E-02	3.16E-02	2.37E-02	2.37E-03	1.40E-03	1.40E-04	1.41E-02	1.41E-03	1.11E-02	5.53E-03	1.09E-02	5.46E-03	4.20E-02	2.10E-02
Benzo(a)anthracene	1.26E-01	6.32E-02	4.74E-02	4.74E-03	2.80E-03	2.80E-04	2.82E-02	2.82E-03	2.21E-02	1.11E-02	2.19E-02	1.09E-02	8.40E-02	4.20E-02
Benzo(a)pyrene	1.38E-01	1.38E-02	4.74E-02	4.74E-03	2.80E-03	2.80E-04	2.82E-02	2.82E-03	2.88E-02	2.88E-03	9.80E-02	9.94E-03	1.09E-01	1.09E-02
Benzo(b)fluoranthene	4.26E-01	2.13E-01	1.60E-01	1.60E-02	9.46E-03	9.46E-04	9.52E-02	9.52E-03	7.47E-02	3.74E-02	7.38E-02	3.69E-02	2.83E-01	1.42E-01
Benzo(g,h,i)perylene	1.05E-01	5.27E-02	3.95E-02	3.95E-03	2.34E-03	2.34E-04	2.35E-02	2.35E-03	1.84E-02	9.22E-03	1.82E-02	9.11E-03	7.00E-02	3.50E-02
Benzo(k)fluoranthene	1.63E-01	8.16E-02	6.13E-02	6.13E-03	3.62E-03	3.62E-04	3.64E-02	3.64E-03	7.19E-02	3.60E-02	2.82E-02	1.41E-02	1.08E-01	5.42E-02
Carbazole	6.84E-02	3.42E-02	2.57E-02	2.57E-03	1.52E-03	1.52E-04	1.53E-02	1.53E-03	1.20E-02	5.99E-03	1.18E-02	5.92E-03	4.55E-02	2.27E-02
Chrysene	2.32E-01	1.16E-01	8.69E-02	8.69E-03	5.14E-03	5.14E-04	5.17E-02	5.17E-03	4.06E-02	2.03E-02	4.01E-02	2.00E-02	1.54E-01	7.70E-02
Dibenz(a,h)anthracene	NC	NC	NC	NC	NC	NC	NC	NC	6.09E-03	3.04E-03	NC	NC	NC	NC
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	9.92E-06	9.92E-07	NA	NA	NA	NA	NA	NA	1.10E-05	1.10E-06	7.14E-06	7.14E-07	7.84E-06	7.84E-07
Fluoranthene	2.16E-01	1.08E-01	8.10E-02	8.10E-03	4.79E-03	4.79E-04	4.82E-02	4.82E-03	3.78E-02	1.89E-02	3.73E-02	1.87E-02	1.43E-01	7.17E-02
Indeno(1,2,3-cd)pyrene	1.32E-01	6.58E-02	4.94E-02	4.94E-03	2.92E-03	2.92E-04	2.94E-02	2.94E-03	2.31E-02	1.15E-02	2.28E-02	1.14E-02	8.74E-02	4.37E-02
Naphthalene	6.84E-02	3.42E-02	2.57E-02	2.57E-03	1.52E-03	1.52E-04	1.53E-02	1.53E-03	1.20E-02	5.99E-03	1.18E-02	5.92E-03	4.55E-02	2.27E-02
Pentachlorophenol	5.22E-01	5.29E-02	NA	NA	NA	NA	NA	NA	9.13E-02	9.27E-03	9.02E-02	9.15E-03	3.46E-01	3.51E-02
Phenanthrene	1.11E-01	5.53E-02	4.15E-02	4.15E-03	2.45E-03	2.45E-04	2.47E-02	2.47E-03	1.94E-02	9.68E-03	1.91E-02	9.56E-03	7.35E-02	3.67E-02
Pyrene	1.58E-01	7.90E-02	5.93E-02	5.93E-03	3.50E-03	3.50E-04	3.53E-02	3.53E-03	2.77E-02	1.38E-02	2.73E-02	1.37E-02	1.05E-01	5.25E-02
Methylene Chloride	NC	NC	NC	NC	NC	NC	NC	NC	2.25E-03	2.64E-04	NC	NC	NC	NC
Toluene	NC	NC	NC	NC	NC	NC	NC	NC	1.84E-05	1.84E-06	NC	NC	NC	NC

NA denotes that benchmark values (NOAEL and LOAEL) were unavailable.
NC denotes not a contaminant of concern.

TABLE 5-3
MAXIMUM CONCENTRATION HAZARD QUOTIENT VALUES
SITE 4, LANDFILL D
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	Muskrat		Shrew		Robin		Hawk		Woodcock		Raccoon		Fox		Mouse	
	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aluminum	4.31E+03	4.31E+02	2.10E+03	2.10E+02	1.26E+02	3.11E+02	7.50E+00	1.85E+01	7.52E+01	1.85E+02	1.81E+03	1.81E+02	1.52E+03	1.51E+02	1.66E+03	1.66E+02
Antimony	NC	NC	4.18E+01	4.19E+00	NA	NA	NA	NA	NA	NA	8.73E+00	8.73E-01	2.99E+01	3.02E+00	3.31E+01	3.31E+00
Arsenic	9.86E+01	9.86E+00	4.01E-02	4.01E-03	7.40E-04	2.95E-04	3.54E-04	1.41E-04	7.90E-04	3.15E-04	3.15E+01	3.15E+00	7.23E-02	7.23E-03	4.07E-02	4.07E-03
Barium	1.36E+01	3.50E+00	NC	NC	NC	NC	NC	NC	NC	NC	4.35E+00	1.12E+00	NC	NC	NC	NC
Beryllium	1.53E+00	1.53E-01	5.19E-01	5.19E-02	NA	NA	NA	NA	NA	NA	6.90E-01	6.90E-02	3.72E-01	3.72E-02	7.58E-01	7.58E-02
Chromium	1.25E+00	9.48E-01	1.39E+01	1.06E+01	1.34E+03	2.69E+02	7.94E+01	1.59E+01	7.99E+02	1.60E+02	7.37E+00	5.60E+00	1.01E+01	7.60E+00	2.64E+01	2.01E+01
Cobalt	8.77E+00	8.77E-01	9.81E-03	9.81E-04	6.15E-03	6.15E-04	2.94E-03	2.94E-04	6.57E-03	6.57E-04	2.80E+00	2.80E-01	4.24E-03	4.24E-04	8.36E-03	8.36E-04
Copper	1.24E+01	9.42E+00	1.22E+01	9.27E+00	2.51E+01	1.91E+01	1.48E+00	1.13E+00	1.49E+01	1.14E+01	1.01E+01	7.65E+00	8.82E+00	6.66E+00	2.32E+01	1.76E+01
Iron	3.66E+02	3.66E+01	4.04E+02	4.04E+01	5.83E+02	5.83E+01	3.45E+01	3.45E+00	3.47E+02	3.47E+01	1.87E+02	1.87E+01	7.00E+01	7.00E+00	2.69E+02	2.69E+01
Lead	2.07E+01	2.07E+00	1.03E+01	1.03E+00	4.62E+02	4.62E+01	2.73E+01	2.73E+00	2.75E+02	2.75E+01	1.06E+01	1.06E+00	7.43E+00	7.42E-01	1.50E+01	1.50E+00
Manganese	3.75E+00	1.16E+00	1.25E+00	3.87E-01	6.98E-01	6.98E-02	4.14E-02	4.14E-03	4.15E-01	4.15E-02	1.68E+00	5.19E-01	9.10E-01	2.79E-01	1.82E+00	5.65E-01
Mercury	1.82E-01	1.82E-02	5.67E-02	5.67E-03	5.71E+00	2.85E+00	3.38E-01	1.69E-01	3.40E+00	1.70E+00	6.99E-02	6.99E-03	4.09E-02	4.09E-03	4.48E-02	4.48E-03
Nickel	4.13E-01	2.06E-01	4.25E+00	2.13E+00	1.39E+01	1.01E+01	8.24E-01	5.96E-01	8.29E+00	6.00E+00	1.77E+00	8.84E-01	3.06E+00	1.53E+00	6.21E+00	3.10E+00
Silver	2.07E-03	2.07E-04	6.04E-03	6.04E-04	NA	NA	NA	NA	NA	NA	1.72E-03	1.72E-04	1.05E-03	1.05E-04	4.02E-03	4.02E-04
Thallium	2.33E+01	2.33E+00	3.81E+01	3.71E+00	NA	NA	NA	NA	NA	NA	2.19E+01	2.19E+00	2.63E+01	2.70E+00	5.47E+01	5.47E+00
Vanadium	1.58E+02	1.58E+01	5.66E+02	5.65E+01	6.14E+01	6.14E+00	3.63E+00	3.63E-01	3.65E+01	3.65E+00	2.53E+02	2.53E+01	4.07E+02	4.07E+01	7.67E+02	7.67E+01
Zinc	1.47E+00	7.34E-01	1.18E+00	5.91E-01	8.27E+01	9.16E+00	4.90E+00	5.42E-01	4.92E+01	5.45E+00	9.23E-01	4.62E-01	8.52E-01	4.26E-01	1.73E+00	8.63E-01
4,4'-DDE	8.43E-03	1.69E-03	NC	NC	NC	NC	NC	NC	NC	NC	2.70E-03	5.40E-04	NC	NC	NC	NC
4,4'-DDT	3.84E-03	7.68E-04	NC	NC	NC	NC	NC	NC	NC	NC	1.23E-03	2.46E-04	NC	NC	NC	NC
Aroclor-1260	8.64E-02	8.64E-03	1.11E+01	1.11E+00	NA	NA	NA	NA	NA	NA	1.96E+00	1.96E-01	1.91E+00	1.91E-01	7.35E+00	7.35E-01
Dieldrin	4.31E-01	4.31E-02	NC	NC	NC	NC	NC	NC	NC	NC	1.38E-01	1.38E-02	NC	NC	NC	NC
Endrin Aldehyde	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Ketone	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	4.03E-02	2.02E-02	NC	NC	NC	NC	NC	NC	NC	NC	1.29E-02	6.46E-03	NC	NC	NC	NC
4-Methylphenol	2.55E-04	2.55E-05	5.80E-05	5.80E-06	NA	NA	NA	NA	NA	NA	2.13E-05	2.13E-06	2.51E-05	2.51E-06	4.94E-05	4.94E-06
Acenaphthylene	2.02E-02	1.01E-02	NC	NC	NC	NC	NC	NC	NC	NC	6.46E-03	3.23E-03	NC	NC	NC	NC
Anthracene	5.76E-02	2.88E-02	1.05E-01	5.27E-02	3.95E-02	3.95E-03	2.34E-03	2.34E-04	2.35E-02	2.35E-03	3.69E-02	1.84E-02	1.82E-02	9.11E-03	7.00E-02	3.50E-02
Benzo(a)anthracene	3.75E-01	1.87E-01	7.37E-01	3.69E-01	2.77E-01	2.77E-02	1.64E-02	1.64E-03	1.65E-01	1.65E-02	2.49E-01	1.25E-01	1.28E-01	6.38E-02	4.90E-01	2.45E-01
Benzo(a)pyrene	4.49E-01	4.49E-02	7.48E-01	7.48E-02	2.57E-01	2.57E-02	1.52E-02	1.52E-03	1.53E-01	1.53E-02	3.00E-01	3.00E-02	5.31E-01	5.38E-02	5.91E-01	5.91E-02
Benzo(k)fluoranthene	3.17E-01	1.58E-01	4.05E-01	2.03E-01	1.52E-01	1.52E-02	9.00E-03	9.00E-04	9.05E-02	9.05E-03	1.72E-01	8.62E-02	7.01E-02	3.51E-02	2.69E-01	1.35E-01
Butylbenzylphthalate	NC	NC	1.51E-04	1.51E-05	NA	NA	NA	NA	NA	NA	2.64E-05	2.64E-06	2.61E-05	2.61E-06	1.00E-04	1.00E-05
Carbazole	NC	NC	1.58E-01	7.90E-02	5.93E-02	5.93E-03	3.50E-03	3.50E-04	3.53E-02	3.53E-03	2.77E-02	1.38E-02	2.73E-02	1.37E-02	1.05E-01	5.25E-02
Chrysene	3.46E-01	1.73E-01	9.48E-01	4.74E-01	3.56E-01	3.56E-02	2.10E-02	2.10E-03	2.12E-01	2.12E-02	2.77E-01	1.38E-01	1.64E-01	8.20E-02	6.30E-01	3.15E-01
Dibenz(a,h)anthracene	4.32E-02	2.16E-02	NC	NC	NC	NC	NC	NC	NC	NC	1.38E-02	6.92E-03	NC	NC	NC	NC
Diethylphthalate	2.45E-05	2.45E-06	7.79E-05	7.79E-06	NA	NA	NA	NA	NA	NA	2.41E-05	2.41E-06	5.60E-05	5.60E-06	6.15E-05	6.15E-06
Fluoranthene	8.07E-01	4.03E-01	1.74E+00	8.69E-01	6.52E-01	6.52E-02	3.86E-02	3.86E-03	3.88E-01	3.88E-02	5.63E-01	2.81E-01	3.01E-01	1.50E-01	1.15E+00	5.77E-01
Indeno(1,2,3-cd)pyrene	NC	NC	3.95E-01	1.97E-01	1.48E-01	1.48E-02	8.76E-03	8.76E-04	8.82E-02	8.82E-03	6.92E-02	3.46E-02	6.83E-02	3.42E-02	2.62E-01	1.31E-01
Phenanthrene	1.15E-01	5.76E-02	1.16E+00	5.79E-01	4.35E-01	4.35E-02	2.57E-02	2.57E-03	2.59E-01	2.59E-02	2.40E-01	1.20E-01	2.00E-01	1.00E-01	7.70E-01	3.85E-01
Pyrene	8.07E-01	4.03E-01	1.63E+00	8.16E-01	6.13E-01	6.13E-02	3.62E-02	3.62E-03	3.64E-01	3.64E-02	5.44E-01	2.72E-01	2.82E-01	1.41E-01	1.08E+00	5.42E-01
2-Butanone	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	6.03E-03	1.21E-03	2.54E-03	5.08E-04	NA	NA	NA	NA	NA	NA	2.69E-03	5.38E-04	1.91E-03	3.84E-04	3.74E-03	7.49E-04
Carbon Disulfide	NA	NA	NC	NC	NC	NC	NC	NC	NC	NC	NA	NA	NC	NC	NC	NC

NA denotes that benchmark values (NOAEL and LOAEL) were unavailable.
NC denotes not a contaminant of concern.

TABLE 5-4
MEAN CONCENTRATION HAZARD QUOTIENT VALUES
SITE 4, LANDFILL D
ST. JULIENS CREEK ANNEX FACILITY
CHESAPEAKE, VA

Ecological Contaminant of Concern	Muskrat		Shrew		Robin		Hawk		Woodcock		Raccoon		Fox		Mouse	
	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aluminum	2.58E+03	2.58E+02	1.66E+03	1.66E+02	1.00E+02	2.46E+02	5.94E+00	1.46E+01	5.95E+01	1.47E+02	1.16E+03	1.16E+02	1.20E+03	1.20E+02	1.31E+03	1.31E+02
Antimony	NC	NC	9.97E+00	9.99E-01	NA	NA	NA	NA	NA	NA	2.08E+00	2.08E-01	7.14E+00	7.20E-01	7.89E+00	7.89E-01
Arsenic	5.88E+01	5.88E+00	4.01E-02	4.01E-03	7.40E-04	2.95E-04	3.54E-04	1.41E-04	7.90E-04	3.15E-04	1.88E+01	1.88E+00	7.23E-02	7.23E-03	4.07E-02	4.07E-03
Barium	8.01E+00	2.06E+00	NC	NC	NC	NC	NC	NC	NC	NC	2.57E+00	6.61E-01	NC	NC	NC	NC
Beryllium	8.51E-01	8.51E-02	1.94E-01	1.94E-02	NA	NA	NA	NA	NA	NA	3.47E-01	3.47E-02	1.39E-01	1.39E-02	2.82E-01	2.82E-02
Chromium	9.78E-01	7.43E-01	2.05E+00	1.55E+00	1.97E+02	3.95E+01	1.17E+01	2.34E+00	1.17E+02	2.35E+01	1.34E+00	1.01E+00	1.48E+00	1.12E+00	3.88E+00	2.95E+00
Cobalt	6.55E+00	6.55E-01	9.81E-03	9.81E-04	6.15E-03	6.15E-04	2.94E-03	2.94E-04	6.57E-03	6.57E-04	2.09E+00	2.09E-01	4.24E-03	4.24E-04	8.36E-03	8.36E-04
Copper	6.96E+00	5.29E+00	4.72E+00	3.58E+00	9.68E+00	7.38E+00	5.73E-01	4.36E-01	5.76E+00	4.39E+00	4.58E+00	3.48E+00	3.41E+00	2.57E+00	8.95E+00	6.80E+00
Iron	1.94E+02	1.94E+01	1.91E+02	1.91E+01	2.76E+02	2.76E+01	1.63E+01	1.63E+00	1.64E+02	1.64E+01	9.51E+01	9.51E+00	3.32E+01	3.32E+00	1.27E+02	1.27E+01
Lead	1.61E+01	1.61E+00	7.09E+00	7.08E-01	3.18E+02	3.18E+01	1.88E+01	1.88E+00	1.89E+02	1.89E+01	7.84E+00	7.84E-01	5.12E+00	5.11E-01	1.03E+01	1.03E+00
Manganese	1.89E+00	5.85E-01	5.28E-01	1.63E-01	2.94E-01	2.94E-02	1.75E-02	1.75E-03	1.75E-01	1.75E-02	8.01E-01	2.48E-01	3.85E-01	1.18E-01	7.70E-01	2.39E-01
Mercury	8.49E-02	8.49E-03	2.79E-02	2.79E-03	2.81E+00	1.41E+00	1.66E-01	8.32E-02	1.67E+00	8.36E-01	3.30E-02	3.30E-03	2.01E-02	2.01E-03	2.21E-02	2.21E-03
Nickel	3.02E-01	1.51E-01	8.02E-01	4.01E-01	2.63E+00	1.90E+00	1.56E-01	1.12E-01	1.56E+00	1.13E+00	4.05E-01	2.03E-01	5.78E-01	2.89E-01	1.17E+00	5.86E-01
Silver	1.85E-03	1.85E-04	3.21E-03	3.21E-04	NA	NA	NA	NA	NA	NA	1.15E-03	1.15E-04	5.55E-04	5.55E-05	2.13E-03	2.13E-04
Thallium	2.43E+01	2.43E+00	2.22E+01	2.17E+00	NA	NA	NA	NA	NA	NA	1.62E+01	1.62E+00	1.54E+01	1.58E+00	3.20E+01	3.20E+00
Vanadium	1.08E+02	1.08E+01	1.23E+02	1.23E+01	1.34E+01	1.34E+00	7.91E-01	7.91E-02	7.96E+00	7.96E-01	7.87E+01	7.87E+00	8.87E+01	8.87E+00	1.67E+02	1.67E+01
Zinc	1.19E+00	5.96E-01	6.97E-01	3.49E-01	4.88E+01	5.40E+00	2.89E+00	3.20E-01	2.90E+01	3.21E+00	6.48E-01	3.24E-01	5.03E-01	2.51E-01	1.02E+00	5.09E-01
4,4'-DDE	4.68E-03	9.36E-04	NC	NC	NC	NC	NC	NC	NC	NC	1.50E-03	3.00E-04	NC	NC	NC	NC
4,4'-DDT	2.15E-03	4.31E-04	NC	NC	NC	NC	NC	NC	NC	NC	6.89E-04	1.38E-04	NC	NC	NC	NC
Aroclor-1260	6.15E-02	6.15E-03	1.30E+00	1.30E-01	NA	NA	NA	NA	NA	NA	2.47E-01	2.47E-02	2.25E-01	2.25E-02	8.63E-01	8.63E-02
Dieldrin	2.06E-01	2.06E-02	NC	NC	NC	NC	NC	NC	NC	NC	6.59E-02	6.59E-03	NC	NC	NC	NC
Endrin Aldehyde	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Ketone	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	1.38E-02	6.91E-03	NC	NC	NC	NC	NC	NC	NC	NC	4.43E-03	2.21E-03	NC	NC	NC	NC
4-Methylphenol	5.82E-04	5.82E-05	5.80E-05	5.80E-06	NA	NA	NA	NA	NA	NA	2.13E-05	2.13E-06	2.51E-05	2.51E-06	4.94E-05	4.94E-06
Acenaphthylene	1.30E-01	6.48E-02	NC	NC	NC	NC	NC	NC	NC	NC	4.15E-02	2.08E-02	NC	NC	NC	NC
Anthracene	1.44E-01	7.20E-02	1.05E-01	5.27E-02	3.95E-02	3.95E-03	2.34E-03	2.34E-04	2.35E-02	2.35E-03	6.46E-02	3.23E-02	1.82E-02	9.11E-03	7.00E-02	3.50E-02
Benzo(a)anthracene	1.79E-01	8.93E-02	7.37E-01	3.69E-01	2.77E-01	2.77E-02	1.64E-02	1.64E-03	1.65E-01	1.65E-02	1.86E-01	9.31E-02	1.28E-01	6.38E-02	4.90E-01	2.45E-01
Benzo(a)pyrene	2.21E-01	2.21E-02	7.48E-01	7.48E-02	2.57E-01	2.57E-02	1.52E-02	1.52E-03	1.53E-01	1.53E-02	2.27E-01	2.27E-02	5.31E-01	5.38E-02	5.91E-01	5.91E-02
Benzo(k)fluoranthene	1.53E-01	7.64E-02	4.05E-01	2.03E-01	1.52E-01	1.52E-02	9.00E-03	9.00E-04	9.05E-02	9.05E-03	1.20E-01	5.99E-02	7.01E-02	3.51E-02	2.69E-01	1.35E-01
Butylbenzylphthalate	NC	NC	1.51E-04	1.51E-05	NA	NA	NA	NA	NA	NA	2.64E-05	2.64E-06	2.61E-05	2.61E-06	1.00E-04	1.00E-05
Carbazole	NC	NC	1.58E-01	7.90E-02	5.93E-02	5.93E-03	3.50E-03	3.50E-04	3.53E-02	3.53E-03	2.77E-02	1.38E-02	2.73E-02	1.37E-02	1.05E-01	5.25E-02
Chrysene	1.84E-01	9.22E-02	9.48E-01	4.74E-01	3.56E-01	3.56E-02	2.10E-02	2.10E-03	2.12E-01	2.12E-02	2.25E-01	1.13E-01	1.64E-01	8.20E-02	6.30E-01	3.15E-01
Dibenz(a,h)anthracene	1.38E-01	6.91E-02	NC	NC	NC	NC	NC	NC	NC	NC	4.43E-02	2.21E-02	NC	NC	NC	NC
Diethylphthalate	2.37E-05	2.37E-06	7.79E-05	7.79E-06	NA	NA	NA	NA	NA	NA	2.38E-05	2.38E-06	5.60E-05	5.60E-06	6.15E-05	6.15E-06
Fluoranthene	3.72E-01	1.86E-01	1.65E+00	8.27E-01	6.20E-01	6.20E-02	3.67E-02	3.67E-03	3.69E-01	3.69E-02	4.09E-01	2.04E-01	2.86E-01	1.43E-01	1.10E+00	5.49E-01
Indeno(1,2,3-cd)pyrene	NC	NC	3.95E-01	1.97E-01	1.48E-01	1.48E-02	8.76E-03	8.76E-04	8.82E-02	8.82E-03	6.92E-02	3.46E-02	6.83E-02	3.42E-02	2.62E-01	1.31E-01
Phenanthrene	8.07E-02	4.03E-02	1.16E+00	5.79E-01	4.35E-01	4.35E-02	2.57E-02	2.57E-03	2.59E-01	2.59E-02	2.29E-01	1.14E-01	2.00E-01	1.00E-01	7.70E-01	3.85E-01
Pyrene	3.80E-01	1.90E-01	1.60E+00	7.98E-01	5.99E-01	5.99E-02	3.54E-02	3.54E-03	3.56E-01	3.56E-02	4.01E-01	2.01E-01	2.76E-01	1.38E-01	1.06E+00	5.30E-01
2-Butanone	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	2.69E-03	5.39E-04	5.79E-04	1.16E-04	NA	NA	NA	NA	NA	NA	8.69E-04	1.74E-04	5.03E-04	1.01E-04	8.80E-04	1.76E-04
Carbon Disulfide	NA	NA	NC	NC	NC	NC	NC	NC	NC	NC	NA	NA	NC	NC	NC	NC

NA denotes that benchmark values (NOAEL and LOAEL) were unavailable.
NC denotes not a contaminant of concern.

Table 6 - 1
Hazard Quotient Determination for Earthworm - Site 3
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Maximum Detected Concentration in Surface Soil	Average Detected Concentration in Surface Soil	BTAG Value for Soil Fauna	BTAG Hazard Quotient (Using Maximum)	Hazard Quotient (Using Average)
General Chemistry (mg/kg)	Total Phosphorous	114	25.13	--	--	--
TAL Inorganics (mg/kg)	Aluminum	21400	11730.00	--	--	--
	Beryllium	1.3	0.55	--	--	--
	Chromium	42.1	24.50	0.0075	5613.33	3266.67
	Copper	125	55.90	--	--	--
	Iron	34000	19365.00	12	2833.33	1613.75
	Lead	240	128.15	0.01	24000.00	12815.00
	Mercury	0.6	0.35	0.058	10.34	6.02
	Nickel	22	11.56	--	--	--
	Thallium	2.5	1.30	--	--	--
	Vanadium	79.8	49.78	58	1.38	0.86
	Zinc	460	163.70	--	--	--
TCL Pesticides/PCBs (ug/kg)	4,4'-DDT	130	30.31	100	1.30	0.30
	Aroclor-1254	100	42.50	--	--	--
TCL Semivolatiles (ug/kg)	Anthracene	120	89.67	100	1.20	0.90
	Benzo(a)Anthracene	390	244.33	100	3.90	2.44
	Benzo(a)Pyrene	350	239.67	100	3.50	2.40
	Benzo(b)Fluoranthene	1500	805.33	100	15.00	8.05
	Benzo(g,h,i)Perylene	340	203.33	100	3.40	2.03
	Benzo(k)Fluoranthene	460	306.67	100	4.60	3.07
	Carbazole	130	130.00	--	--	--
	Chrysene	730	436.83	100	7.30	4.37
	Dibenzofuran	58	58.00	--	--	--
	Diethylphthalate	79	79.00	--	--	--
	Fluoranthene	640	407.17	100	6.40	4.07
	Indeno(1,2,3-cd)Pyrene	440	246.67	100	4.40	2.47
	Naphthalene	130	130.00	100	1.30	1.30
	Pentachlorophenol	160	160.00	100	1.60	1.60
	Phenanthrene	420	206.67	100	4.20	2.07
	Pyrene	560	304.00	100	5.60	3.04

Table 6 - 2
Hazard Quotient Determination for Earthworm - Site 4
St. Juliens Creek Annex Facility
Chesapeake, VA

Sample Analysis	Chemical Name	Maximum Detected Concentration in Surface Soil	Average Detected Concentration in Surface Soil	BTAG Value for Soil Fauna	BTAG Hazard Quotient (Using Maximum)	Hazard Quotient (Using Average)
General Chemistry (mg/kg)	Total Phosphorous	11.8	5.49	---	---	---
TAL Inorganics (mg/kg)	Aluminum	7010	5545.56	---	---	---
	Antimony	9.1	2.17	---	---	---
	Beryllium	1.1	0.41	---	---	---
	Chromium	680	99.9	0.0075	90666.67	13320.00
	Copper	596	230.29	---	---	---
	Iron	29500	13935.56	12	2458.33	1161.30
	Lead	264	181.71	0.01	26400.00	18171.00
	Manganese	352	148.18	330	1.07	0.45
	Mercury	1.3	0.64	0.058	22.41	11.03
	Nickel	546	103	---	---	---
	Silver	1.6	0.8475	---	---	---
	Thallium	0.89	0.515	---	---	---
	Vanadium	354	77.18	58	6.10	1.33
	Zinc	607	357.82	---	---	---
TCL Pesticides/PCBs (ug/kg)	Aroclor-1260	6300	741.72	---	---	---
	Endrin Aldehyde	160	20.28	---	---	---
	Endrin Ketone	83	11.72	---	---	---
TCL Semivolatiles (ug/kg)	Anthracene	200	200	100	2.00	2.00
	Benzo(a)Anthracene	1400	1400	100	14.00	14.00
	Benzo(a)Pyrene	1300	1300	100	13.00	13.00
	Benzo(b)Fluoranthene	1900	1900	100	19.00	19.00
	Benzo(g,h,i)Perylene	770	770	100	7.70	7.70
	Benzo(k)Fluoranthene	770	770	100	7.70	7.70
	Butylbenzylphthalate	35	35	---	---	---
	Carbazole	300	300	---	---	---
	Chrysene	1800	1800	100	18.00	18.00
	Diethylphthalate	620	620	---	---	---
	Fluoranthene	3300	3139.89	100	33.00	31.40
	Indeno(1,2,3-cd)Pyrene	750	750	100	7.50	7.50
	Phenanthrene	2200	2200	100	22.00	22.00
	Pyrene	3100	3031.78	100	31.00	30.32
TCL Volatile (ug/kg)	2-Butanone	28	8.61	---	---	---
	Acetone	79	16.33	---	---	---

TABLE D-1
HAZARD QUOTIENT CALCULATIONS FOR SHORT-TAILED SHREW

Site 3, Landfill C
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Short-Tailed Shrew
(Conservative Inputs)

Body Weight	0.0150000 kg	(USEPA, 1993)
Food Ingestion Rate	0.0093000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0033450 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0009672 kg/day	(Beyer, 1994)

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	25.13333	0	25.13333	17.20326172	NA	NA	NA	NA
Aluminum	11730	0	11730	8028.9504	2.30E+00	2.30E+01	3.50E+03	3.50E+02
Beryllium	0.554167	0	0.554167	0.379316228	1.45E+00	1.45E+01	2.62E-01	2.62E-02
Chromium	24.5	0	24.5	16.76976	3.34E+01	4.40E+01	5.02E-01	3.81E-01
Copper	55.9	0	55.9	38.262432	3.34E+01	4.40E+01	1.15E+00	8.70E-01
Iron	19365	0	19365	13254.9552	5.00E+01	5.00E+02	2.65E+02	2.65E+01
Lead	128.15	0	128.15	87.716112	1.76E+01	1.76E+02	4.99E+00	4.99E-01
Mercury	0.349167	0	0.349167	0.238997828	1.57E+01	1.57E+02	1.52E-02	1.52E-03
Nickel	11.56	0	11.56	7.9125888	8.79E+01	1.76E+02	9.00E-02	4.50E-02
Thallium	1.295	0	1.295	0.8864016	1.60E-02	1.64E-01	5.54E+01	5.40E+00
Vanadium	49.78333	0	49.78333	34.07569372	4.28E-01	4.29E+00	7.96E+01	7.95E+00
Zinc	163.7	0	163.7	112.049376	3.52E+02	7.03E+02	3.19E-01	1.59E-01
4,4'-DDT	0.03	0	0.03	0.0205344	1.76E+00	8.79E+00	1.17E-02	2.34E-03
Aroclor-1254	0.043	0	0.043	0.02943264	6.70E-02	6.68E-01	4.39E-01	4.41E-02
Anthracene	0.12	0	0.12	0.0821376	1.30E+00	2.60E+00	6.32E-02	3.16E-02
Benzo(a)anthracene	0.24	0	0.24	0.1642752	1.30E+00	2.60E+00	1.26E-01	6.32E-02
Benzo(a)pyrene	0.24	0	0.24	0.1642752	1.19E+00	1.19E+01	1.38E-01	1.38E-02
Benzo(b)fluoranthene	0.81	0	0.81	0.5544288	1.30E+00	2.60E+00	4.26E-01	2.13E-01
Benzo(g,h,i)perylene	0.2	0	0.2	0.136896	1.30E+00	2.60E+00	1.05E-01	5.27E-02
Benzo(k)fluoranthene	0.31	0	0.31	0.2121888	1.30E+00	2.60E+00	1.63E-01	8.16E-02
Carbazole	0.13	0	0.13	0.0889824	1.30E+00	2.60E+00	6.84E-02	3.42E-02
Chrysene	0.44	0	0.44	0.3011712	1.30E+00	2.60E+00	2.32E-01	1.16E-01
Dibenzofuran	0.058	0	0.058	0.03969984	NA	NA	NA	NA
Diethylphthalate	0.079	0	0.079	0.05407392	5.45E+03	5.45E+04	9.92E-06	9.92E-07
Fluoranthene	0.41	0	0.41	0.2806368	1.30E+00	2.60E+00	2.16E-01	1.08E-01
Indeno(1,2,3-cd)pyrene	0.25	0	0.25	0.17112	1.30E+00	2.60E+00	1.32E-01	6.58E-02
Naphthalene	0.13	0	0.13	0.0889824	1.30E+00	2.60E+00	6.84E-02	3.42E-02
Pentachlorophenol	0.16	0	0.16	0.1095168	2.10E-01	2.07E+00	5.22E-01	5.29E-02
Phenanthrene	0.21	0	0.21	0.1437408	1.30E+00	2.60E+00	1.11E-01	5.53E-02
Pyrene	0.3	0	0.3	0.205344	1.30E+00	2.60E+00	1.58E-01	7.90E-02

NA - Not Available

Site 3, Landfill C
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Short-Tailed Shrew
(Conservative Inputs)

Body Weight	0.0150000 kg	(USEPA, 1993)
Food Ingestion Rate	0.0093000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0033450 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0009672 kg/day	(Beyer, 1994)

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	114	0	114	78.03072	NA	NA	NA	NA
Aluminum	21400	0	21400	14647.872	2.30E+00	2.30E+01	6.38E+03	6.38E+02
Beryllium	1.3	0	1.3	0.889824	1.45E+00	1.45E+01	6.14E-01	6.14E-02
Chromium	42.1	0	42.1	28.816608	3.34E+01	4.40E+01	8.63E-01	6.55E-01
Copper	125	0	125	85.56	3.34E+01	4.40E+01	2.56E+00	1.94E+00
Iron	34000	0	34000	23272.32	5.00E+01	5.00E+02	4.65E+02	4.65E+01
Lead	240	0	240	164.2752	1.76E+01	1.76E+02	9.34E+00	9.34E-01
Mercury	0.6	0	0.6	0.410688	1.57E+01	1.57E+02	2.62E-02	2.62E-03
Nickel	22	0	22	15.05856	8.79E+01	1.76E+02	1.71E-01	8.56E-02
Thallium	2.5	0	2.5	1.7112	1.60E-02	1.64E-01	1.07E+02	1.04E+01
Vanadium	79.8	0	0	5.145504	4.28E-01	4.29E+00	1.20E+01	1.20E+00
Zinc	460	0	460	314.8608	3.52E+02	7.03E+02	8.95E-01	4.48E-01
4,4'-DDT	0.13	0	0.13	0.0889824	1.76E+00	8.79E+00	5.06E-02	1.01E-02
Aroclor-1254	0.1	0	0.1	0.068448	6.70E-02	6.68E-01	1.02E+00	1.02E-01
Anthracene	0.12	0	0.12	0.0821376	1.30E+00	2.60E+00	6.32E-02	3.16E-02
Benzo(a)anthracene	0.39	0	0.39	0.2669472	1.30E+00	2.60E+00	2.05E-01	1.03E-01
Benzo(a)pyrene	0.35	0	0.35	0.239568	1.19E+00	1.19E+01	2.01E-01	2.01E-02
Benzo(b)fluoranthene	1.5	0	1.5	1.02672	1.30E+00	2.60E+00	7.90E-01	3.95E-01
Benzo(g,h,i)perylene	0.34	0	0.34	0.2327232	1.30E+00	2.60E+00	1.79E-01	8.95E-02
Benzo(k)fluoranthene	0.46	0	0.46	0.3148608	1.30E+00	2.60E+00	2.42E-01	1.21E-01
Carbazole	0.13	0	0.13	0.0889824	1.30E+00	2.60E+00	6.84E-02	3.42E-02
Chrysene	0.73	0	0.73	0.4996704	1.30E+00	2.60E+00	3.84E-01	1.92E-01
Dibenzofuran	0.058	0	0.058	0.03969984	NA	NA	NA	NA
Diethylphthalate	0.079	0	0.079	0.05407392	5.45E+03	5.45E+04	9.92E-06	9.92E-07
Fluoranthene	0.64	0	0.64	0.4380672	1.30E+00	2.60E+00	3.37E-01	1.68E-01
Indeno(1,2,3-cd)pyrene	0.44	0	0.44	0.3011712	1.30E+00	2.60E+00	2.32E-01	1.16E-01
Naphthalene	0.13	0	0.13	0.0889824	1.30E+00	2.60E+00	6.84E-02	3.42E-02
Pentachlorophenol	0.16	0	0.16	0.1095168	2.10E-01	2.07E+00	5.22E-01	5.29E-02
Phenanthrene	0.42	0	0.42	0.2874816	1.30E+00	2.60E+00	2.21E-01	1.11E-01
Pyrene	0.56	0	0.56	0.3833088	1.30E+00	2.60E+00	2.95E-01	1.47E-01

NA - Not Available

TABLE D-2
HAZARD QUOTIENT CALCULATIONS FOR AMERICAN ROBIN

Site 3, Landfill C
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Robin
(Conservative Inputs)

Body Weight	0.0773000 kg	(USEPA, 1993)
Food Ingestion Rate	0.1175000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0108000 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0352500 kg/day	(Beyer, 1994)

Mean Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	25.13	0	25.13333	49.66515081	NA	NA	NA	NA
Aluminum	11730.00	0	11730	23179.26908	1.10E+02	4.45E+01	2.11E+02	5.21E+02
Beryllium	0.55	0	0.554167	1.095071271	NA	NA	NA	NA
Chromium	24.50	0	24.5	48.41364812	1.00E+00	5.00E+00	4.84E+01	9.68E+00
Copper	55.90	0	55.9	110.4621604	4.70E+01	6.17E+01	2.35E+00	1.79E+00
Iron	19365.00	0	19365	38266.54269	1.00E+02	1.00E+03	3.83E+02	3.83E+01
Lead	128.15	0	128.15	253.2330207	1.13E+00	1.13E+01	2.24E+02	2.24E+01
Mercury	0.35	0	0.349167	0.689977481	4.50E-01	9.00E-01	1.53E+00	7.67E-01
Nickel	11.56	0	11.56	22.84333765	7.74E+01	1.07E+02	2.95E-01	2.13E-01
Thallium	1.30	0	1.295	2.559007115	NA	NA	NA	NA
Vanadium	49.78	0	49.78333	98.37520902	1.14E+01	1.14E+02	8.63E+00	8.63E-01
Zinc	163.70	0	163.7	323.4822122	1.45E+01	1.31E+02	2.23E+01	2.47E+00
4,4'-DDT	0.03	0	0.03	0.059282018	3.00E-03	2.80E-02	1.98E+01	2.12E+00
Aroclor-1254	0.043	0	0.043	0.084970893	1.80E-01	1.80E+00	4.72E-01	4.72E-02
Anthracene	0.12	0	0.12	0.237128072	1.00E+01	1.00E+02	2.37E-02	2.37E-03
Benzo(a)anthracene	0.24	0	0.24	0.474256145	1.00E+01	1.00E+02	4.74E-02	4.74E-03
Benzo(a)pyrene	0.24	0	0.24	0.474256145	1.00E+01	1.00E+02	4.74E-02	4.74E-03
Benzo(b)fluoranthene	0.81	0	0.81	1.600614489	1.00E+01	1.00E+02	1.60E-01	1.60E-02
Benzo(g,h,i)perylene	0.20	0	0.2	0.395213454	1.00E+01	1.00E+02	3.95E-02	3.95E-03
Benzo(k)fluoranthene	0.31	0	0.31	0.612580854	1.00E+01	1.00E+02	6.13E-02	6.13E-03
Carbazole	0.13	0	0.13	0.256888745	1.00E+01	1.00E+02	2.57E-02	2.57E-03
Chrysene	0.44	0	0.44	0.869469599	1.00E+01	1.00E+02	8.69E-02	8.69E-03
Dibenzofuran	0.058	0	0.058	0.114611902	NA	NA	NA	NA
Diethylphthalate	0.079	0	0.079	0.156109314	NA	NA	NA	NA
Fluoranthene	0.41	0	0.41	0.810187581	1.00E+01	1.00E+02	8.10E-02	8.10E-03
Indeno(1,2,3-cd)pyrene	0.25	0	0.25	0.494016818	1.00E+01	1.00E+02	4.94E-02	4.94E-03
Naphthalene	0.13	0	0.13	0.256888745	1.00E+01	1.00E+02	2.57E-02	2.57E-03
Pentachlorophenol	0.16	0	0.16	0.316170763	NA	NA	NA	NA
Phenanthrene	0.21	0	0.21	0.414974127	1.00E+01	1.00E+02	4.15E-02	4.15E-03
Pyrene	0.30	0	0.3	0.592820181	1.00E+01	1.00E+02	5.93E-02	5.93E-03

NA - Not Available

Site 3, Landfill C
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Robin
(Conservative Inputs)

Body Weight	0.0773000 kg	(USEPA, 1993)
Food Ingestion Rate	0.1175000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0108000 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0352500 kg/day	(Beyer, 1994)

Maximum Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	114	0	114	225.2716688	NA	NA	NA	NA
Aluminum	21400	0	21400	42287.83959	1.10E+02	4.45E+01	3.85E+02	9.50E+02
Beryllium	1.3	0	1.3	2.568887451	NA	NA	NA	NA
Chromium	42.1	0	42.1	83.19243208	1.00E+00	5.00E+00	8.32E+01	1.66E+01
Copper	125	0	125	247.0084088	4.70E+01	6.17E+01	5.26E+00	4.00E+00
Iron	34000	0	34000	67186.28719	1.00E+02	1.00E+03	6.72E+02	6.72E+01
Lead	240	0	240	474.2561449	1.13E+00	1.13E+01	4.20E+02	4.20E+01
Mercury	0.6	0	0.6	1.185640362	4.50E-01	9.00E-01	2.63E+00	1.32E+00
Nickel	22	0	22	43.47347995	7.74E+01	1.07E+02	5.62E-01	4.06E-01
Thallium	2.5	0	2.5	4.940168176	NA	NA	NA	NA
Vanadium	79.8	0	79.8	157.6901682	1.14E+01	1.14E+02	1.38E+01	1.38E+00
Zinc	460	0	460	908.9909444	1.45E+01	1.31E+02	6.27E+01	6.94E+00
4,4'-DDT	0.13	0	0.13	0.256888745	3.00E-03	2.80E-02	8.56E+01	9.17E+00
Aroclor-1254	0.1	0	0.1	0.197606727	1.80E-01	1.80E+00	1.10E+00	1.10E-01
Anthracene	0.12	0	0.12	0.237128072	1.00E+01	1.00E+02	2.37E-02	2.37E-03
Benzo(a)anthracene	0.39	0	0.39	0.770666235	1.00E+01	1.00E+02	7.71E-02	7.71E-03
Benzo(a)pyrene	0.35	0	0.35	0.691623545	1.00E+01	1.00E+02	6.92E-02	6.92E-03
Benzo(b)fluoranthene	1.5	0	1.5	2.964100906	1.00E+01	1.00E+02	2.96E-01	2.96E-02
Benzo(g,h,i)perylene	0.34	0	0.34	0.671862872	1.00E+01	1.00E+02	6.72E-02	6.72E-03
Benzo(k)fluoranthene	0.46	0	0.46	0.908990944	1.00E+01	1.00E+02	9.09E-02	9.09E-03
Carbazole	0.13	0	0.13	0.256888745	1.00E+01	1.00E+02	2.57E-02	2.57E-03
Chrysene	0.73	0	0.73	1.442529107	1.00E+01	1.00E+02	1.44E-01	1.44E-02
Dibenzofuran	0.058	0	0.058	0.114611902	NA	NA	NA	NA
Diethylphthalate	0.079	0	0.079	0.156109314	NA	NA	NA	NA
Fluoranthene	0.64	0	0.64	1.264683053	1.00E+01	1.00E+02	1.26E-01	1.26E-02
Indeno(1,2,3-cd)pyrene	0.44	0	0.44	0.869469599	1.00E+01	1.00E+02	8.69E-02	8.69E-03
Naphthalene	0.13	0	0.13	0.256888745	1.00E+01	1.00E+02	2.57E-02	2.57E-03
Pentachlorophenol	0.16	0	0.16	0.316170763	NA	NA	NA	NA
Phenanthrene	0.42	0	0.42	0.829948254	1.00E+01	1.00E+02	8.30E-02	8.30E-03
Pyrene	0.56	0	0.56	1.106597671	1.00E+01	1.00E+02	1.11E-01	1.11E-02

NA - Not Available

TABLE D-3
HAZARD QUOTIENT CALCULATIONS FOR RED-TAILED HAWK

Site 3, Landfill C
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red-Tailed Hawk
(Conservative Inputs)

Body Weight	0.9570000 kg	(USEPA, 1993)
Food Ingestion Rate	0.1090000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0640000 L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0028000 kg/day	(USEPA, 1993; life history fact sheet)

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Sm. Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	25.13	0	25.13333	2.936161227	NA	NA	NA	NA
Aluminum	11730.00	0	11730	1370.338558	1.10E+02	4.45E+01	1.25E+01	3.08E+01
Beryllium	0.55	0	0.554167	0.064739677	NA	NA	NA	NA
Chromium	24.50	0	24.5	2.862173459	1.00E+00	5.00E+00	2.86E+00	5.72E-01
Copper	55.90	0	55.9	6.530428422	4.70E+01	6.17E+01	1.39E-01	1.06E-01
Iron	19365.00	0	19365	2262.285266	1.00E+02	1.00E+03	2.26E+01	2.26E+00
Lead	128.15	0	128.15	14.97091954	1.13E+00	1.13E+01	1.32E+01	1.32E+00
Mercury	0.35	0	0.349167	0.040790878	4.50E-01	9.00E-01	9.06E-02	4.53E-02
Nickel	11.56	0	11.56	1.350478579	7.74E+01	1.07E+02	1.74E-02	1.26E-02
Thallium	1.30	0	1.295	0.151286311	NA	NA	NA	NA
Vanadium	49.78	0	49.78333	5.815858196	1.14E+01	1.14E+02	5.10E-01	5.10E-02
Zinc	163.70	0	163.7	19.12399164	1.45E+01	1.31E+02	1.32E+00	1.46E-01
4,4'-DDT	0.03	0	0.03	0.003504702	3.00E-03	2.80E-02	1.17E+00	1.25E-01
Aroclor-1254	0.043	0	0.043	0.005023406	1.80E-01	1.80E+00	2.79E-02	2.79E-03
Anthracene	0.12	0	0.12	0.014018809	1.00E+01	1.00E+02	1.40E-03	1.40E-04
Benzo(a)anthracene	0.24	0	0.24	0.028037618	1.00E+01	1.00E+02	2.80E-03	2.80E-04
Benzo(a)pyrene	0.24	0	0.24	0.028037618	1.00E+01	1.00E+02	2.80E-03	2.80E-04
Benzo(b)fluoranthene	0.81	0	0.81	0.094626959	1.00E+01	1.00E+02	9.46E-03	9.46E-04
Benzo(g,h,i)perylene	0.20	0	0.2	0.023364681	1.00E+01	1.00E+02	2.34E-03	2.34E-04
Benzo(k)fluoranthene	0.31	0	0.31	0.036215256	1.00E+01	1.00E+02	3.62E-03	3.62E-04
Carbazole	0.13	0	0.13	0.015187043	1.00E+01	1.00E+02	1.52E-03	1.52E-04
Chrysene	0.44	0	0.44	0.051402299	1.00E+01	1.00E+02	5.14E-03	5.14E-04
Dibenzofuran	0.058	0	0.058	0.006775758	NA	NA	NA	NA
Diethylphthalate	0.079	0	0.079	0.009229049	NA	NA	NA	NA
Fluoranthene	0.41	0	0.41	0.047897597	1.00E+01	1.00E+02	4.79E-03	4.79E-04
Indeno(1,2,3-cd)pyrene	0.25	0	0.25	0.029205852	1.00E+01	1.00E+02	2.92E-03	2.92E-04
Naphthalene	0.13	0	0.13	0.015187043	1.00E+01	1.00E+02	1.52E-03	1.52E-04
Pentachlorophenol	0.16	0	0.16	0.018691745	NA	NA	NA	NA
Phenanthrene	0.21	0	0.21	0.024532915	1.00E+01	1.00E+02	2.45E-03	2.45E-04
Pyrene	0.30	0	0.3	0.035047022	1.00E+01	1.00E+02	3.50E-03	3.50E-04

NA - Not Available

Site 3, Landfill C
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red-Tailed Hawk
(Conservative Inputs)

Body Weight	0.9570000 kg	(USEPA, 1993)
Food Ingestion Rate	0.1090000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0640000 L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0028000 kg/day	(USEPA, 1993; life history fact sheet)

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Sm. Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	114	0	114	13.31786834	NA	NA	NA	NA
Aluminum	21400	0	21400	2500.020899	1.10E+02	4.45E+01	2.28E+01	5.62E+01
Beryllium	1.3	0	1.3	0.151870428	NA	NA	NA	NA
Chromium	42.1	0	42.1	4.918265413	1.00E+00	5.00E+00	4.92E+00	9.84E-01
Copper	125	0	125	14.60292581	4.70E+01	6.17E+01	3.11E-01	2.37E-01
Iron	34000	0	34000	3971.99582	1.00E+02	1.00E+03	3.97E+01	3.97E+00
Lead	240	0	240	28.03761755	1.13E+00	1.13E+01	2.48E+01	2.48E+00
Mercury	0.6	0	0.6	0.070094044	4.50E-01	9.00E-01	1.56E-01	7.79E-02
Nickel	22	0	22	2.570114943	7.74E+01	1.07E+02	3.32E-02	2.40E-02
Thallium	2.5	0	2.5	0.292058516	NA	NA	NA	NA
Vanadium	79.8	0	79.8	9.322507837	1.14E+01	1.14E+02	8.18E-01	8.18E-02
Zinc	460	0	460	53.73876698	1.45E+01	1.31E+02	3.71E+00	4.10E-01
4,4'-DDT	0.13	0	0.13	0.015187043	3.00E-03	2.80E-02	5.06E+00	5.42E-01
Aroclor-1254	0.1	0	0.1	0.011682341	1.80E-01	1.80E+00	6.49E-02	6.49E-03
Anthracene	0.12	0	0.12	0.014018809	1.00E+01	1.00E+02	1.40E-03	1.40E-04
Benzo(a)anthracene	0.39	0	0.39	0.045561129	1.00E+01	1.00E+02	4.56E-03	4.56E-04
Benzo(a)pyrene	0.35	0	0.35	0.040888192	1.00E+01	1.00E+02	4.09E-03	4.09E-04
Benzo(b)fluoranthene	1.5	0	1.5	0.17523511	1.00E+01	1.00E+02	1.75E-02	1.75E-03
Benzo(g,h,i)perylene	0.34	0	0.34	0.039719958	1.00E+01	1.00E+02	3.97E-03	3.97E-04
Benzo(k)fluoranthene	0.46	0	0.46	0.053738767	1.00E+01	1.00E+02	5.37E-03	5.37E-04
Carbazole	0.13	0	0.13	0.015187043	1.00E+01	1.00E+02	1.52E-03	1.52E-04
Chrysene	0.73	0	0.73	0.085281087	1.00E+01	1.00E+02	8.53E-03	8.53E-04
Dibenzofuran	0.058	0	0.058	0.006775758	NA	NA	NA	NA
Diethylphthalate	0.079	0	0.079	0.009229049	NA	NA	NA	NA
Fluoranthene	0.64	0	0.64	0.07476698	1.00E+01	1.00E+02	7.48E-03	7.48E-04
Indeno(1,2,3-cd)pyrene	0.44	0	0.44	0.051402299	1.00E+01	1.00E+02	5.14E-03	5.14E-04
Naphthalene	0.13	0	0.13	0.015187043	1.00E+01	1.00E+02	1.52E-03	1.52E-04
Pentachlorophenol	0.16	0	0.16	0.018691745	NA	NA	NA	NA
Phenanthrene	0.42	0	0.42	0.049065831	1.00E+01	1.00E+02	4.91E-03	4.91E-04
Pyrene	0.56	0	0.56	0.065421108	1.00E+01	1.00E+02	6.54E-03	6.54E-04

NA - Not Available

TABLE D-4
HAZARD QUOTIENT CALCULATIONS FOR AMERICAN WOODCOCK

Site 3, Landfill C
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Woodcock
(Conservataive Inputs)

Body Weight	0.1340000	kg	(USEPA, 1993)
Food Ingestion Rate	0.1500000	kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0200000	L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0075000	kg/day	(Beyer, 1994)

Mean Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	25.13	0	25.13333	29.54104086	NA	NA	NA	NA
Aluminum	11730.00	0	11730	13787.12687	1.10E+02	4.45E+01	1.26E+02	3.10E+02
Beryllium	0.55	0	0.554167	0.651353004	NA	NA	NA	NA
Chromium	24.50	0	24.5	28.79664179	1.00E+00	5.00E+00	2.88E+01	5.76E+00
Copper	55.90	0	55.9	65.70335821	4.70E+01	6.17E+01	1.40E+00	1.06E+00
Iron	19365.00	0	19365	22761.10075	1.00E+02	1.00E+03	2.28E+02	2.28E+01
Lead	128.15	0	128.15	150.6240672	1.13E+00	1.13E+01	1.33E+02	1.33E+01
Mercury	0.35	0	0.349167	0.410401511	4.50E-01	9.00E-01	9.12E-01	4.56E-01
Nickel	11.56	0	11.56	13.58731343	7.74E+01	1.07E+02	1.76E-01	1.27E-01
Thallium	1.30	0	1.295	1.522108209	NA	NA	NA	NA
Vanadium	49.78	0	49.78333	58.51398862	1.14E+01	1.14E+02	5.13E+00	5.13E-01
Zinc	163.70	0	163.7	192.4085821	1.45E+01	1.31E+02	1.33E+01	1.47E+00
4,4'-DDT	0.03	0	0.03	0.035261194	3.00E-03	2.80E-02	1.18E+01	1.26E+00
Aroclor-1254	0.043	0	0.043	0.050541045	1.80E-01	1.80E+00	2.81E-01	2.81E-02
Anthracene	0.12	0	0.12	0.141044776	1.00E+01	1.00E+02	1.41E-02	1.41E-03
Benzo(a)anthracene	0.24	0	0.24	0.282089552	1.00E+01	1.00E+02	2.82E-02	2.82E-03
Benzo(a)pyrene	0.24	0	0.24	0.282089552	1.00E+01	1.00E+02	2.82E-02	2.82E-03
Benzo(b)fluoranthene	0.81	0	0.81	0.952052239	1.00E+01	1.00E+02	9.52E-02	9.52E-03
Benzo(g,h,i)perylene	0.20	0	0.2	0.235074627	1.00E+01	1.00E+02	2.35E-02	2.35E-03
Benzo(k)fluoranthene	0.31	0	0.31	0.364365672	1.00E+01	1.00E+02	3.64E-02	3.64E-03
Carbazole	0.13	0	0.13	0.152798507	1.00E+01	1.00E+02	1.53E-02	1.53E-03
Chrysene	0.44	0	0.44	0.517164179	1.00E+01	1.00E+02	5.17E-02	5.17E-03
Dibenzofuran	0.058	0	0.058	0.068171642	NA	NA	NA	NA
Diethylphthalate	0.079	0	0.079	0.092854478	NA	NA	NA	NA
Fluoranthene	0.41	0	0.41	0.481902985	1.00E+01	1.00E+02	4.82E-02	4.82E-03
Indeno(1,2,3-cd)pyrene	0.25	0	0.25	0.293843284	1.00E+01	1.00E+02	2.94E-02	2.94E-03
Naphthalene	0.13	0	0.13	0.152798507	1.00E+01	1.00E+02	1.53E-02	1.53E-03
Pentachlorophenol	0.16	0	0.16	0.188059701	NA	NA	NA	NA
Phenanthrene	0.21	0	0.21	0.246828358	1.00E+01	1.00E+02	2.47E-02	2.47E-03
Pyrene	0.30	0	0.3	0.35261194	1.00E+01	1.00E+02	3.53E-02	3.53E-03

NA - Not Available

Site 3, Landfill C
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Woodcock
(Conservataive Inputs)

Body Weight	0.1340000	kg	(USEPA, 1993)
Food Ingestion Rate	0.1500000	kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0200000	L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0075000	kg/day	(Beyer, 1994)

Maximum Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	114	0	114	133.9925373	NA	NA	NA	NA
Aluminum	21400	0	21400	25152.98507	1.10E+02	4.45E+01	2.29E+02	5.65E+02
Beryllium	1.3	0	1.3	1.527985075	NA	NA	NA	NA
Chromium	42.1	0	42.1	49.48320896	1.00E+00	5.00E+00	4.95E+01	9.90E+00
Copper	125	0	125	146.9216418	4.70E+01	6.17E+01	3.13E+00	2.38E+00
Iron	34000	0	34000	39962.68657	1.00E+02	1.00E+03	4.00E+02	4.00E+01
Lead	240	0	240	282.0895522	1.13E+00	1.13E+01	2.50E+02	2.50E+01
Mercury	0.6	0	0.6	0.705223881	4.50E-01	9.00E-01	1.57E+00	7.84E-01
Nickel	22	0	22	25.85820896	7.74E+01	1.07E+02	3.34E-01	2.42E-01
Thallium	2.5	0	2.5	2.938432836	NA	NA	NA	NA
Vanadium	79.8	0	79.8	93.79477612	1.14E+01	1.14E+02	8.23E+00	8.23E-01
Zinc	460	0	460	540.6716418	1.45E+01	1.31E+02	3.73E+01	4.13E+00
4,4'-DDT	0.13	0	0.13	0.152798507	3.00E-03	2.80E-02	5.09E+01	5.46E+00
Aroclor-1254	0.1	0	0.1	0.117537313	1.80E-01	1.80E+00	6.53E-01	6.53E-02
Anthracene	0.12	0	0.12	0.141044776	1.00E+01	1.00E+02	1.41E-02	1.41E-03
Benzo(a)anthracene	0.39	0	0.39	0.458395522	1.00E+01	1.00E+02	4.58E-02	4.58E-03
Benzo(a)pyrene	0.35	0	0.35	0.411380597	1.00E+01	1.00E+02	4.11E-02	4.11E-03
Benzo(b)fluoranthene	1.5	0	1.5	1.763059701	1.00E+01	1.00E+02	1.76E-01	1.76E-02
Benzo(g,h,i)perylene	0.34	0	0.34	0.399626866	1.00E+01	1.00E+02	4.00E-02	4.00E-03
Benzo(k)fluoranthene	0.46	0	0.46	0.540671642	1.00E+01	1.00E+02	5.41E-02	5.41E-03
Carbazole	0.13	0	0.13	0.152798507	1.00E+01	1.00E+02	1.53E-02	1.53E-03
Chrysene	0.73	0	0.73	0.858022388	1.00E+01	1.00E+02	8.58E-02	8.58E-03
Dibenzofuran	0.058	0	0.058	0.068171642	NA	NA	NA	NA
Diethylphthalate	0.079	0	0.079	0.092854478	NA	NA	NA	NA
Fluoranthene	0.64	0	0.64	0.752238806	1.00E+01	1.00E+02	7.52E-02	7.52E-03
Indeno(1,2,3-cd)pyrene	0.44	0	0.44	0.517164179	1.00E+01	1.00E+02	5.17E-02	5.17E-03
Naphthalene	0.13	0	0.13	0.152798507	1.00E+01	1.00E+02	1.53E-02	1.53E-03
Pentachlorophenol	0.16	0	0.16	0.188059701	NA	NA	NA	NA
Phenanthrene	0.42	0	0.42	0.493656716	1.00E+01	1.00E+02	4.94E-02	4.94E-03
Pyrene	0.56	0	0.56	0.658208955	1.00E+01	1.00E+02	6.58E-02	6.58E-03

NA - Not Available

TABLE D-5
HAZARD QUOTIENT CALCULATIONS FOR RED FOX

Site 3, Landfill C
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red Fox
(Conservative Inputs)

Body Weight	3.9400000 kg	(USEPA, 1993)
Food Ingestion Rate	0.4500000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.3800000 L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0165074 kg/day	(Beyer, 1994)

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	25.13	0	25.13333	2.975858993	NA	NA	NA	NA
Aluminum	11730.00	0	11730	1388.86594	5.51E-01	5.52E+00	2.52E+03	2.52E+02
Beryllium	0.55	0	0.554167	0.065614976	3.50E-01	3.50E+00	1.87E-01	1.87E-02
Chromium	24.50	0	24.5	2.900870888	8.00E+00	1.06E+01	3.63E-01	2.74E-01
Copper	55.90	0	55.9	6.618721741	8.00E+00	1.06E+01	8.27E-01	6.24E-01
Iron	19365.00	0	19365	2292.872031	5.00E+01	5.00E+02	4.59E+01	4.59E+00
Lead	128.15	0	128.15	15.17333079	4.22E+00	4.23E+01	3.60E+00	3.59E-01
Mercury	0.35	0	0.349167	0.041342383	3.77E+00	3.77E+01	1.10E-02	1.10E-03
Nickel	11.56	0	11.56	1.368737448	2.11E+01	4.23E+01	6.48E-02	3.24E-02
Thallium	1.30	0	1.295	0.153331747	4.00E-03	3.90E-02	3.83E+01	3.93E+00
Vanadium	49.78	0	49.78333	5.894490315	1.03E-01	1.03E+00	5.72E+01	5.72E+00
Zinc	163.70	0	163.7	19.38255365	8.45E+01	1.69E+02	2.29E-01	1.15E-01
4,4'-DDT	0.03	0	0.03	0.003552087	4.20E-01	2.11E+00	8.46E-03	1.68E-03
Aroclor-1254	0.043	0	0.043	0.005091324	9.60E-02	4.74E-01	5.30E-02	1.07E-02
Anthracene	0.12	0	0.12	0.014208347	1.30E+00	2.60E+00	1.09E-02	5.46E-03
Benzo(a)anthracene	0.24	0	0.24	0.028416694	1.30E+00	2.60E+00	2.19E-02	1.09E-02
Benzo(a)pyrene	0.24	0	0.24	0.028416694	2.90E-01	2.86E+00	9.80E-02	9.94E-03
Benzo(b)fluoranthene	0.81	0	0.81	0.095906344	1.30E+00	2.60E+00	7.38E-02	3.69E-02
Benzo(g,h,i)perylene	0.20	0	0.2	0.023680579	1.30E+00	2.60E+00	1.82E-02	9.11E-03
Benzo(k)fluoranthene	0.31	0	0.31	0.036704897	1.30E+00	2.60E+00	2.82E-02	1.41E-02
Carbazole	0.13	0	0.13	0.015392376	1.30E+00	2.60E+00	1.18E-02	5.92E-03
Chrysene	0.44	0	0.44	0.052097273	1.30E+00	2.60E+00	4.01E-02	2.00E-02
Dibenzofuran	0.058	0	0.058	0.006867368	NA	NA	NA	NA
Diethylphthalate	0.079	0	0.079	0.009353829	1.31E+03	1.31E+04	7.14E-06	7.14E-07
Fluoranthene	0.41	0	0.41	0.048545186	1.30E+00	2.60E+00	3.73E-02	1.87E-02
Indeno(1,2,3-cd)pyrene	0.25	0	0.25	0.029600723	1.30E+00	2.60E+00	2.28E-02	1.14E-02
Naphthalene	0.13	0	0.13	0.015392376	1.30E+00	2.60E+00	1.18E-02	5.92E-03
Pentachlorophenol	0.16	0	0.16	0.018944463	2.10E-01	2.07E+00	9.02E-02	9.15E-03
Phenanthrene	0.21	0	0.21	0.024864608	1.30E+00	2.60E+00	1.91E-02	9.56E-03
Pyrene	0.30	0	0.3	0.035520868	1.30E+00	2.60E+00	2.73E-02	1.37E-02

NA - Not Available

Site 3, Landfill C
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red Fox
(Conservative Inputs)

Body Weight	3.9400000 kg	(USEPA, 1993)
Food Ingestion Rate	0.4500000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.3800000 L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0165074 kg/day	(Beyer, 1994)

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	114	0	114	13.49792985	NA	NA	NA	NA
Aluminum	21400	0	21400	2533.821919	5.51E-01	5.52E+00	4.60E+03	4.59E+02
Beryllium	1.3	0	1.3	0.153923761	3.50E-01	3.50E+00	4.40E-01	4.40E-02
Chromium	42.1	0	42.1	4.984761812	8.00E+00	1.06E+01	6.23E-01	4.70E-01
Copper	125	0	125	14.80036168	8.00E+00	1.06E+01	1.85E+00	1.40E+00
Iron	34000	0	34000	4025.698376	5.00E+01	5.00E+02	8.05E+01	8.05E+00
Lead	240	0	240	28.41669442	4.22E+00	4.23E+01	6.73E+00	6.73E-01
Mercury	0.6	0	0.6	0.071041736	3.77E+00	3.77E+01	1.88E-02	1.88E-03
Nickel	22	0	22	2.604863655	2.11E+01	4.23E+01	1.23E-01	6.17E-02
Thallium	2.5	0	2.5	0.296007234	4.00E-03	3.90E-02	7.40E+01	7.59E+00
Vanadium	79.8	0	79.8	9.448550893	1.03E-01	1.03E+00	9.17E+01	9.17E+00
Zinc	460	0	460	54.46533096	8.45E+01	1.69E+02	6.45E-01	3.22E-01
4,4'-DDT	0.13	0	0.13	0.015392376	4.20E-01	2.11E+00	3.66E-02	7.29E-03
Aroclor-1254	0.1	0	0.1	0.011840289	9.60E-02	4.74E-01	1.23E-01	2.50E-02
Anthracene	0.12	0	0.12	0.014208347	1.30E+00	2.60E+00	1.09E-02	5.46E-03
Benzo(a)anthracene	0.39	0	0.39	0.046177128	1.30E+00	2.60E+00	3.55E-02	1.78E-02
Benzo(a)pyrene	0.35	0	0.35	0.041441013	2.90E-01	2.86E+00	1.43E-01	1.45E-02
Benzo(b)fluoranthene	1.5	0	1.5	0.17760434	1.30E+00	2.60E+00	1.37E-01	6.83E-02
Benzo(g,h,i)perylene	0.34	0	0.34	0.040256984	1.30E+00	2.60E+00	3.10E-02	1.55E-02
Benzo(k)fluoranthene	0.46	0	0.46	0.054465331	1.30E+00	2.60E+00	4.19E-02	2.09E-02
Carbazole	0.13	0	0.13	0.015392376	1.30E+00	2.60E+00	1.18E-02	5.92E-03
Chrysene	0.73	0	0.73	0.086434112	1.30E+00	2.60E+00	6.65E-02	3.32E-02
Dibenzofuran	0.058	0	0.058	0.006867368	NA	NA	NA	NA
Diethylphthalate	0.079	0	0.079	0.009353829	1.31E+03	1.31E+04	7.14E-06	7.14E-07
Fluoranthene	0.64	0	0.64	0.075777852	1.30E+00	2.60E+00	5.83E-02	2.91E-02
Indeno(1,2,3-cd)pyrene	0.44	0	0.44	0.052097273	1.30E+00	2.60E+00	4.01E-02	2.00E-02
Naphthalene	0.13	0	0.13	0.015392376	1.30E+00	2.60E+00	1.18E-02	5.92E-03
Pentachlorophenol	0.16	0	0.16	0.018944463	2.10E-01	2.07E+00	9.02E-02	9.15E-03
Phenanthrene	0.42	0	0.42	0.049729215	1.30E+00	2.60E+00	3.83E-02	1.91E-02
Pyrene	0.56	0	0.56	0.06630562	1.30E+00	2.60E+00	5.10E-02	2.55E-02

NA - Not Available

TABLE D-6
HAZARD QUOTIENT CALCULATIONS FOR DEER MOUSE

Site 3, Landfill C
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Deer Mouse
(Conservative Inputs)

Body Weight	0.0148000 kg	(USEPA, 1993)
Food Ingestion Rate	0.0066600 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0028120 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0000700 kg/day	(Beyer, 1994)

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertabrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	25.13	0	10.053332	15.079998	11.4288724	NA	NA	NA	NA
Aluminum	11730.00	0	4692	7038	5333.97973	1.93E+00	1.93E+01	2.76E+03	2.76E+02
Beryllium	0.55	0	0.2216668	0.3325002	0.25199621	6.60E-01	6.60E+00	3.82E-01	3.82E-02
Chromium	24.50	0	9.8	14.7	11.1408784	1.17E+01	1.54E+01	9.52E-01	7.23E-01
Copper	55.90	0	22.36	33.54	25.4193919	1.17E+01	1.54E+01	2.17E+00	1.65E+00
Iron	19365.00	0	7746	11619	8805.84122	5.00E+01	5.00E+02	1.76E+02	1.76E+01
Lead	128.15	0	51.26	76.89	58.2736149	8.00E+00	8.00E+01	7.28E+00	7.28E-01
Mercury	0.35	0	0.1396668	0.2095002	0.15877662	1.32E+01	1.32E+02	1.20E-02	1.20E-03
Nickel	11.56	0	4.624	6.936	5.25667568	4.00E+01	8.00E+01	1.31E-01	6.57E-02
Thallium	1.30	0	0.518	0.777	0.588875	7.40E-03	7.40E-02	7.96E+01	7.96E+00
Vanadium	49.78	0	19.913332	29.869998	22.6379602	2.10E-01	2.10E+00	1.08E+02	1.08E+01
Zinc	163.70	0	65.48	98.22	74.4392568	1.60E+02	3.20E+02	4.65E-01	2.33E-01
4,4'-DDT	0.03	0	0.012	0.018	0.01364189	8.00E-01	4.00E+00	1.71E-02	3.41E-03
Aroclor-1254	0.043	0	0.0172	0.0258	0.01955338	6.80E-02	6.80E-01	2.88E-01	2.88E-02
Anthracene	0.12	0	0.048	0.072	0.05456757	1.30E+00	2.60E+00	4.20E-02	2.10E-02
Benzo(a)anthracene	0.24	0	0.096	0.144	0.10913514	1.30E+00	2.60E+00	8.40E-02	4.20E-02
Benzo(a)pyrene	0.24	0	0.096	0.144	0.10913514	1.00E+00	1.00E+01	1.09E-01	1.09E-02
Benzo(b)fluoranthene	0.81	0	0.324	0.486	0.36833108	1.30E+00	2.60E+00	2.83E-01	1.42E-01
Benzo(g,h,i)perylene	0.20	0	0.08	0.12	0.09094595	1.30E+00	2.60E+00	7.00E-02	3.50E-02
Benzo(k)fluoranthene	0.31	0	0.124	0.186	0.14096622	1.30E+00	2.60E+00	1.08E-01	5.42E-02
Carbazole	0.13	0	0.052	0.078	0.05911486	1.30E+00	2.60E+00	4.55E-02	2.27E-02
Chrysene	0.44	0	0.176	0.264	0.20008108	1.30E+00	2.60E+00	1.54E-01	7.70E-02
Dibenzofuran	0.058	0	0.0232	0.0348	0.02637432	NA	NA	NA	NA
Diethylphthalate	0.079	0	0.0316	0.0474	0.03592365	4.58E+03	4.58E+04	7.84E-06	7.84E-07
Fluoranthene	0.41	0	0.164	0.246	0.18643919	1.30E+00	2.60E+00	1.43E-01	7.17E-02
Indeno(1,2,3-cd)pyrene	0.25	0	0.1	0.15	0.11368243	1.30E+00	2.60E+00	8.74E-02	4.37E-02
Naphthalene	0.13	0	0.052	0.078	0.05911486	1.30E+00	2.60E+00	4.55E-02	2.27E-02
Pentachlorophenol	0.16	0	0.064	0.096	0.07275676	2.10E-01	2.07E+00	3.46E-01	3.51E-02
Phenanthrene	0.21	0	0.084	0.126	0.09549324	1.30E+00	2.60E+00	7.35E-02	3.67E-02
Pyrene	0.30	0	0.12	0.18	0.13641892	1.30E+00	2.60E+00	1.05E-01	5.25E-02

NA - Not Available

Site 3, Landfill C
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Deer Mouse
(Conservative Inputs)

Body Weight	0.0148000 kg	(USEPA, 1993)
Food Ingestion Rate	0.0066600 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0028120 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0000700 kg/day	(Beyer, 1994)

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	114	0	45.6	68.4	51.8391892	NA	NA	NA	NA
Aluminum	21400	0	8560	12840	9731.21622	1.93E+00	1.93E+01	5.04E+03	5.04E+02
Beryllium	1.3	0	0.52	0.78	0.59114865	6.60E-01	6.60E+00	8.96E-01	8.96E-02
Chromium	42.1	0	16.84	25.26	19.1441216	1.17E+01	1.54E+01	1.64E+00	1.24E+00
Copper	125	0	50	75	56.8412162	1.17E+01	1.54E+01	4.86E+00	3.69E+00
Iron	34000	0	13600	20400	15460.8108	5.00E+01	5.00E+02	3.09E+02	3.09E+01
Lead	240	0	96	144	109.135135	8.00E+00	8.00E+01	1.36E+01	1.36E+00
Mercury	0.6	0	0.24	0.36	0.27283784	1.32E+01	1.32E+02	2.07E-02	2.07E-03
Nickel	22	0	8.8	13.2	10.0040541	4.00E+01	8.00E+01	2.50E-01	1.25E-01
Thallium	2.5	0	1	1.5	1.13682432	7.40E-03	7.40E-02	1.54E+02	1.54E+01
Vanadium	79.8	0	31.92	47.88	36.2874324	2.10E-01	2.10E+00	1.73E+02	1.73E+01
Zinc	460	0	184	276	209.175676	1.60E+02	3.20E+02	1.31E+00	6.54E-01
4,4'-DDT	0.13	0	0.052	0.078	0.05911486	8.00E-01	4.00E+00	7.39E-02	1.48E-02
Aroclor-1254	0.1	0	0.04	0.06	0.04547297	6.80E-02	6.80E-01	6.69E-01	6.69E-02
Anthracene	0.12	0	0.048	0.072	0.05456757	1.30E+00	2.60E+00	4.20E-02	2.10E-02
Benzo(a)anthracene	0.39	0	0.156	0.234	0.17734459	1.30E+00	2.60E+00	1.36E-01	6.82E-02
Benzo(a)pyrene	0.35	0	0.14	0.21	0.15915541	1.00E+00	1.00E+01	1.59E-01	1.59E-02
Benzo(b)fluoranthene	1.5	0	0.6	0.9	0.68209459	1.30E+00	2.60E+00	5.25E-01	2.62E-01
Benzo(g,h,i)perylene	0.34	0	0.136	0.204	0.15460811	1.30E+00	2.60E+00	1.19E-01	5.95E-02
Benzo(k)fluoranthene	0.46	0	0.184	0.276	0.20917568	1.30E+00	2.60E+00	1.61E-01	8.05E-02
Carbazole	0.13	0	0.052	0.078	0.05911486	1.30E+00	2.60E+00	4.55E-02	2.27E-02
Chrysene	0.73	0	0.292	0.438	0.3319527	1.30E+00	2.60E+00	2.55E-01	1.28E-01
Dibenzofuran	0.058	0	0.0232	0.0348	0.02637432	NA	NA	NA	NA
Diethylphthalate	0.079	0	0.0316	0.0474	0.03592365	4.58E+03	4.58E+04	7.84E-06	7.84E-07
Fluoranthene	0.64	0	0.256	0.384	0.29102703	1.30E+00	2.60E+00	2.24E-01	1.12E-01
Indeno(1,2,3-cd)pyrene	0.44	0	0.176	0.264	0.20008108	1.30E+00	2.60E+00	1.54E-01	7.70E-02
Naphthalene	0.13	0	0.052	0.078	0.05911486	1.30E+00	2.60E+00	4.55E-02	2.27E-02
Pentachlorophenol	0.16	0	0.064	0.096	0.07275676	2.10E-01	2.07E+00	3.46E-01	3.51E-02
Phenanthrene	0.42	0	0.168	0.252	0.19098649	1.30E+00	2.60E+00	1.47E-01	7.35E-02
Pyrene	0.56	0	0.224	0.336	0.25464865	1.30E+00	2.60E+00	1.96E-01	9.79E-02

NA - Not Available

TABLE D-7
HAZARD QUOTIENT CALCULATIONS FOR RACCOON

Site 3, Landfill C
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Raccoon
(Conservative Inputs)

Body Weight	3.6700000	kg	(USEPA, 1993)
Food Ingestion Rate	0.8000000	kg/day	(USEPA, 1993, using placental mammal equation)
Water Ingestion Rate	0.3000000	L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0400000	kg/day	(estimated)
Sed. Ingestion Rate	0.0400000	kg/day	(estimated)

Mean Concentrations ECOC	Soil Concentration (mg/kg)	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	25.13	20.87	0	12.566665	10.435	5.51538561	NA	NA	NA	NA
Aluminum	11730.00	8523.33	0	5865	4261.665	2428.19215	1.93E+00	1.93E+01	1.26E+03	1.26E+02
Arsenic	0	5.77	0	0	2.885	0.69177112	1.26E-01	1.26E+00	5.49E+00	5.49E-01
Barium	0	140.6	0	0	70.3	16.8566757	5.10E+00	1.98E+01	3.31E+00	8.51E-01
Beryllium	0.55	1	0	0.2770835	0.5	0.18633065	6.60E-01	6.60E+00	2.82E-01	2.82E-02
Cadmium	0	1.12	0	0	0.56	0.13427793	1.00E+00	1.00E+01	1.34E-01	1.34E-02
Chromium	24.50	32.47	0	12.25	16.235	6.83019074	1.17E+01	1.54E+01	5.84E-01	4.44E-01
Cobalt	0	4.7	0	0	2.35	0.56348774	1.00E+00	1.00E+01	5.63E-01	5.63E-02
Copper	55.90	72.13	0	27.95	36.065	15.3496458	1.17E+01	1.54E+01	1.31E+00	9.97E-01
Iron	19365.00	15070	0	9682.5	7535	4128.44687	5.00E+01	5.00E+02	8.26E+01	8.26E+00
Lead	128.15	307.97	0	64.075	153.985	52.2868665	8.00E+00	8.00E+01	6.54E+00	6.54E-01
Manganese	0	155.5	0	0	77.75	18.6430518	8.80E+01	2.84E+02	2.12E-01	6.56E-02
Mercury	0.35	0.22	0	0.1745835	0.11	0.06823801	1.32E+01	1.32E+02	5.17E-03	5.17E-04
Nickel	11.56	0	0	5.78	0	1.38594005	4.00E+01	8.00E+01	3.46E-02	1.73E-02
Thallium	1.30	0	0	0.6475	0	0.15525886	7.40E-03	7.40E-02	2.10E+01	2.10E+00
Vanadium	49.78	30.3	0	24.891665	15.15	9.60127117	2.10E-01	2.10E+00	4.57E+01	4.57E+00
Zinc	163.70	307.47	0	81.85	153.735	56.4890463	1.60E+02	3.20E+02	3.53E-01	1.77E-01
4,4'-DDD	0	0.043	0	0	0.0215	0.00515531	8.00E-01	4.00E+00	6.44E-03	1.29E-03
4,4'-DDE	0	0.03	0	0	0.015	0.00359673	8.00E-01	4.00E+00	4.50E-03	8.99E-04
4,4'-DDT	0.03	0.013	0	0.015	0.0065	0.00515531	8.00E-01	4.00E+00	6.44E-03	1.29E-03
alpha-Chlordane	0	0.00088	0	0	0.00044	0.0001055	4.60E+00	9.20E+00	2.29E-05	1.15E-05
Aroclor-1254	0.043	0	0	0.0215	0	0.00515531	1.40E-01	6.90E-01	3.68E-02	7.47E-03
Aroclor-1260	0	0.08	0	0	0.04	0.00959128	3.90E-01	3.90E+00	2.46E-02	2.46E-03
Dieldrin	0	0.0072	0	0	0.0036	0.00086322	2.00E-02	2.00E-01	4.32E-02	4.32E-03
gamma-Chlordane	0	0.0018	0	0	0.0009	0.0002158	4.60E+00	9.20E+00	4.69E-05	2.35E-05
Acenaphthylene	0	0.066	0	0	0.033	0.00791281	1.30E+00	2.60E+00	6.09E-03	3.04E-03
Anthracene	0.12	0	0	0.06	0	0.01438692	1.30E+00	2.60E+00	1.11E-02	5.53E-03
Benzo(a)anthracene	0.24	0	0	0.12	0	0.02877384	1.30E+00	2.60E+00	2.21E-02	1.11E-02
Benzo(a)pyrene	0.24	0	0	0.12	0	0.02877384	1.00E+00	1.00E+01	2.88E-02	2.88E-03
Benzo(b)fluoranthene	0.81	0	0	0.405	0	0.09711172	1.30E+00	2.60E+00	7.47E-02	3.74E-02
Benzo(g,h,i)perylene	0.20	0	0	0.1	0	0.0239782	1.30E+00	2.60E+00	1.84E-02	9.22E-03
Benzo(k)fluoranthene	0.31	0.47	0	0.155	0.235	0.09351499	1.30E+00	2.60E+00	7.19E-02	3.60E-02
Carbazole	0.13	0	0	0.065	0	0.01558583	1.30E+00	2.60E+00	1.20E-02	5.99E-03
Chrysene	0.44	0	0	0.22	0	0.05275204	1.30E+00	2.60E+00	4.06E-02	2.03E-02
Dibenz(a,h)anthracene	0	0.066	0	0	0.033	0.00791281	1.30E+00	2.60E+00	6.09E-03	3.04E-03
Dibenzofuran	0.058	0	0	0.029	0	0.00695368	NA	NA	NA	NA
Diethylphthalate	0.079	0.34	0	0.0395	0.17	0.05023433	4.58E+03	4.58E+04	1.10E-05	1.10E-06
Fluoranthene	0.41	0	0	0.205	0	0.04915531	1.30E+00	2.60E+00	3.78E-02	1.89E-02
Indeno(1,2,3-cd)pyrene	0.25	0	0	0.125	0	0.02997275	1.30E+00	2.60E+00	2.31E-02	1.15E-02
Naphthalene	0.13	0	0	0.065	0	0.01558583	1.30E+00	2.60E+00	1.20E-02	5.99E-03
Pentachlorophenol	0.16	0	0	0.08	0	0.01918256	2.10E-01	2.07E+00	9.13E-02	9.27E-03
Phenanthrene	0.21	0	0	0.105	0	0.02517711	1.30E+00	2.60E+00	1.94E-02	9.68E-03
Pyrene	0.30	0	0	0.15	0	0.0339673	1.30E+00	2.60E+00	2.77E-02	1.38E-02
Methylene Chloride	0	0.11	0	0	0.055	0.01318801	5.85E+00	5.00E+01	2.25E-03	2.64E-04
Toluene	0	0.004	0	0	0.002	0.00047956	2.60E+01	2.60E+02	1.84E-05	1.84E-06

NA - Not Available

Site 3, Landfill C
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Raccoon
(Conservative Inputs)

Body Weight	3.6700000	kg	(USEPA, 1993)
Food Ingestion Rate	0.8000000	kg/day	(USEPA, 1993, using placental mammal equation)
Water Ingestion Rate	0.3000000	L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0400000	kg/day	(estimated)
Sed. Ingestion Rate	0.0400000	kg/day	(estimated)

Maximum Concentrations ECOC	Soil Concentration (mg/kg)	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	114	48.4	0	57	24.2	19.4702997	NA	NA	NA	NA
Aluminum	21400	14200	0	10700	7100	4268.11989	1.93E+00	1.93E+01	2.21E+03	2.21E+02
Arsenic	0	9.1	0	0	4.55	1.09100817	1.26E-01	1.26E+00	8.66E+00	8.66E-01
Barium	0	300	0	0	150	35.9673025	5.10E+00	1.98E+01	7.05E+00	1.82E+00
Beryllium	1.3	1.7	0	0.65	0.85	0.35967302	6.60E-01	6.60E+00	5.45E-01	5.45E-02
Cadmium	0	2.5	0	0	1.25	0.29972752	1.00E+00	1.00E+01	3.00E-01	3.00E-02
Chromium	42.1	63.3	0	21.05	31.65	12.6365123	1.17E+01	1.54E+01	1.08E+00	8.21E-01
Cobalt	0	5.6	0	0	2.8	0.67138965	1.00E+00	1.00E+01	6.71E-01	6.71E-02
Copper	125	126	0	62.5	63	30.0926431	1.17E+01	1.54E+01	2.57E+00	1.95E+00
Iron	34000	18700	0	17000	9350	6318.25613	5.00E+01	5.00E+02	1.26E+02	1.26E+01
Lead	240	734	0	120	367	116.773842	8.00E+00	8.00E+01	1.46E+01	1.46E+00
Manganese	0	257	0	0	128.5	30.8119891	8.80E+01	2.84E+02	3.50E-01	1.08E-01
Mercury	0.6	0.27	0	0.3	0.135	0.10430518	1.32E+01	1.32E+02	7.90E-03	7.90E-04
Nickel	22	0	0	11	0	2.63760218	4.00E+01	8.00E+01	6.59E-02	3.30E-02
Thallium	2.5	0	0	1.25	0	0.29972752	7.40E-03	7.40E-02	4.05E+01	4.05E+00
Vanadium	79.8	32.6	0	39.9	16.3	13.4757493	2.10E-01	2.10E+00	6.42E+01	6.42E+00
Zinc	460	577	0	230	288.5	124.326975	1.60E+02	3.20E+02	7.77E-01	3.89E-01
4,4'-DDD	0	0.066	0	0	0.033	0.00791281	8.00E-01	4.00E+00	9.89E-03	1.98E-03
4,4'-DDE	0	0.078	0	0	0.039	0.0093515	8.00E-01	4.00E+00	1.17E-02	2.34E-03
4,4'-DDT	0.13	0.02	0	0.065	0.01	0.01798365	8.00E-01	4.00E+00	2.25E-02	4.50E-03
alpha-Chlordane	0	0.00088	0	0	0.00044	0.0001055	4.60E+00	9.20E+00	2.29E-05	1.15E-05
Aroclor-1254	0.1	0	0	0.05	0	0.0119891	1.40E-01	6.90E-01	8.56E-02	1.74E-02
Aroclor-1260	0	0.15	0	0	0.075	0.01798365	3.90E-01	3.90E+00	4.61E-02	4.61E-03
Dieldrin	0	0.013	0	0	0.0065	0.00155858	2.00E-02	2.00E-01	7.79E-02	7.79E-03
gamma-Chlordane	0	0.0033	0	0	0.00165	0.00039564	4.60E+00	9.20E+00	8.60E-05	4.30E-05
Acenaphthylene	0	0.066	0	0	0.033	0.00791281	1.30E+00	2.60E+00	6.09E-03	3.04E-03
Anthracene	0.12	0	0	0.06	0	0.01438692	1.30E+00	2.60E+00	1.11E-02	5.53E-03
Benzo(a)anthracene	0.39	0	0	0.195	0	0.04675749	1.30E+00	2.60E+00	3.60E-02	1.80E-02
Benzo(a)pyrene	0.35	0	0	0.175	0	0.04196185	1.00E+00	1.00E+01	4.20E-02	4.20E-03
Benzo(b)fluoranthene	1.5	0	0	0.75	0	0.17983651	1.30E+00	2.60E+00	1.38E-01	6.92E-02
Benzo(g,h,i)perylene	0.34	0	0	0.17	0	0.04076294	1.30E+00	2.60E+00	3.14E-02	1.57E-02
Benzo(k)fluoranthene	0.46	0.47	0	0.23	0.235	0.11149864	1.30E+00	2.60E+00	8.58E-02	4.29E-02
Carbazole	0.13	0	0	0.065	0	0.01558583	1.30E+00	2.60E+00	1.20E-02	5.99E-03
Chrysene	0.73	0	0	0.365	0	0.08752044	1.30E+00	2.60E+00	6.73E-02	3.37E-02
Dibenz(a,h)anthracene	0	0.066	0	0	0.033	0.00791281	1.30E+00	2.60E+00	6.09E-03	3.04E-03
Dibenzofuran	0.058	0	0	0.029	0	0.00695368	NA	NA	NA	NA
Diethylphthalate	0.079	0.34	0	0.0395	0.17	0.05023433	4.58E+03	4.58E+04	1.10E-05	1.10E-06
Fluoranthene	0.64	0	0	0.32	0	0.07673025	1.30E+00	2.60E+00	5.90E-02	2.95E-02
Indeno(1,2,3-cd)pyrene	0.44	0	0	0.22	0	0.05275204	1.30E+00	2.60E+00	4.06E-02	2.03E-02
Naphthalene	0.13	0	0	0.065	0	0.01558583	1.30E+00	2.60E+00	1.20E-02	5.99E-03
Pentachlorophenol	0.16	0	0	0.08	0	0.01918256	2.10E-01	2.07E+00	9.13E-02	9.27E-03
Phenanthrene	0.42	0	0	0.21	0	0.05035422	1.30E+00	2.60E+00	3.87E-02	1.94E-02
Pyrene	0.56	0	0	0.28	0	0.06713896	1.30E+00	2.60E+00	5.16E-02	2.58E-02
Methylene Chloride	0	0.11	0	0	0.055	0.01318801	5.85E+00	5.00E+01	2.25E-03	2.64E-04
Toluene	0	0.004	0	0	0.002	0.00047956	2.60E+01	2.60E+02	1.84E-05	1.84E-06

NA - Not Available

TABLE D-8
HAZARD QUOTIENT CALCULATIONS FOR SHORT-TAILED SHREW

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Short-Tailed Shrew
(Conservative Inputs)

Body Weight	0.0150000 kg	(USEPA, 1993)
Food Ingestion Rate	0.0093000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0033450 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0009672 kg/day	(Beyer, 1994)

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	5.49	0.21	5.49	3.8046252	NA	NA	NA	NA
Aluminum	5545.56	50	5545.56	3806.974909	2.30E+00	2.30E+01	1.66E+03	1.66E+02
Antimony	2.17	0	2.17	1.4853216	1.49E-01	1.49E+00	9.97E+00	9.99E-01
Arsenic	0	0.027	0	0.006021	1.50E-01	1.50E+00	4.01E-02	4.01E-03
Beryllium	0.41	0	0.41	0.2806368	1.45E+00	1.45E+01	1.94E-01	1.94E-02
Chromium	99.9	0.067	99.9	68.394493	3.34E+01	4.40E+01	2.05E+00	1.55E+00
Cobalt	0	0.044	0	0.009812	1.00E+00	1.00E+01	9.81E-03	9.81E-04
Copper	230.29	0.179	230.29	157.6688162	3.34E+01	4.40E+01	4.72E+00	3.58E+00
Iron	13935.56	93.1	13935.56	9559.373409	5.00E+01	5.00E+02	1.91E+02	1.91E+01
Lead	181.71	0.82	181.71	124.5597208	1.76E+01	1.76E+02	7.09E+00	7.08E-01
Manganese	148.18	1.91	148.18	101.8521764	1.93E+02	6.24E+02	5.28E-01	1.63E-01
Mercury	0.64	0.0012	0.64	0.4383348	1.57E+01	1.57E+02	2.79E-02	2.79E-03
Nickel	103	0.064	103	70.515712	8.79E+01	1.76E+02	8.02E-01	4.01E-01
Silver	0.85	0	0.85	0.581808	1.81E+02	1.81E+03	3.21E-03	3.21E-04
Thallium	0.52	0	0.52	0.3559296	1.60E-02	1.64E-01	2.22E+01	2.17E+00
Vanadium	77.18	0	77.18	52.8281664	4.28E-01	4.29E+00	1.23E+02	1.23E+01
Zinc	357.82	1.16	357.82	245.1793136	3.52E+02	7.03E+02	6.97E-01	3.49E-01
Aroclor-1260	0.74	0	0.74	0.5065152	3.90E-01	3.90E+00	1.30E+00	1.30E-01
Endrin Aldehyde	0.02	0	0.02	0.0136896	NA	NA	NA	NA
Endrin Ketone	0.012	0	0.012	0.00821376	NA	NA	NA	NA
4-Methylphenol	0	0.013	0	0.002899	5.00E+01	5.00E+02	5.80E-05	5.80E-06
Anthracene	0.2	0	0.2	0.136896	1.30E+00	2.60E+00	1.05E-01	5.27E-02
Benzo(a)anthracene	1.4	0	1.4	0.958272	1.30E+00	2.60E+00	7.37E-01	3.69E-01
Benzo(a)pyrene	1.3	0	1.3	0.889824	1.19E+00	1.19E+01	7.48E-01	7.48E-02
Benzo(k)anthracene	0.77	0	0.77	0.5270496	1.30E+00	2.60E+00	4.05E-01	2.03E-01
Butylbenzylphthalate	0.035	0	0.035	0.0239568	1.59E+02	1.59E+03	1.51E-04	1.51E-05
Carbazole	0.3	0	0.3	0.205344	1.30E+00	2.60E+00	1.58E-01	7.90E-02
Chrysene	1.8	0	1.8	1.232064	1.30E+00	2.60E+00	9.48E-01	4.74E-01
Diethylphthalate	0.62	0	0.62	0.4243776	5.45E+03	5.45E+04	7.79E-05	7.79E-06
Fluoranthene	3.14	0	3.14	2.1492672	1.30E+00	2.60E+00	1.65E+00	8.27E-01
Indeno(1,2,3-cd)pyrene	0.75	0	0.75	0.51336	1.30E+00	2.60E+00	3.95E-01	1.97E-01
Phenanthrene	2.2	0	2.2	1.505856	1.30E+00	2.60E+00	1.16E+00	5.79E-01
Pyrene	3.03	0	3.03	2.0739744	1.30E+00	2.60E+00	1.60E+00	7.98E-01
2-Butanone	0.0086	0	0.0086	0.005886528	NA	NA	NA	NA
Acetone	0.016	0.008	0.016	0.01273568	2.20E+01	1.10E+02	5.79E-04	1.16E-04

NA - Not Available

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Short-Tailed Shrew
(Conservative Inputs)

Body Weight	0.0150000 kg	(USEPA, 1993)
Food Ingestion Rate	0.0093000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0033450 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0009672 kg/day	(Beyer, 1994)

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	11.8	0.21	11.8	8.123694	NA	NA	NA	NA
Aluminum	7010	50	7010	4809.3548	2.30E+00	2.30E+01	2.10E+03	2.10E+02
Antimony	9.1	0	9.1	6.228768	1.49E-01	1.49E+00	4.18E+01	4.19E+00
Arsenic	0	0.027	0	0.006021	1.50E-01	1.50E+00	4.01E-02	4.01E-03
Beryllium	1.1	0	1.1	0.752928	1.45E+00	1.45E+01	5.19E-01	5.19E-02
Chromium	680	0.067	680	465.461341	3.34E+01	4.40E+01	1.39E+01	1.06E+01
Cobalt	0	0.044	0	0.009812	1.00E+00	1.00E+01	9.81E-03	9.81E-04
Copper	596	0.179	596	407.989997	3.34E+01	4.40E+01	1.22E+01	9.27E+00
Iron	29500	93.1	29500	20212.9213	5.00E+01	5.00E+02	4.04E+02	4.04E+01
Lead	264	0.82	264	180.88558	1.76E+01	1.76E+02	1.03E+01	1.03E+00
Manganese	352	1.91	352	241.36289	1.93E+02	6.24E+02	1.25E+00	3.87E-01
Mercury	1.3	0.0012	1.3	0.8900916	1.57E+01	1.57E+02	5.67E-02	5.67E-03
Nickel	546	0.064	546	373.740352	8.79E+01	1.76E+02	4.25E+00	2.13E+00
Silver	1.6	0	1.6	1.095168	1.81E+02	1.81E+03	6.04E-03	6.04E-04
Thallium	0.89	0	0.89	0.6091872	1.60E-02	1.64E-01	3.81E+01	3.71E+00
Vanadium	354	0	354	242.30592	4.28E-01	4.29E+00	5.66E+02	5.65E+01
Zinc	607	1.16	607	415.73804	3.52E+02	7.03E+02	1.18E+00	5.91E-01
Aroclor-1260	6.3	0	6.3	4.312224	3.90E-01	3.90E+00	1.11E+01	1.11E+00
Endrin Aldehyde	0.16	0	0.16	0.1095168	NA	NA	NA	NA
Endrin Ketone	0.083	0	0.083	0.05681184	NA	NA	NA	NA
4-Methylphenol	0	0.013	0	0.002899	5.00E+01	5.00E+02	5.80E-05	5.80E-06
Anthracene	0.2	0	0.2	0.136896	1.30E+00	2.60E+00	1.05E-01	5.27E-02
Benzo(a)anthracene	1.4	0	1.4	0.958272	1.30E+00	2.60E+00	7.37E-01	3.69E-01
Benzo(a)pyrene	1.3	0	1.3	0.889824	1.19E+00	1.19E+01	7.48E-01	7.48E-02
Benzo(k)anthracene	0.77	0	0.77	0.5270496	1.30E+00	2.60E+00	4.05E-01	2.03E-01
Butylbenzylphthalate	0.035	0	0.035	0.0239568	1.59E+02	1.59E+03	1.51E-04	1.51E-05
Carbazole	0.3	0	0.3	0.205344	1.30E+00	2.60E+00	1.58E-01	7.90E-02
Chrysene	1.8	0	1.8	1.232064	1.30E+00	2.60E+00	9.48E-01	4.74E-01
Diethylphthalate	0.62	0	0.62	0.4243776	5.45E+03	5.45E+04	7.79E-05	7.79E-06
Fluoranthene	3.3	0	3.3	2.258784	1.30E+00	2.60E+00	1.74E+00	8.69E-01
Indeno(1,2,3-cd)pyrene	0.75	0	0.75	0.51336	1.30E+00	2.60E+00	3.95E-01	1.97E-01
Phenanthrene	2.2	0	2.2	1.505856	1.30E+00	2.60E+00	1.16E+00	5.79E-01
Pyrene	3.1	0	3.1	2.121888	1.30E+00	2.60E+00	1.63E+00	8.16E-01
2-Butanone	0.028	0	0.028	0.01916544	NA	NA	NA	NA
Acetone	0.079	0.008	0.079	0.05585792	2.20E+01	1.10E+02	2.54E-03	5.08E-04

NA - Not Available

TABLE D-9
HAZARD QUOTIENT CALCULATIONS FOR AMERICAN ROBIN

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Robin
(Conservative Inputs)

Body Weight	0.0773000 kg	(USEPA, 1993)
Food Ingestion Rate	0.1175000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0108000 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0352500 kg/day	(Beyer, 1994)

Mean Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	5.49	0.21	5.49	10.87794955	NA	NA	NA	NA
Aluminum	5545.56	50	5545.56	10965.38538	1.10E+02	4.45E+01	1.00E+02	2.46E+02
Antimony	2.17	0	2.17	4.288065977	NA	NA	NA	NA
Arsenic	0	0.027	0	0.003772316	5.10E+00	1.28E+01	7.40E-04	2.95E-04
Beryllium	0.41	0	0.41	0.810187581	NA	NA	NA	NA
Chromium	99.9	0.067	99.9	197.4184812	1.00E+00	5.00E+00	1.97E+02	3.95E+01
Cobalt	0	0.044	0	0.006147477	1.00E+00	1.00E+01	6.15E-03	6.15E-04
Copper	230.29	0.179	230.29	455.0935408	4.70E+01	6.17E+01	9.68E+00	7.38E+00
Iron	13935.56	93.1	13935.56	27550.61151	1.00E+02	1.00E+03	2.76E+02	2.76E+01
Lead	181.71	0.82	181.71	359.1857503	1.13E+00	1.13E+01	3.18E+02	3.18E+01
Manganese	148.18	1.91	148.18	293.0805045	9.97E+02	9.97E+03	2.94E-01	2.94E-02
Mercury	0.64	0.0012	0.64	1.264850712	4.50E-01	9.00E-01	2.81E+00	1.41E+00
Nickel	103	0.064	103	203.5438706	7.74E+01	1.07E+02	2.63E+00	1.90E+00
Silver	0.85	0	0.85	1.67965718	NA	NA	NA	NA
Thallium	0.52	0	0.52	1.027554981	NA	NA	NA	NA
Vanadium	77.18	0	77.18	152.5128719	1.14E+01	1.14E+02	1.34E+01	1.34E+00
Zinc	357.82	1.16	357.82	707.2384605	1.45E+01	1.31E+02	4.88E+01	5.40E+00
Aroclor-1260	0.74	0	0.74	1.46228978	NA	NA	NA	NA
Endrin Aldehyde	0.02	0	0.02	0.039521345	NA	NA	NA	NA
Endrin Ketone	0.012	0	0.012	0.023712807	NA	NA	NA	NA
4-Methylphenol	0	0.013	0	0.0018163	NA	NA	NA	NA
Anthracene	0.2	0	0.2	0.395213454	1.00E+01	1.00E+02	3.95E-02	3.95E-03
Benzo(a)anthracene	1.4	0	1.4	2.766494179	1.00E+01	1.00E+02	2.77E-01	2.77E-02
Benzo(a)pyrene	1.3	0	1.3	2.568887451	1.00E+01	1.00E+02	2.57E-01	2.57E-02
Benzo(k)anthracene	0.77	0	0.77	1.521571798	1.00E+01	1.00E+02	1.52E-01	1.52E-02
Butylbenzylphthalate	0.035	0	0.035	0.069162354	NA	NA	NA	NA
Carbazole	0.3	0	0.3	0.592820181	1.00E+01	1.00E+02	5.93E-02	5.93E-03
Chrysene	1.8	0	1.8	3.556921087	1.00E+01	1.00E+02	3.56E-01	3.56E-02
Diethylphthalate	0.62	0	0.62	1.225161708	NA	NA	NA	NA
Fluoranthene	3.14	0	3.14	6.204851229	1.00E+01	1.00E+02	6.20E-01	6.20E-02
Indeno(1,2,3-cd)pyrene	0.75	0	0.75	1.482050453	1.00E+01	1.00E+02	1.48E-01	1.48E-02
Phenanthrene	2.2	0	2.2	4.347347995	1.00E+01	1.00E+02	4.35E-01	4.35E-02
Pyrene	3.03	0	3.03	5.987483829	1.00E+01	1.00E+02	5.99E-01	5.99E-02
2-Butanone	0.0086	0	0.0086	0.016994179	NA	NA	NA	NA
Acetone	0.016	0.008	0.016	0.032734799	NA	NA	NA	NA

NA - Not Available

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Robin
(Conservative Inputs)

Body Weight	0.0773000 kg	(USEPA, 1993)
Food Ingestion Rate	0.1175000 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0108000 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0352500 kg/day	(Beyer, 1994)

Maximum Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	11.8	0.21	11.8	23.34693402	NA	NA	NA	NA
Aluminum	7010	50	7010	13859.21734	1.10E+02	4.45E+01	1.26E+02	3.11E+02
Antimony	9.1	0	9.1	17.98221216	NA	NA	NA	NA
Arsenic	0	0.027	0	0.003772316	5.10E+00	1.28E+01	7.40E-04	2.95E-04
Beryllium	1.1	0	1.1	2.173673997	NA	NA	NA	NA
Chromium	680	0.067	680	1343.735105	1.00E+00	5.00E+00	1.34E+03	2.69E+02
Cobalt	0	0.044	0	0.006147477	1.00E+00	1.00E+01	6.15E-03	6.15E-04
Copper	596	0.179	596	1177.761102	4.70E+01	6.17E+01	2.51E+01	1.91E+01
Iron	29500	93.1	29500	58306.99198	1.00E+02	1.00E+03	5.83E+02	5.83E+01
Lead	264	0.82	264	521.796326	1.13E+00	1.13E+01	4.62E+02	4.62E+01
Manganese	352	1.91	352	695.8425356	9.97E+02	9.97E+03	6.98E-01	6.98E-02
Mercury	1.3	0.0012	1.3	2.56905511	4.50E-01	9.00E-01	5.71E+00	2.85E+00
Nickel	546	0.064	546	1078.941671	7.74E+01	1.07E+02	1.39E+01	1.01E+01
Silver	1.6	0	1.6	3.161707633	NA	NA	NA	NA
Thallium	0.89	0	0.89	1.758699871	NA	NA	NA	NA
Vanadium	354	0	354	699.5278137	1.14E+01	1.14E+02	6.14E+01	6.14E+00
Zinc	607	1.16	607	1199.634903	1.45E+01	1.31E+02	8.27E+01	9.16E+00
Aroclor-1260	6.3	0	6.3	12.4492238	NA	NA	NA	NA
Endrin Aldehyde	0.16	0	0.16	0.316170763	NA	NA	NA	NA
Endrin Ketone	0.083	0	0.083	0.164013583	NA	NA	NA	NA
4-Methylphenol	0	0.013	0	0.0018163	NA	NA	NA	NA
Anthracene	0.2	0	0.2	0.395213454	1.00E+01	1.00E+02	3.95E-02	3.95E-03
Benzo(a)anthracene	1.4	0	1.4	2.766494179	1.00E+01	1.00E+02	2.77E-01	2.77E-02
Benzo(a)pyrene	1.3	0	1.3	2.568887451	1.00E+01	1.00E+02	2.57E-01	2.57E-02
Benzo(k)anthracene	0.77	0	0.77	1.521571798	1.00E+01	1.00E+02	1.52E-01	1.52E-02
Butylbenzylphthalate	0.035	0	0.035	0.069162354	NA	NA	NA	NA
Carbazole	0.3	0	0.3	0.592820181	1.00E+01	1.00E+02	5.93E-02	5.93E-03
Chrysene	1.8	0	1.8	3.556921087	1.00E+01	1.00E+02	3.56E-01	3.56E-02
Diethylphthalate	0.62	0	0.62	1.225161708	NA	NA	NA	NA
Fluoranthene	3.3	0	3.3	6.521021992	1.00E+01	1.00E+02	6.52E-01	6.52E-02
Indeno(1,2,3-cd)pyrene	0.75	0	0.75	1.482050453	1.00E+01	1.00E+02	1.48E-01	1.48E-02
Phenanthrene	2.2	0	2.2	4.347347995	1.00E+01	1.00E+02	4.35E-01	4.35E-02
Pyrene	3.1	0	3.1	6.125808538	1.00E+01	1.00E+02	6.13E-01	6.13E-02
2-Butanone	0.028	0	0.028	0.055329884	NA	NA	NA	NA
Acetone	0.079	0.008	0.079	0.157227038	NA	NA	NA	NA

NA - Not Available

TABLE D-10
HAZARD QUOTIENT CALCULATIONS FOR RED-TAILED HAWK

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red-Tailed Hawk
(Conservative Inputs)

Body Weight	0.9570000 kg	(USEPA, 1993)
Food Ingestion Rate	0.1090000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0640000 L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0028000 kg/day	(USEPA, 1993; life history fact sheet)

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Sm. Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	5.49	0.21	5.49	0.655404389	NA	NA	NA	NA
Aluminum	5545.56	50	5545.56	651.1949927	1.10E+02	4.45E+01	5.94E+00	1.46E+01
Antimony	2.17	0	2.17	0.253506792	NA	NA	NA	NA
Arsenic	0	0.027	0	0.001805643	5.10E+00	1.28E+01	3.54E-04	1.41E-04
Beryllium	0.41	0	0.41	0.047897597	NA	NA	NA	NA
Chromium	99.9	0.067	99.9	11.67513898	1.00E+00	5.00E+00	1.17E+01	2.34E+00
Cobalt	0	0.044	0	0.002942529	1.00E+00	1.00E+01	2.94E-03	2.94E-04
Copper	230.29	0.179	230.29	26.91523302	4.70E+01	6.17E+01	5.73E-01	4.36E-01
Iron	13935.56	93.1	13935.56	1634.225714	1.00E+02	1.00E+03	1.63E+01	1.63E+00
Lead	181.71	0.82	181.71	21.28281923	1.13E+00	1.13E+01	1.88E+01	1.88E+00
Manganese	148.18	1.91	148.18	17.43862487	9.97E+02	9.97E+03	1.75E-02	1.75E-03
Mercury	0.64	0.0012	0.64	0.074847231	4.50E-01	9.00E-01	1.66E-01	8.32E-02
Nickel	103	0.064	103	12.03709091	7.74E+01	1.07E+02	1.56E-01	1.12E-01
Silver	0.85	0	0.85	0.099299896	NA	NA	NA	NA
Thallium	0.52	0	0.52	0.060748171	NA	NA	NA	NA
Vanadium	77.18	0	77.18	9.016430512	1.14E+01	1.14E+02	7.91E-01	7.91E-02
Zinc	357.82	1.16	357.82	41.87932706	1.45E+01	1.31E+02	2.89E+00	3.20E-01
Aroclor-1260	0.74	0	0.74	0.086449321	NA	NA	NA	NA
Endrin Aldehyde	0.02	0	0.02	0.002336468	NA	NA	NA	NA
Endrin Ketone	0.012	0	0.012	0.001401881	NA	NA	NA	NA
4-Methylphenol	0	0.013	0	0.000869383	NA	NA	NA	NA
Anthracene	0.2	0	0.2	0.023364681	1.00E+01	1.00E+02	2.34E-03	2.34E-04
Benzo(a)anthracene	1.4	0	1.4	0.163552769	1.00E+01	1.00E+02	1.64E-02	1.64E-03
Benzo(a)pyrene	1.3	0	1.3	0.151870428	1.00E+01	1.00E+02	1.52E-02	1.52E-03
Benzo(k)fluoranthene	0.77	0	0.77	0.089954023	1.00E+01	1.00E+02	9.00E-03	9.00E-04
Butylbenzylphthalate	0.035	0	0.035	0.004088819	NA	NA	NA	NA
Carbazole	0.3	0	0.3	0.035047022	1.00E+01	1.00E+02	3.50E-03	3.50E-04
Chrysene	1.8	0	1.8	0.210282132	1.00E+01	1.00E+02	2.10E-02	2.10E-03
Diethylphthalate	0.62	0	0.62	0.072430512	NA	NA	NA	NA
Fluoranthene	3.14	0	3.14	0.366825496	1.00E+01	1.00E+02	3.67E-02	3.67E-03
Indeno(1,2,3-cd)pyrene	0.75	0	0.75	0.087617555	1.00E+01	1.00E+02	8.76E-03	8.76E-04
Phenanthrene	2.2	0	2.2	0.257011494	1.00E+01	1.00E+02	2.57E-02	2.57E-03
Pyrene	3.03	0	3.03	0.353974922	1.00E+01	1.00E+02	3.54E-02	3.54E-03
2-Butanone	0.0086	0	0.0086	0.001004681	NA	NA	NA	NA
Acetone	0.016	0.008	0.016	0.00240418	NA	NA	NA	NA

NA - Not Available

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red-Tailed Hawk
(Conservative Inputs)

Body Weight	0.9570000 kg	(USEPA, 1993)
Food Ingestion Rate	0.1090000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0640000 L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0028000 kg/day	(USEPA, 1993; life history fact sheet)

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Sm. Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	11.8	0.21	11.8	1.392560084	NA	NA	NA	NA
Aluminum	7010	50	7010	822.2758621	1.10E+02	4.45E+01	7.50E+00	1.85E+01
Antimony	9.1	0	9.1	1.063092999	NA	NA	NA	NA
Arsenic	0	0.027	0	0.001805643	5.10E+00	1.28E+01	3.54E-04	1.41E-04
Beryllium	1.1	0	1.1	0.128505747	NA	NA	NA	NA
Chromium	680	0.067	680	79.44439707	1.00E+00	5.00E+00	7.94E+01	1.59E+01
Cobalt	0	0.044	0	0.002942529	1.00E+00	1.00E+01	2.94E-03	2.94E-04
Copper	596	0.179	596	69.638721	4.70E+01	6.17E+01	1.48E+00	1.13E+00
Iron	29500	93.1	29500	3452.516614	1.00E+02	1.00E+03	3.45E+01	3.45E+00
Lead	264	0.82	264	30.89621735	1.13E+00	1.13E+01	2.73E+01	2.73E+00
Manganese	352	1.91	352	41.24957158	9.97E+02	9.97E+03	4.14E-02	4.14E-03
Mercury	1.3	0.0012	1.3	0.151950679	4.50E-01	9.00E-01	3.38E-01	1.69E-01
Nickel	546	0.064	546	63.78985998	7.74E+01	1.07E+02	8.24E-01	5.96E-01
Silver	1.6	0	1.6	0.18691745	NA	NA	NA	NA
Thallium	0.89	0	0.89	0.103972832	NA	NA	NA	NA
Vanadium	354	0	354	41.35548589	1.14E+01	1.14E+02	3.63E+00	3.63E-01
Zinc	607	1.16	607	70.98938349	1.45E+01	1.31E+02	4.90E+00	5.42E-01
Aroclor-1260	6.3	0	6.3	0.735987461	NA	NA	NA	NA
Endrin Aldehyde	0.16	0	0.16	0.018691745	NA	NA	NA	NA
Endrin Ketone	0.083	0	0.083	0.009696343	NA	NA	NA	NA
4-Methylphenol	0	0.013	0	0.000869383	NA	NA	NA	NA
Anthracene	0.2	0	0.2	0.023364681	1.00E+01	1.00E+02	2.34E-03	2.34E-04
Benzo(a)anthracene	1.4	0	1.4	0.163552769	1.00E+01	1.00E+02	1.64E-02	1.64E-03
Benzo(a)pyrene	1.3	0	1.3	0.151870428	1.00E+01	1.00E+02	1.52E-02	1.52E-03
Benzo(k)fluoranthene	0.77	0	0.77	0.089954023	1.00E+01	1.00E+02	9.00E-03	9.00E-04
Butylbenzylphthalate	0.035	0	0.035	0.004088819	NA	NA	NA	NA
Carbazole	0.3	0	0.3	0.035047022	1.00E+01	1.00E+02	3.50E-03	3.50E-04
Chrysene	1.8	0	1.8	0.210282132	1.00E+01	1.00E+02	2.10E-02	2.10E-03
Diethylphthalate	0.62	0	0.62	0.072430512	NA	NA	NA	NA
Fluoranthene	3.3	0	3.3	0.385517241	1.00E+01	1.00E+02	3.86E-02	3.86E-03
Indeno(1,2,3-cd)pyrene	0.75	0	0.75	0.087617555	1.00E+01	1.00E+02	8.76E-03	8.76E-04
Phenanthrene	2.2	0	2.2	0.257011494	1.00E+01	1.00E+02	2.57E-02	2.57E-03
Pyrene	3.1	0	3.1	0.36215256	1.00E+01	1.00E+02	3.62E-02	3.62E-03
2-Butanone	0.028	0	0.028	0.003271055	NA	NA	NA	NA
Acetone	0.079	0.008	0.079	0.009764054	NA	NA	NA	NA

NA - Not Available

TABLE D-11
HAZARD QUOTIENT CALCULATIONS FOR AMERICAN WOODCOCK

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Woodcock
(Conservataive Inputs)

Body Weight	0.1340000	kg	(USEPA, 1993)
Food Ingestion Rate	0.1500000	kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0200000	L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0075000	kg/day	(Beyer, 1994)

Mean Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	5.49	0.21	5.49	6.484141791	NA	NA	NA	NA
Aluminum	5545.56	50	5545.56	6525.564925	1.10E+02	4.45E+01	5.95E+01	1.47E+02
Antimony	2.17	0	2.17	2.550559701	NA	NA	NA	NA
Arsenic	0	0.027	0	0.004029851	5.10E+00	1.28E+01	7.90E-04	3.15E-04
Beryllium	0.41	0	0.41	0.481902985	NA	NA	NA	NA
Chromium	99.9	0.067	99.9	117.4297761	1.00E+00	5.00E+00	1.17E+02	2.35E+01
Cobalt	0	0.044	0	0.006567164	1.00E+00	1.00E+01	6.57E-03	6.57E-04
Copper	230.29	0.179	230.29	270.7033955	4.70E+01	6.17E+01	5.76E+00	4.39E+00
Iron	13935.56	93.1	13935.56	16393.37836	1.00E+02	1.00E+03	1.64E+02	1.64E+01
Lead	181.71	0.82	181.71	213.6994403	1.13E+00	1.13E+01	1.89E+02	1.89E+01
Manganese	148.18	1.91	148.18	174.4518657	9.97E+02	9.97E+03	1.75E-01	1.75E-02
Mercury	0.64	0.0012	0.64	0.75241791	4.50E-01	9.00E-01	1.67E+00	8.36E-01
Nickel	103	0.064	103	121.0729851	7.74E+01	1.07E+02	1.56E+00	1.13E+00
Silver	0.85	0	0.85	0.999067164	NA	NA	NA	NA
Thallium	0.52	0	0.52	0.61119403	NA	NA	NA	NA
Vanadium	77.18	0	77.18	90.71529851	1.14E+01	1.14E+02	7.96E+00	7.96E-01
Zinc	357.82	1.16	357.82	420.7451493	1.45E+01	1.31E+02	2.90E+01	3.21E+00
Aroclor-1260	0.74	0	0.74	0.869776119	NA	NA	NA	NA
Endrin Aldehyde	0.02	0	0.02	0.023507463	NA	NA	NA	NA
Endrin Ketone	0.012	0	0.012	0.014104478	NA	NA	NA	NA
4-Methylphenol	0	0.013	0	0.001940299	NA	NA	NA	NA
Anthracene	0.2	0	0.2	0.235074627	1.00E+01	1.00E+02	2.35E-02	2.35E-03
Benzo(a)anthracene	1.4	0	1.4	1.645522388	1.00E+01	1.00E+02	1.65E-01	1.65E-02
Benzo(a)pyrene	1.3	0	1.3	1.527985075	1.00E+01	1.00E+02	1.53E-01	1.53E-02
Benzo(k)fluroanthene	0.77	0	0.77	0.905037313	1.00E+01	1.00E+02	9.05E-02	9.05E-03
Butylbenzylphthalate	0.035	0	0.035	0.04113806	NA	NA	NA	NA
Carbazole	0.3	0	0.3	0.35261194	1.00E+01	1.00E+02	3.53E-02	3.53E-03
Chrysene	1.8	0	1.8	2.115671642	1.00E+01	1.00E+02	2.12E-01	2.12E-02
Diethylphthalate	0.62	0	0.62	0.728731343	NA	NA	NA	NA
Fluoranthene	3.14	0	3.14	3.690671642	1.00E+01	1.00E+02	3.69E-01	3.69E-02
Indeno(1,2,3-cd)pyrene	0.75	0	0.75	0.881529851	1.00E+01	1.00E+02	8.82E-02	8.82E-03
Phenanthrene	2.2	0	2.2	2.585820896	1.00E+01	1.00E+02	2.59E-01	2.59E-02
Pyrene	3.03	0	3.03	3.561380597	1.00E+01	1.00E+02	3.56E-01	3.56E-02
2-Butanone	0.0086	0	0.0086	0.010108209	NA	NA	NA	NA
Acetone	0.016	0.008	0.016	0.02	NA	NA	NA	NA

NA - Not Available

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

American Woodcock
(Conservative Inputs)

Body Weight	0.1340000	kg	(USEPA, 1993)
Food Ingestion Rate	0.1500000	kg/day	(USDOE, 1996)
Water Ingestion Rate	0.0200000	L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0075000	kg/day	(Beyer, 1994)

Maximum Concentrations ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Earthworm Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	11.8	0.21	11.8	13.90074627	NA	NA	NA	NA
Aluminum	7010	50	7010	8246.828358	1.10E+02	4.45E+01	7.52E+01	1.85E+02
Antimony	9.1	0	9.1	10.69589552	NA	NA	NA	NA
Arsenic	0	0.027	0	0.004029851	5.10E+00	1.28E+01	7.90E-04	3.15E-04
Beryllium	1.1	0	1.1	1.292910448	NA	NA	NA	NA
Chromium	680	0.067	680	799.2637313	1.00E+00	5.00E+00	7.99E+02	1.60E+02
Cobalt	0	0.044	0	0.006567164	1.00E+00	1.00E+01	6.57E-03	6.57E-04
Copper	596	0.179	596	700.5491045	4.70E+01	6.17E+01	1.49E+01	1.14E+01
Iron	29500	93.1	29500	34687.40299	1.00E+02	1.00E+03	3.47E+02	3.47E+01
Lead	264	0.82	264	310.4208955	1.13E+00	1.13E+01	2.75E+02	2.75E+01
Manganese	352	1.91	352	414.0164179	9.97E+02	9.97E+03	4.15E-01	4.15E-02
Mercury	1.3	0.0012	1.3	1.528164179	4.50E-01	9.00E-01	3.40E+00	1.70E+00
Nickel	546	0.064	546	641.7632836	7.74E+01	1.07E+02	8.29E+00	6.00E+00
Silver	1.6	0	1.6	1.880597015	NA	NA	NA	NA
Thallium	0.89	0	0.89	1.04608209	NA	NA	NA	NA
Vanadium	354	0	354	416.0820896	1.14E+01	1.14E+02	3.65E+01	3.65E+00
Zinc	607	1.16	607	713.6246269	1.45E+01	1.31E+02	4.92E+01	5.45E+00
Aroclor-1260	6.3	0	6.3	7.404850746	NA	NA	NA	NA
Endrin Aldehyde	0.16	0	0.16	0.188059701	NA	NA	NA	NA
Endrin Ketone	0.083	0	0.083	0.09755597	NA	NA	NA	NA
4-Methylphenol	0	0.013	0	0.001940299	NA	NA	NA	NA
Anthracene	0.2	0	0.2	0.235074627	1.00E+01	1.00E+02	2.35E-02	2.35E-03
Benzo(a)anthracene	1.4	0	1.4	1.645522388	1.00E+01	1.00E+02	1.65E-01	1.65E-02
Benzo(a)pyrene	1.3	0	1.3	1.527985075	1.00E+01	1.00E+02	1.53E-01	1.53E-02
Benzo(k)fluroanthene	0.77	0	0.77	0.905037313	1.00E+01	1.00E+02	9.05E-02	9.05E-03
Butylbenzylphthalate	0.035	0	0.035	0.04113806	NA	NA	NA	NA
Carbazole	0.3	0	0.3	0.35261194	1.00E+01	1.00E+02	3.53E-02	3.53E-03
Chrysene	1.8	0	1.8	2.115671642	1.00E+01	1.00E+02	2.12E-01	2.12E-02
Diethylphthalate	0.62	0	0.62	0.728731343	NA	NA	NA	NA
Fluoranthene	3.3	0	3.3	3.878731343	1.00E+01	1.00E+02	3.88E-01	3.88E-02
Indeno(1,2,3-cd)pyrene	0.75	0	0.75	0.881529851	1.00E+01	1.00E+02	8.82E-02	8.82E-03
Phenanthrene	2.2	0	2.2	2.585820896	1.00E+01	1.00E+02	2.59E-01	2.59E-02
Pyrene	3.1	0	3.1	3.643656716	1.00E+01	1.00E+02	3.64E-01	3.64E-02
2-Butanone	0.028	0	0.028	0.032910448	NA	NA	NA	NA
Acetone	0.079	0.008	0.079	0.094048507	NA	NA	NA	NA

NA - Not Available

TABLE D-12
HAZARD QUOTIENT CALCULATIONS FOR RED FOX

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red Fox
(Conservative Inputs)

Body Weight	3.9400000 kg	(USEPA, 1993)
Food Ingestion Rate	0.4500000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.3800000 L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0165074 kg/day	(Beyer, 1994)

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	5.49	0.21	5.49	0.670285692	NA	NA	NA	NA
Aluminum	5545.56	50	5545.56	661.4326846	5.51E-01	5.52E+00	1.20E+03	1.20E+02
Antimony	2.17	0	2.17	0.256934279	3.60E-02	3.57E-01	7.14E+00	7.20E-01
Arsenic	0	0.027	0	0.002604061	3.60E-02	3.60E-01	7.23E-02	7.23E-03
Beryllium	0.41	0	0.41	0.048545186	3.50E-01	3.50E+00	1.39E-01	1.39E-02
Chromium	99.9	0.067	99.9	11.83491098	8.00E+00	1.06E+01	1.48E+00	1.12E+00
Cobalt	0	0.044	0	0.004243655	1.00E+00	1.00E+01	4.24E-03	4.24E-04
Copper	230.29	0.179	230.29	27.28426628	8.00E+00	1.06E+01	3.41E+00	2.57E+00
Iron	13935.56	93.1	13935.56	1658.989813	5.00E+01	5.00E+02	3.32E+01	3.32E+00
Lead	181.71	0.82	181.71	21.59407605	4.22E+00	4.23E+01	5.12E+00	5.11E-01
Manganese	148.18	1.91	148.18	17.72915394	4.60E+01	1.50E+02	3.85E-01	1.18E-01
Mercury	0.64	0.0012	0.64	0.075893588	3.77E+00	3.77E+01	2.01E-02	2.01E-03
Nickel	103	0.064	103	12.20167061	2.11E+01	4.23E+01	5.78E-01	2.89E-01
Silver	0.85	0	0.85	0.100642459	1.81E+02	1.81E+03	5.55E-04	5.55E-05
Thallium	0.52	0	0.52	0.061569505	4.00E-03	3.90E-02	1.54E+01	1.58E+00
Vanadium	77.18	0	77.18	9.138335313	1.03E-01	1.03E+00	8.87E+01	8.87E+00
Zinc	357.82	1.16	357.82	42.47880149	8.45E+01	1.69E+02	5.03E-01	2.51E-01
Aroclor-1260	0.74	0	0.74	0.087618141	3.90E-01	3.90E+00	2.25E-01	2.25E-02
Endrin Aldehyde	0.02	0	0.02	0.002368058	NA	NA	NA	NA
Endrin Ketone	0.012	0	0.012	0.001420835	NA	NA	NA	NA
4-Methylphenol	0	0.013	0	0.001253807	5.00E+01	5.00E+02	2.51E-05	2.51E-06
Anthracene	0.2	0	0.2	0.023680579	1.30E+00	2.60E+00	1.82E-02	9.11E-03
Benzo(a)anthracene	1.4	0	1.4	0.165764051	1.30E+00	2.60E+00	1.28E-01	6.38E-02
Benzo(a)pyrene	1.3	0	1.3	0.153923761	2.90E-01	2.86E+00	5.31E-01	5.38E-02
Benzo(k)fluoranthene	0.77	0	0.77	0.091170228	1.30E+00	2.60E+00	7.01E-02	3.51E-02
Butylbenzylphthalate	0.035	0	0.035	0.004144101	1.59E+02	1.59E+03	2.61E-05	2.61E-06
Carbazole	0.3	0	0.3	0.035520868	1.30E+00	2.60E+00	2.73E-02	1.37E-02
Chrysene	1.8	0	1.8	0.213125208	1.30E+00	2.60E+00	1.64E-01	8.20E-02
Diethylphthalate	0.62	0	0.62	0.073409794	1.31E+03	1.31E+04	5.60E-05	5.60E-06
Fluoranthene	3.14	0	3.14	0.371785085	1.30E+00	2.60E+00	2.86E-01	1.43E-01
Indeno(1,2,3-cd)pyrene	0.75	0	0.75	0.08880217	1.30E+00	2.60E+00	6.83E-02	3.42E-02
Phenanthrene	2.2	0	2.2	0.260486365	1.30E+00	2.60E+00	2.00E-01	1.00E-01
Pyrene	3.03	0	3.03	0.358760767	1.30E+00	2.60E+00	2.76E-01	1.38E-01
2-Butanone	0.0086	0	0.0086	0.001018265	NA	NA	NA	NA
Acetone	0.016	0.008	0.016	0.00266602	5.30E+00	2.64E+01	5.03E-04	1.01E-04

NA - Not Available

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Red Fox
(Conservative Inputs)

Body Weight	3.9400000 kg	(USEPA, 1993)
Food Ingestion Rate	0.4500000 kg/day	(USDOE, 1996)
Water Ingestion Rate	0.3800000 L/day	(USDOE, 1996)
Soil Ingestion Rate	0.0165074 kg/day	(Beyer, 1994)

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Small Mammal Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL HQ_l
Total Phosphorous	11.8	0.21	11.8	1.417407949	NA	NA	NA	NA
Aluminum	7010	50	7010	834.8266178	5.51E-01	5.52E+00	1.52E+03	1.51E+02
Antimony	9.1	0	9.1	1.07746633	3.60E-02	3.57E-01	2.99E+01	3.02E+00
Arsenic	0	0.027	0	0.002604061	3.60E-02	3.60E-01	7.23E-02	7.23E-03
Beryllium	1.1	0	1.1	0.130243183	3.50E-01	3.50E+00	3.72E-01	3.72E-02
Chromium	680	0.067	680	80.52042944	8.00E+00	1.06E+01	1.01E+01	7.60E+00
Cobalt	0	0.044	0	0.004243655	1.00E+00	1.00E+01	4.24E-03	4.24E-04
Copper	596	0.179	596	70.58538843	8.00E+00	1.06E+01	8.82E+00	6.66E+00
Iron	29500	93.1	29500	3501.864543	5.00E+01	5.00E+02	7.00E+01	7.00E+00
Lead	264	0.82	264	31.33745015	4.22E+00	4.23E+01	7.43E+00	7.42E-01
Manganese	352	1.91	352	41.86203168	4.60E+01	1.50E+02	9.10E-01	2.79E-01
Mercury	1.3	0.0012	1.3	0.154039497	3.77E+00	3.77E+01	4.09E-02	4.09E-03
Nickel	546	0.064	546	64.65415239	2.11E+01	4.23E+01	3.06E+00	1.53E+00
Silver	1.6	0	1.6	0.189444629	1.81E+02	1.81E+03	1.05E-03	1.05E-04
Thallium	0.89	0	0.89	0.105378575	4.00E-03	3.90E-02	2.63E+01	2.70E+00
Vanadium	354	0	354	41.91462426	1.03E-01	1.03E+00	4.07E+02	4.07E+01
Zinc	607	1.16	607	71.98243447	8.45E+01	1.69E+02	8.52E-01	4.26E-01
Aroclor-1260	6.3	0	6.3	0.745938228	3.90E-01	3.90E+00	1.91E+00	1.91E-01
Endrin Aldehyde	0.16	0	0.16	0.018944463	NA	NA	NA	NA
Endrin Ketone	0.083	0	0.083	0.00982744	NA	NA	NA	NA
4-Methylphenol	0	0.013	0	0.001253807	5.00E+01	5.00E+02	2.51E-05	2.51E-06
Anthracene	0.2	0	0.2	0.023680579	1.30E+00	2.60E+00	1.82E-02	9.11E-03
Benzo(a)anthracene	1.4	0	1.4	0.165764051	1.30E+00	2.60E+00	1.28E-01	6.38E-02
Benzo(a)pyrene	1.3	0	1.3	0.153923761	2.90E-01	2.86E+00	5.31E-01	5.38E-02
Benzo(k)fluoranthene	0.77	0	0.77	0.091170228	1.30E+00	2.60E+00	7.01E-02	3.51E-02
Butylbenzylphthalate	0.035	0	0.035	0.004144101	1.59E+02	1.59E+03	2.61E-05	2.61E-06
Carbazole	0.3	0	0.3	0.035520868	1.30E+00	2.60E+00	2.73E-02	1.37E-02
Chrysene	1.8	0	1.8	0.213125208	1.30E+00	2.60E+00	1.64E-01	8.20E-02
Diethylphthalate	0.62	0	0.62	0.073409794	1.31E+03	1.31E+04	5.60E-05	5.60E-06
Fluoranthene	3.3	0	3.3	0.390729548	1.30E+00	2.60E+00	3.01E-01	1.50E-01
Indeno(1,2,3-cd)pyrene	0.75	0	0.75	0.08880217	1.30E+00	2.60E+00	6.83E-02	3.42E-02
Phenanthrene	2.2	0	2.2	0.260486365	1.30E+00	2.60E+00	2.00E-01	1.00E-01
Pyrene	3.1	0	3.1	0.36704897	1.30E+00	2.60E+00	2.82E-01	1.41E-01
2-Butanone	0.028	0	0.028	0.003315281	NA	NA	NA	NA
Acetone	0.079	0.008	0.079	0.010125402	5.30E+00	2.64E+01	1.91E-03	3.84E-04

NA - Not Available

TABLE D-13
HAZARD QUOTIENT CALCULATIONS FOR DEER MOUSE

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Deer Mouse
(Conservative Inputs)

Body Weight	0.0148000 kg	(USEPA, 1993)
Food Ingestion Rate	0.0066600 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0028120 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0000700 kg/day	(Beyer, 1994)

Mean Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertabrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	5.49	0.21	2.196	3.294	2.53636622	NA	NA	NA	NA
Aluminum	5545.56	50	2218.224	3327.336	2531.231	1.93E+00	1.93E+01	1.31E+03	1.31E+02
Antimony	2.17	0	0.868	1.302	0.98676351	1.25E-01	1.25E+00	7.89E+00	7.89E-01
Arsenic	0	0.027	0	0	0.00513	1.26E-01	1.26E+00	4.07E-02	4.07E-03
Beryllium	0.41	0	0.164	0.246	0.18643919	6.60E-01	6.60E+00	2.82E-01	2.82E-02
Chromium	99.9	0.067	39.96	59.94	45.44023	1.17E+01	1.54E+01	3.88E+00	2.95E+00
Cobalt	0	0.044	0	0	0.00836	1.00E+00	1.00E+01	8.36E-03	8.36E-04
Copper	230.29	0.179	92.116	138.174	104.753719	1.17E+01	1.54E+01	8.95E+00	6.80E+00
Iron	13935.56	93.1	5574.224	8361.336	6354.60243	5.00E+01	5.00E+02	1.27E+02	1.27E+01
Lead	181.71	0.82	72.684	109.026	82.7847392	8.00E+00	8.00E+01	1.03E+01	1.03E+00
Manganese	148.18	1.91	59.272	88.908	67.7447514	8.80E+01	2.84E+02	7.70E-01	2.39E-01
Mercury	0.64	0.0012	0.256	0.384	0.29125503	1.32E+01	1.32E+02	2.21E-02	2.21E-03
Nickel	103	0.064	41.2	61.8	46.8493222	4.00E+01	8.00E+01	1.17E+00	5.86E-01
Silver	0.85	0	0.34	0.51	0.38652027	1.81E+02	1.81E+03	2.13E-03	2.13E-04
Thallium	0.52	0	0.208	0.312	0.23645946	7.40E-03	7.40E-02	3.20E+01	3.20E+00
Vanadium	77.18	0	30.872	46.308	35.0960405	2.10E-01	2.10E+00	1.67E+02	1.67E+01
Zinc	357.82	1.16	143.128	214.692	162.931792	1.60E+02	3.20E+02	1.02E+00	5.09E-01
Aroclor-1260	0.74	0	0.296	0.444	0.3365	3.90E-01	3.90E+00	8.63E-01	8.63E-02
Endrin Aldehyde	0.02	0	0.008	0.012	0.00909459	NA	NA	NA	NA
Endrin Ketone	0.012	0	0.0048	0.0072	0.00545676	NA	NA	NA	NA
4-Methylphenol	0	0.013	0	0	0.00247	5.00E+01	5.00E+02	4.94E-05	4.94E-06
Anthracene	0.2	0	0.08	0.12	0.09094595	1.30E+00	2.60E+00	7.00E-02	3.50E-02
Benzo(a)anthracene	1.4	0	0.56	0.84	0.63662162	1.30E+00	2.60E+00	4.90E-01	2.45E-01
Benzo(a)pyrene	1.3	0	0.52	0.78	0.59114865	1.00E+00	1.00E+01	5.91E-01	5.91E-02
Benzo(k)fluroanthene	0.77	0	0.308	0.462	0.35014189	1.30E+00	2.60E+00	2.69E-01	1.35E-01
Butylbenzylphthalate	0.035	0	0.014	0.021	0.01591554	1.59E+02	1.59E+03	1.00E-04	1.00E-05
Carbazole	0.3	0	0.12	0.18	0.13641892	1.30E+00	2.60E+00	1.05E-01	5.25E-02
Chrysene	1.8	0	0.72	1.08	0.81851351	1.30E+00	2.60E+00	6.30E-01	3.15E-01
Diethylphthalate	0.62	0	0.248	0.372	0.28193243	4.58E+03	4.58E+04	6.15E-05	6.15E-06
Fluoranthene	3.14	0	1.256	1.884	1.42785135	1.30E+00	2.60E+00	1.10E+00	5.49E-01
Indeno(1,2,3-cd)pyrene	0.75	0	0.3	0.45	0.3410473	1.30E+00	2.60E+00	2.62E-01	1.31E-01
Phenanthrene	2.2	0	0.88	1.32	1.00040541	1.30E+00	2.60E+00	7.70E-01	3.85E-01
Pyrene	3.03	0	1.212	1.818	1.37783108	1.30E+00	2.60E+00	1.06E+00	5.30E-01
2-Butanone	0.0086	0	0.00344	0.00516	0.00391068	NA	NA	NA	NA
Acetone	0.016	0.008	0.0064	0.0096	0.00879568	1.00E+01	5.00E+01	8.80E-04	1.76E-04

NA - Not Available

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Deer Mouse
(Conservative Inputs)

Body Weight	0.0148000 kg	(USEPA, 1993)
Food Ingestion Rate	0.0066600 kg/day	(USEPA, 1993)
Water Ingestion Rate	0.0028120 L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0000700 kg/day	(Beyer, 1994)

Maximum Concentrations

ECOC	Soil Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	11.8	0.21	4.72	7.08	5.40571081	NA	NA	NA	NA
Aluminum	7010	50	2804	4206	3197.15541	1.93E+00	1.93E+01	1.66E+03	1.66E+02
Antimony	9.1	0	3.64	5.46	4.13804054	1.25E-01	1.25E+00	3.31E+01	3.31E+00
Arsenic	0	0.027	0	0	0.00513	1.26E-01	1.26E+00	4.07E-02	4.07E-03
Beryllium	1.1	0	0.44	0.66	0.5002027	6.60E-01	6.60E+00	7.58E-01	7.58E-02
Chromium	680	0.067	272	408	309.228946	1.17E+01	1.54E+01	2.64E+01	2.01E+01
Cobalt	0	0.044	0	0	0.00836	1.00E+00	1.00E+01	8.36E-03	8.36E-04
Copper	596	0.179	238.4	357.6	271.052929	1.17E+01	1.54E+01	2.32E+01	1.76E+01
Iron	29500	93.1	11800	17700	13432.216	5.00E+01	5.00E+02	2.69E+02	2.69E+01
Lead	264	0.82	105.6	158.4	120.204449	8.00E+00	8.00E+01	1.50E+01	1.50E+00
Manganese	352	1.91	140.8	211.2	160.427765	8.80E+01	2.84E+02	1.82E+00	5.65E-01
Mercury	1.3	0.0012	0.52	0.78	0.59137665	1.32E+01	1.32E+02	4.48E-02	4.48E-03
Nickel	546	0.064	218.4	327.6	248.294592	4.00E+01	8.00E+01	6.21E+00	3.10E+00
Silver	1.6	0	0.64	0.96	0.72756757	1.81E+02	1.81E+03	4.02E-03	4.02E-04
Thallium	0.89	0	0.356	0.534	0.40470946	7.40E-03	7.40E-02	5.47E+01	5.47E+00
Vanadium	354	0	141.6	212.4	160.974324	2.10E-01	2.10E+00	7.67E+02	7.67E+01
Zinc	607	1.16	242.8	364.2	276.241346	1.60E+02	3.20E+02	1.73E+00	8.63E-01
Aroclor-1260	6.3	0	2.52	3.78	2.8647973	3.90E-01	3.90E+00	7.35E+00	7.35E-01
Endrin Aldehyde	0.16	0	0.064	0.096	0.07275676	NA	NA	NA	NA
Endrin Ketone	0.083	0	0.0332	0.0498	0.03774257	NA	NA	NA	NA
4-Methylphenol	0	0.013	0	0	0.00247	5.00E+01	5.00E+02	4.94E-05	4.94E-06
Anthracene	0.2	0	0.08	0.12	0.09094595	1.30E+00	2.60E+00	7.00E-02	3.50E-02
Benzo(a)anthracene	1.4	0	0.56	0.84	0.63662162	1.30E+00	2.60E+00	4.90E-01	2.45E-01
Benzo(a)pyrene	1.3	0	0.52	0.78	0.59114865	1.00E+00	1.00E+01	5.91E-01	5.91E-02
Benzo(k)fluroanthene	0.77	0	0.308	0.462	0.35014189	1.30E+00	2.60E+00	2.69E-01	1.35E-01
Butylbenzylphthalate	0.035	0	0.014	0.021	0.01591554	1.59E+02	1.59E+03	1.00E-04	1.00E-05
Carbazole	0.3	0	0.12	0.18	0.13641892	1.30E+00	2.60E+00	1.05E-01	5.25E-02
Chrysene	1.8	0	0.72	1.08	0.81851351	1.30E+00	2.60E+00	6.30E-01	3.15E-01
Diethylphthalate	0.62	0	0.248	0.372	0.28193243	4.58E+03	4.58E+04	6.15E-05	6.15E-06
Fluoranthene	3.3	0	1.32	1.98	1.50060811	1.30E+00	2.60E+00	1.15E+00	5.77E-01
Indeno(1,2,3-cd)pyrene	0.75	0	0.3	0.45	0.3410473	1.30E+00	2.60E+00	2.62E-01	1.31E-01
Phenanthrene	2.2	0	0.88	1.32	1.00040541	1.30E+00	2.60E+00	7.70E-01	3.85E-01
Pyrene	3.1	0	1.24	1.86	1.40966216	1.30E+00	2.60E+00	1.08E+00	5.42E-01
2-Butanone	0.028	0	0.0112	0.0168	0.01273243	NA	NA	NA	NA
Acetone	0.079	0.008	0.0316	0.0474	0.03744365	1.00E+01	5.00E+01	3.74E-03	7.49E-04

NA - Not Available

TABLE D-14
HAZARD QUOTIENT CALCULATIONS FOR RACCOON

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Raccoon
(Conservative Inputs)

Body Weight	3.6700000	kg	(USEPA, 1993)
Food Ingestion Rate	0.8000000	kg/day	(USEPA, 1993, using placental mammal equation)
Water Ingestion Rate	0.3000000	L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0400000	kg/day	(estimated)
Sed. Ingestion Rate	0.0400000	kg/day	(estimated)

Mean Concentrations ECOC	Soil Concentration (mg/kg)	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	5.49	13.7	0.21	2.745	6.85	2.31787466	NA	NA	NA	NA
Aluminum	5545.56	13150	50	2772.78	6575	2245.51673	1.93E+00	1.93E+01	1.16E+03	1.16E+02
Antimony	2.17	0	0	1.085	0	0.26016349	1.25E-01	1.25E+00	2.08E+00	2.08E-01
Arsenic	0	19.7	0.027	0	9.85	2.36405995	1.26E-01	1.26E+00	1.88E+01	1.88E+00
Barium	0	109.13	0	0	54.565	13.0837057	5.10E+00	1.98E+01	2.57E+00	6.61E-01
Beryllium	0.41	1.5	0	0.205	0.75	0.22899183	6.60E-01	6.60E+00	3.47E-01	3.47E-02
Chromium	99.9	30.37	0.067	49.95	15.185	15.6236785	1.17E+01	1.54E+01	1.34E+00	1.01E+00
Cobalt	0	17.37	0.044	0	8.685	2.08610354	1.00E+00	1.00E+01	2.09E+00	2.09E-01
Copper	230.29	217	0.179	115.145	108.5	53.6406812	1.17E+01	1.54E+01	4.58E+00	3.48E+00
Iron	13935.56	25666.67	93.1	6967.78	12833.335	4755.56163	5.00E+01	5.00E+02	9.51E+01	9.51E+00
Lead	181.71	340.67	0.82	90.855	170.335	62.6956948	8.00E+00	8.00E+01	7.84E+00	7.84E-01
Manganese	148.18	438.73	1.91	74.09	219.365	70.5213624	8.80E+01	2.84E+02	8.01E-01	2.48E-01
Mercury	0.64	2.99	0.0012	0.32	1.495	0.43530245	1.32E+01	1.32E+02	3.30E-02	3.30E-03
Nickel	103	32.13	0.064	51.5	16.065	16.2061035	4.00E+01	8.00E+01	4.05E-01	2.03E-01
Silver	0.85	0.895	0	0.425	0.4475	0.20920981	1.81E+02	1.81E+03	1.15E-03	1.15E-04
Thallium	0.52	0.48	0	0.26	0.24	0.11989101	7.40E-03	7.40E-02	1.62E+01	1.62E+00
Vanadium	77.18	60.67	0	38.59	30.335	16.5269755	2.10E-01	2.10E+00	7.87E+01	7.87E+00
Zinc	357.82	506.33	1.16	178.91	253.165	103.698638	1.60E+02	3.20E+02	6.48E-01	3.24E-01
4,4'-DDE	0	0.01	0	0	0.005	0.00119891	8.00E-01	4.00E+00	1.50E-03	3.00E-04
4,4'-DDT	0	0.0046	0	0	0.0023	0.0005515	8.00E-01	4.00E+00	6.89E-04	1.38E-04
Aroclor-1260	0.74	0.064	0	0.37	0.032	0.09639237	3.90E-01	3.90E+00	2.47E-01	2.47E-02
Dieldrin	0	0.011	0	0	0.0055	0.0013188	2.00E-02	2.00E-01	6.59E-02	6.59E-03
Endrin Aldehyde	0.02	0	0	0.01	0	0.00239782	NA	NA	NA	NA
Endrin Ketone	0.012	0	0	0.006	0	0.00143869	NA	NA	NA	NA
2-Methylnaphthalene	0	0.048	0	0	0.024	0.00575477	1.30E+00	2.60E+00	4.43E-03	2.21E-03
4-Methylphenol	0	0	0.013	0	0	0.00106267	5.00E+01	5.00E+02	2.13E-05	2.13E-06
Acenaphthylene	0	0.45	0	0	0.225	0.05395095	1.30E+00	2.60E+00	4.15E-02	2.08E-02
Anthracene	0.2	0.5	0	0.1	0.25	0.08392371	1.30E+00	2.60E+00	6.46E-02	3.23E-02
Benzo(a)anthracene	1.4	0.62	0	0.7	0.31	0.24217984	1.30E+00	2.60E+00	1.86E-01	9.31E-02
Benzo(a)pyrene	1.3	0.59	0	0.65	0.295	0.22659401	1.00E+00	1.00E+01	2.27E-01	2.27E-02
Benzo(k)fluoranthene	0.77	0.53	0	0.385	0.265	0.15585831	1.30E+00	2.60E+00	1.20E-01	5.99E-02
Butylbenzylphthalate	0.035	0	0	0.0175	0	0.00419619	1.59E+02	1.59E+03	2.64E-05	2.64E-06
Carbazole	0.3	0	0	0.15	0	0.0359673	1.30E+00	2.60E+00	2.77E-02	1.38E-02
Chrysene	1.8	0.64	0	0.9	0.32	0.29253406	1.30E+00	2.60E+00	2.25E-01	1.13E-01
Dibenz(a,h)anthracene	0	0.48	0	0	0.24	0.05754768	1.30E+00	2.60E+00	4.43E-02	2.21E-02
Diethylphthalate	0.62	0.29	0	0.31	0.145	0.10910082	4.58E+03	4.58E+04	2.38E-05	2.38E-06
Fluoranthene	3.14	1.29	0	1.57	0.645	0.53111717	1.30E+00	2.60E+00	4.09E-01	2.04E-01
Indeno(1,2,3-cd)pyrene	0.75	0	0	0.375	0	0.08991826	1.30E+00	2.60E+00	6.92E-02	3.46E-02
Phenanthrene	2.2	0.28	0	1.1	0.14	0.2973297	1.30E+00	2.60E+00	2.29E-01	1.14E-01
Pyrene	3.03	1.32	0	1.515	0.66	0.52152589	1.30E+00	2.60E+00	4.01E-01	2.01E-01
2-Butanone	0.0086	0	0	0.0043	0	0.00103106	NA	NA	NA	NA
Acetone	0.016	0.051	0.008	0.008	0.0255	0.00868665	1.00E+01	5.00E+01	8.69E-04	1.74E-04
Carbon Disulfide	0	0.01	0	0	0.005	0.00119891	NA	NA	NA	NA

NA - Not Available

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Raccoon
(Conservative Inputs)

Body Weight	3.6700000	kg	(USEPA, 1993)
Food Ingestion Rate	0.8000000	kg/day	(USEPA, 1993, using placental mammal equation)
Water Ingestion Rate	0.3000000	L/day	(USEPA, 1993)
Soil Ingestion Rate	0.0400000	kg/day	(estimated)
Sed. Ingestion Rate	0.0400000	kg/day	(estimated)

Maximum Concentrations ECOC	Soil Concentration (mg/kg)	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	11.8	28	0.21	5.9	14	4.78882834	NA	NA	NA	NA
Aluminum	7010	22100	50	3505	11050	3494.11444	1.93E+00	1.93E+01	1.81E+03	1.81E+02
Antimony	9.1	0	0	4.55	0	1.09100817	1.25E-01	1.25E+00	8.73E+00	8.73E-01
Arsenic	0	33.1	0.027	0	16.55	3.97059946	1.26E-01	1.26E+00	3.15E+01	3.15E+00
Barium	0	185	0	0	92.5	22.1798365	5.10E+00	1.98E+01	4.35E+00	1.12E+00
Beryllium	1.1	2.7	0	0.55	1.35	0.45558583	6.60E-01	6.60E+00	6.90E-01	6.90E-02
Chromium	680	38.8	0.067	340	19.4	86.1831335	1.17E+01	1.54E+01	7.37E+00	5.60E+00
Cobalt	0	23.3	0.044	0	11.65	2.79705722	1.00E+00	1.00E+01	2.80E+00	2.80E-01
Copper	596	387	0.179	298	193.5	117.867493	1.17E+01	1.54E+01	1.01E+01	7.65E+00
Iron	29500	48600	93.1	14750	24300	9371.09809	5.00E+01	5.00E+02	1.87E+02	1.87E+01
Lead	264	441	0.82	132	220.5	84.5901907	8.00E+00	8.00E+01	1.06E+01	1.06E+00
Manganese	352	877	1.91	176	438.5	147.50218	8.80E+01	2.84E+02	1.68E+00	5.19E-01
Mercury	1.3	6.4	0.0012	0.65	3.2	0.92325886	1.32E+01	1.32E+02	6.99E-02	6.99E-03
Nickel	546	43.9	0.064	273	21.95	70.7289373	4.00E+01	8.00E+01	1.77E+00	8.84E-01
Silver	1.6	1	0	0.8	0.5	0.31171662	1.81E+02	1.81E+03	1.72E-03	1.72E-04
Thallium	0.89	0.46	0	0.445	0.23	0.16185286	7.40E-03	7.40E-02	2.19E+01	2.19E+00
Vanadium	354	88.5	0	177	44.25	53.0517711	2.10E-01	2.10E+00	2.53E+02	2.53E+01
Zinc	607	624	1.16	303.5	312	147.680654	1.60E+02	3.20E+02	9.23E-01	4.62E-01
4,4'-DDE	0	0.018	0	0	0.009	0.00215804	8.00E-01	4.00E+00	2.70E-03	5.40E-04
4,4'-DDT	0	0.0082	0	0	0.0041	0.00098311	8.00E-01	4.00E+00	1.23E-03	2.46E-04
Aroclor-1260	6.3	0.09	0	3.15	0.045	0.76610354	3.90E-01	3.90E+00	1.96E+00	1.96E-01
Dieldrin	0	0.023	0	0	0.0115	0.00275749	2.00E-02	2.00E-01	1.38E-01	1.38E-02
Endrin Aldehyde	0.16	0	0	0.08	0	0.01918256	NA	NA	NA	NA
Endrin Ketone	0.083	0	0	0.0415	0	0.00995095	NA	NA	NA	NA
2-Methylnaphthalene	0	0.14	0	0	0.07	0.01678474	1.30E+00	2.60E+00	1.29E-02	6.46E-03
4-Methylphenol	0	0	0.013	0	0	0.00106267	5.00E+01	5.00E+02	2.13E-05	2.13E-06
Acenaphthylene	0	0.07	0	0	0.035	0.00839237	1.30E+00	2.60E+00	6.46E-03	3.23E-03
Anthracene	0.2	0.2	0	0.1	0.1	0.0479564	1.30E+00	2.60E+00	3.69E-02	1.84E-02
Benzo(a)anthracene	1.4	1.3	0	0.7	0.65	0.32370572	1.30E+00	2.60E+00	2.49E-01	1.25E-01
Benzo(a)pyrene	1.3	1.2	0	0.65	0.6	0.29972752	1.00E+00	1.00E+01	3.00E-01	3.00E-02
Benzo(k)fluroanthene	0.77	1.1	0	0.385	0.55	0.22419619	1.30E+00	2.60E+00	1.72E-01	8.62E-02
Butylbenzylphthalate	0.035	0	0	0.0175	0	0.00419619	1.59E+02	1.59E+03	2.64E-05	2.64E-06
Carbazole	0.3	0	0	0.15	0	0.0359673	1.30E+00	2.60E+00	2.77E-02	1.38E-02
Chrysene	1.8	1.2	0	0.9	0.6	0.35967302	1.30E+00	2.60E+00	2.77E-01	1.38E-01
Dibenz(a,h)anthracene	0	0.15	0	0	0.075	0.01798365	1.30E+00	2.60E+00	1.38E-02	6.92E-03
Diethylphthalate	0.62	0.3	0	0.31	0.15	0.11029973	4.58E+03	4.58E+04	2.41E-05	2.41E-06
Fluoranthene	3.3	2.8	0	1.65	1.4	0.73133515	1.30E+00	2.60E+00	5.63E-01	2.81E-01
Indeno(1,2,3-cd)pyrene	0.75	0	0	0.375	0	0.08991826	1.30E+00	2.60E+00	6.92E-02	3.46E-02
Phenanthrene	2.2	0.4	0	1.1	0.2	0.31171662	1.30E+00	2.60E+00	2.40E-01	1.20E-01
Pyrene	3.1	2.8	0	1.55	1.4	0.70735695	1.30E+00	2.60E+00	5.44E-01	2.72E-01
2-Butanone	0.028	0	0	0.014	0	0.00335695	NA	NA	NA	NA
Acetone	0.079	0.14	0.008	0.0395	0.07	0.02691008	1.00E+01	5.00E+01	2.69E-03	5.38E-04
Carbon Disulfide	0	0.019	0	0	0.0095	0.00227793	NA	NA	NA	NA

NA - Not Available

TABLE D-15
HAZARD QUOTIENT CALCULATIONS FOR MUSKRAT

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Muskrat
(Conservative Inputs)

Body Weight	0.8370000 kg	USEPA, 1993)
Food Ingestion Rate	0.2850000 kg/day	USEPA, 1993)
Water Ingestion Rate	0.8202600 L/day	USEPA, 1993)
Soil Ingestion Rate	0.0285000 kg/day	(estimated)

Mean Concentrations

ECOC	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	13.7	0.21	13.7	5.337	NA	NA	NA	NA
Aluminum	13150	50	13150	4974.358	1.93E+00	1.93E+01	2.58E+03	2.58E+02
Arsenic	19.7	0.027	19.7	7.405	1.26E-01	1.26E+00	5.88E+01	5.88E+00
Barium	109.13	0	109.13	40.875	5.10E+00	1.98E+01	8.01E+00	2.06E+00
Beryllium	1.5	0	1.5	0.562	6.60E-01	6.60E+00	8.51E-01	8.51E-02
Chromium	30.37	0.067	30.37	11.441	1.17E+01	1.54E+01	9.78E-01	7.43E-01
Colbalt	17.37	0.044	17.37	6.549	1.00E+00	1.00E+01	6.55E+00	6.55E-01
Copper	217	0.179	217	81.453	1.17E+01	1.54E+01	6.96E+00	5.29E+00
Iron	25666.67	93.1	25666.67	9704.740	5.00E+01	5.00E+02	1.94E+02	1.94E+01
Lead	340.67	0.82	340.67	128.402	8.00E+00	8.00E+01	1.61E+01	1.61E+00
Manganese	438.73	1.91	438.73	166.199	8.80E+01	2.84E+02	1.89E+00	5.85E-01
Mercury	2.99	0.0012	2.99	1.121	1.32E+01	1.32E+02	8.49E-02	8.49E-03
Nickel	32.13	0.064	32.13	12.097	4.00E+01	8.00E+01	3.02E-01	1.51E-01
Silver	0.895	0	0.895	0.335	1.81E+02	1.81E+03	1.85E-03	1.85E-04
Thallium	0.48	0	0.48	0.180	7.40E-03	7.40E-02	2.43E+01	2.43E+00
Vanadium	60.67	0	60.67	22.724	2.10E-01	2.10E+00	1.08E+02	1.08E+01
Zinc	506.33	1.16	506.33	190.784	1.60E+02	3.20E+02	1.19E+00	5.96E-01
4,4'-DDE	0.01	0	0.01	0.004	8.00E-01	4.00E+00	4.68E-03	9.36E-04
4,4'-DDT	0.0046	0	0.0046	0.002	8.00E-01	4.00E+00	2.15E-03	4.31E-04
Aroclor-1260	0.064	0	0.064	0.024	3.90E-01	3.90E+00	6.15E-02	6.15E-03
Dieldrin	0.011	0	0.011	0.004	2.00E-02	2.00E-01	2.06E-01	2.06E-02
2-Methylnaphthalene	0.048	0	0.048	0.018	1.30E+00	2.60E+00	1.38E-02	6.91E-03
4-Methylphenol	0	0.013	0.048	0.029	5.00E+01	5.00E+02	5.82E-04	5.82E-05
Acenaphthylene	0.45	0	0.45	0.169	1.30E+00	2.60E+00	1.30E-01	6.48E-02
Anthracene	0.5	0	0.5	0.187	1.30E+00	2.60E+00	1.44E-01	7.20E-02
Benzo(a)anthracene	0.62	0	0.62	0.232	1.30E+00	2.60E+00	1.79E-01	8.93E-02
Benzo(a)pyrene	0.59	0	0.59	0.221	1.00E+00	1.00E+01	2.21E-01	2.21E-02
Benzo(k)fluoranthene	0.53	0	0.53	0.199	1.30E+00	2.60E+00	1.53E-01	7.64E-02
Chrysene	0.64	0	0.64	0.240	1.30E+00	2.60E+00	1.84E-01	9.22E-02
Dibenz(a,h)anthracene	0.48	0	0.48	0.180	1.30E+00	2.60E+00	1.38E-01	6.91E-02
Diethylphthalate	0.29	0	0.29	0.109	4.58E+03	4.58E+04	2.37E-05	2.37E-06
Fluoranthene	1.29	0	1.29	0.483	1.30E+00	2.60E+00	3.72E-01	1.86E-01
Phenanthrene	0.28	0	0.28	0.105	1.30E+00	2.60E+00	8.07E-02	4.03E-02
Pyrene	1.32	0	1.32	0.494	1.30E+00	2.60E+00	3.80E-01	1.90E-01
Acetone	0.051	0.008	0.051	0.027	1.00E+01	5.00E+01	2.69E-03	5.39E-04
Carbon Disulfide	0.01	0	0.01	0.004	NA	NA	NA	NA

NA - Not Available

Site 4, Landfill D
St. Juliens Creek Annex Facility
Chesapeake, Virginia

Muskrat
(Conservative Inputs)

Body Weight	0.8370000 kg	USEPA, 1993)
Food Ingestion Rate	0.2850000 kg/day	USEPA, 1993)
Water Ingestion Rate	0.8202600 L/day	USEPA, 1993)
Soil Ingestion Rate	0.0285000 kg/day	(estimated)

Maximum Concentrations

ECOC	Sediment Concentration (mg/kg)	Water Concentration (mg/L)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL HQ_a	LOAEL HQ_l
Total Phosphorous	28	0.21	28	10.6932552	NA	NA	NA	NA
Aluminum	22100	50	22100	8326.598566	1.93E+00	1.93E+01	4.31E+03	4.31E+02
Arsenic	33.1	0.027	33.1	12.42413025	1.26E-01	1.26E+00	9.86E+01	9.86E+00
Barium	185	0	185	69.2921147	5.10E+00	1.98E+01	1.36E+01	3.50E+00
Beryllium	2.7	0	2.7	1.011290323	6.60E-01	6.60E+00	1.53E+00	1.53E-01
Chromium	38.8	0.067	38.8	14.59827649	1.17E+01	1.54E+01	1.25E+00	9.48E-01
Colbalt	23.3	0.044	23.3	8.770180932	1.00E+00	1.00E+01	8.77E+00	8.77E-01
Copper	387	0.179	387	145.1270329	1.17E+01	1.54E+01	1.24E+01	9.42E+00
Iron	48600	93.1	48600	18294.46381	5.00E+01	5.00E+02	3.66E+02	3.66E+01
Lead	441	0.82	441	165.9810194	8.00E+00	8.00E+01	2.07E+01	2.07E+00
Manganese	877	1.91	877	330.3538789	8.80E+01	2.84E+02	3.75E+00	1.16E+00
Mercury	6.4	0.0012	6.4	2.398308616	1.32E+01	1.32E+02	1.82E-01	1.82E-02
Nickel	43.9	0.064	43.9	16.50555154	4.00E+01	8.00E+01	4.13E-01	2.06E-01
Silver	1	0	1	0.374551971	1.81E+02	1.81E+03	2.07E-03	2.07E-04
Thallium	0.46	0	0.46	0.172293907	7.40E-03	7.40E-02	2.33E+01	2.33E+00
Vanadium	88.5	0	88.5	33.14784946	2.10E-01	2.10E+00	1.58E+02	1.58E+01
Zinc	624	1.16	624	234.8572301	1.60E+02	3.20E+02	1.47E+00	7.34E-01
4,4'-DDE	0.018	0	0.018	0.006741935	8.00E-01	4.00E+00	8.43E-03	1.69E-03
4,4'-DDT	0.0082	0	0.0082	0.003071326	8.00E-01	4.00E+00	3.84E-03	7.68E-04
Aroclor-1260	0.09	0	0.09	0.033709677	3.90E-01	3.90E+00	8.64E-02	8.64E-03
Dieldrin	0.023	0	0.023	0.008614695	2.00E-02	2.00E-01	4.31E-01	4.31E-02
2-Methylnaphthalene	0.14	0	0.14	0.052437276	1.30E+00	2.60E+00	4.03E-02	2.02E-02
4-Methylphenol	0	0.013	0	0.01274	5.00E+01	5.00E+02	2.55E-04	2.55E-05
Acenaphthylene	0.07	0	0.07	0.026218638	1.30E+00	2.60E+00	2.02E-02	1.01E-02
Anthracene	0.2	0	0.2	0.074910394	1.30E+00	2.60E+00	5.76E-02	2.88E-02
Benzo(a)anthracene	1.3	0	1.3	0.486917563	1.30E+00	2.60E+00	3.75E-01	1.87E-01
Benzo(a)pyrene	1.2	0	1.2	0.449462366	1.00E+00	1.00E+01	4.49E-01	4.49E-02
Benzo(k)fluoranthene	1.1	0	1.1	0.412007168	1.30E+00	2.60E+00	3.17E-01	1.58E-01
Chrysene	1.2	0	1.2	0.449462366	1.30E+00	2.60E+00	3.46E-01	1.73E-01
Dibenz(a,h)anthracene	0.15	0	0.15	0.056182796	1.30E+00	2.60E+00	4.32E-02	2.16E-02
Diethylphthalate	0.3	0	0.3	0.112365591	4.58E+03	4.58E+04	2.45E-05	2.45E-06
Fluoranthene	2.8	0	2.8	1.04874552	1.30E+00	2.60E+00	8.07E-01	4.03E-01
Phenanthrene	0.4	0	0.4	0.149820789	1.30E+00	2.60E+00	1.15E-01	5.76E-02
Pyrene	2.8	0	2.8	1.04874552	1.30E+00	2.60E+00	8.07E-01	4.03E-01
Acetone	0.14	0.008	0.14	0.060277276	1.00E+01	5.00E+01	6.03E-03	1.21E-03
Carbon Disulfide	0.019	0	0.019	0.007116487	NA	NA	NA	NA

NA - Not Available