**TABLE 4-1**
**ANALYTICAL DATA SUMMARY**
**BRADFORD ISLAND LANDFILL - IN WATER RESULTS - WATER COLUMN SAMPLES AND COLLOCATED SEDIMENT**
**POLYCHLORINATED BIPHENYLS**

| **Sample ID** | | **010502IW03WCS/SS** | | **010502IW04WCS/SS** | | **010502IW05WCS** | | **010502IW06WCS/SS** | | **010502IW10WCS/SS** | | **010502IW11WCS/SS** | | **010502IW12SS** | | **Freshwater Sediment Ecological Benchmark** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Area** | | **Pile #1** | | **Pile #1** | | **Duplicate of 010502IW04WCS** | | **Pile #1** | | **Background Location** | | **Pile #2** | | **Duplicate of 010502IW11WCS** | | | | | |
| **Location** | | **Within Pile** | | **Within Pile** | | **Within Pile** | | **Within Pile** | | **Goose Island** | | **Within Pile** | | **Within Pile** | | | | **Lowest of Other** | |
| **Date Collected** | | **5/2/2001 - 6/19/2001** | | **5/2/2001 - 6/19/2001** | | **5/2/2001 - 6/19/2001** | | **5/2/2001 - 6/19/2001** | | **5/2/2001 - 6/19/2001** | | **5/2/2001 - 6/19/2001** | | **5/2/2001 - 6/19/2001** | | **WQC** | **TEC** | **Reference Levels** | |
| **Water - Dissolved Phase** | | | | | | | | | | | | | | | | | | | |
| Aroclor 1242 | ug/L | 0.0326 | U | 0.0321 | U | 0.0311 | U | 0.032 | U | 0.031 | U | 0.0299 | U | NA | | 0.014 | NV | -- | -- |
| Aroclor 1248 | ug/L | 0.0326 | U | 0.0321 | U | 0.0311 | U | 0.032 | U | 0.031 | U | 0.0299 | U | NA | | 0.014 | NV | -- | -- |
| Aroclor 1254 | ug/L | **0.265** | | **0.038** | J | **0.0399** | | 0.032 | U | 0.031 | U | **0.03** | U | NA | | 0.014 | NV | -- | -- |
| Aroclor 1260 | ug/L | 0.0326 | U | 0.0321 | U | 0.0311 | U | 0.032 | U | 0.031 | U | 0.0299 | U | NA | | 0.014 | NV | -- | -- |
| **Water - Particulate Phase** | | | | | | | | | | | | | | | | | | | |
| Aroclor 1242 | ug/L | 0.316 | U | 0.0316 | U | 0.0316 | U | 0.0316 | U | 0.0316 | U | 0.0316 | U | NA | | 0.014 | NV | -- | -- |
| Aroclor 1248 | ug/L | 0.316 | U | 0.0316 | U | 0.0316 | U | 0.0316 | U | 0.0316 | U | 0.0316 | U | NA | | 0.014 | NV | -- | -- |
| Aroclor 1254 | ug/L | **7.28** | | **0.624** | | 0.032 | U | **0.132** | | 0.032 | U | **0.24** | | NA | | 0.014 | NV | -- | -- |
| Aroclor 1260 | ug/L | 0.316 | U | 0.0316 | U | 0.0316 | U | 0.0316 | U | 0.0316 | U | 0.0316 | U | NA | | 0.014 | NV | -- | -- |
| **Sediment** | | | | | | | | | | | | | | | | **NOAA TEL** | **TEC** | **Lowest of Other Reference Levels** | |
| Aroclor 1242 | mg/Kg-dry | 0.0021 | U | 0.002 | U | NA | | 0.0019 | U | 0.00255 | U | 0.0021 | U | 0.00213 | U | 0.0341 | 0.0598 | -- | -- |
| Aroclor 1248 | mg/Kg-dry | 0.0021 | U | 0.002 | U | NA | | 0.0019 | U | 0.00255 | U | 0.0021 | U | 0.00213 | U | 0.0341 | 0.0598 | -- | -- |
| Aroclor 1254 | mg/Kg-dry | **24** | **J** | **0.077** | | NA | | **0.092** | | **0.018** | | **1.24** | | **0.417** | | 0.0341 | 0.0598 | -- | -- |
| Aroclor 1260 | mg/Kg-dry | 0.0021 | U | 0.002 | U | NA | | 0.0019 | U | 0.00255 | U | 0.0021 | U | 0.00213 | U | 0.0341 | 0.0598 | -- | -- |
| Total Organic Carbon | % | 0.15 | | 0.08 | | NA | | 0.19 | | 0.47 | | 0.42 | | 0.23 | | NV | NV | -- | -- |

**Notes:**
Data presented herein reflect the concentrations, quantitation limits and qualifications as determined by the data validation process. The Data Validation Report is presented in Appendix C.
Detections are in bold.
Shaded concentrations are values above benchmark values.
U - The analyte was not detected above the reported sample quantitation limit.
J - The associated numerical value is an estimate.
NA - Not analyzed
NV - No value
WQC - Ambient Water Quality Criteria (EPA 1999).
NOAA TEL - Screening Quick Reference Table Threshold Effects Level.
TEC - Threshold Effect Concentration (MacDonald et al. 2000).
-- Not applicable since other value present.

# TABLE 4-2
# ANALYTICAL DATA SUMMARY
# BRADFORD ISLAND LANDFILL - IN WATER RESULTS - SEDIMENTS
# PESTICIDES AND POLYCHLORINATED BIPHENYLS

| Sample | | 010502IW07SS | | 010502IW08SS | | 010502IW01SS | | 010502IW02SS | | 010503IW16SS | | 010503IW13SS | | 010503IW14SS | | 010503IW15SS | | 010503IW17SS | | Freshwater Sediment Ecological Benchmark Values | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | | Pile #1 | | Pile #1 | | Pile #2 | | Pile #2 | | Pile #2 | | Pile #2 | | Pile #2 | | Pile #2 | | Pile #2 | | NOAA TEL | TEC | Lowest of Other Reference Levels | |
| Location | | Perimeter | | Perimeter | | East Perimeter | | East Perimeter | | West Perimeter | | West Perimeter | | Within Pile | | Duplicate of 14 SS | | Within Pile | | | | | |
| Date Collected | | 5/2/2001 | | 5/2/2001 | | 5/2/2001 | | 5/2/2001 | | 5/3/2001 | | 5/3/2001 | | 5/3/2001 | | 5/3/2001 | | 5/3/2001 | | | | | |
| **PCBs** | | | | | | | | | | | | | | | | | | | | | | | |
| **Aroclor 1016** | mg/kg-dry | 0.01 | U | 0.014 | U | 0.01 | U | 0.012 | U | 0.01 | U | 0.013 | U | 0.01 | U | 0.01 | U | 0.012 | U | 0.0341 | 0.0598 | -- | |
| **Aroclor 1221** | mg/kg-dry | 0.021 | U | 0.014 | U | 0.021 | U | 0.012 | U | 0.021 | U | 0.013 | U | 0.021 | U | 0.021 | U | 0.012 | U | 0.0341 | 0.0598 | -- | |
| **Aroclor 1232** | mg/kg-dry | 0.01 | U | 0.014 | U | 0.01 | U | 0.012 | U | 0.01 | U | 0.013 | U | 0.01 | U | 0.01 | U | 0.012 | U | 0.0341 | 0.0598 | -- | |
| **Aroclor 1242** | mg/kg-dry | 0.01 | U | 0.014 | U | 0.01 | U | 0.012 | U | 0.01 | U | 0.013 | U | 0.01 | U | 0.01 | U | 0.012 | U | 0.0341 | 0.0598 | -- | |
| **Aroclor 1248** | mg/kg-dry | 0.01 | U | 0.014 | U | 0.01 | U | 0.012 | U | 0.01 | U | 0.013 | U | 0.01 | U | 0.01 | U | 0.012 | U | 0.0341 | 0.0598 | -- | |
| **Aroclor 1254** | mg/kg-dry | 0.01 | U | 0.014 | U | 0.01 | U | **0.2** | | **0.044** | | **0.35** | | **0.51** | | **0.57** | | **1.1** | | 0.0341 | 0.0598 | -- | |
| **Aroclor 1260** | mg/kg-dry | 0.01 | U | 0.014 | U | 0.01 | U | 0.012 | U | 0.01 | U | 0.013 | U | 0.01 | U | 0.01 | U | 0.012 | U | 0.0341 | 0.0598 | -- | |
| **Pesticides** | | | | | | | | | | | | | | | | | | | | | | | |
| **Aldrin** | ug/kg-dry | 1 | U | NA | | 1 | U | NA | | 1 | U | NA | | 1 | U | 1 | U | NA | | NV | NV | 2 | Ontario LEL |
| **alpha-BHC** | ug/kg-dry | 1 | U | NA | | 1 | U | NA | | 1 | U | NA | | 1 | U | 1 | U | NA | | NV | NV | 6 | Ontario LEL |
| **beta-BHC** | ug/kg-dry | 1 | U | NA | | 1 | U | NA | | 1 | U | NA | | 1 | U | 1 | U | NA | | NV | NV | 5 | Ontario LEL |
| **delta-BHC** | ug/kg-dry | 1 | U | NA | | 1 | U | NA | | 1 | U | NA | | 1 | U | 1 | U | NA | | NV | NV | 120 | ORNL |
| **gamma-BHC (Lindane)** | ug/kg-dry | 1 | U | NA | | 1 | U | NA | | 1 | U | NA | | 1 | U | 1 | U | NA | | 0.94 | NV | -- | |
| **Chlordane (technical)** | ug/kg-dry | 10 | U | NA | | 10 | U | NA | | 9 | U | NA | | 10 | U | 11 | U | NA | | 4.5 | 3.24 | -- | |
| **4,4'-DDD** | ug/kg-dry | 2 | U | NA | | 2 | U | NA | | **0.8** | J | NA | | 2 | U | 2 | U | NA | | 3.54 | 4.88 | -- | |
| **4,4'-DDE** | ug/kg-dry | 2 | U | NA | | 2 | U | NA | | **0.5** | J | NA | | 2 | U | 6 | U | NA | | 1.42 | 3.16 | -- | |
| **4,4'-DDT** | ug/kg-dry | 2 | U | NA | | **1.7** | J | NA | | 2 | U | NA | | 2 | U | 2 | U | NA | | NV | 4.16 | -- | |
| **Dieldrin** | ug/kg-dry | 2 | U | NA | | 2 | U | NA | | 2 | U | NA | | 10 | U | 9 | U | NA | | 2.85 | 1.9 | -- | |
| **Endosulfan I** | ug/kg-dry | 1 | U | NA | | 1 | U | NA | | 1 | U | NA | | 1 | U | 1 | U | NA | | NV | NV | 5.4 | OSWER |
| **Endosulfan II** | ug/kg-dry | 2 | U | NA | | 2 | U | NA | | 2 | U | NA | | 2 | U | 2 | U | NA | | NV | NV | 5.4 | OSWER |
| **Endosulfan sulfate** | ug/kg-dry | 2 | U | NA | | 2 | U | NA | | 2 | U | NA | | 2 | U | 2 | U | NA | | NV | NV | NV | |
| **Endrin** | ug/kg-dry | 2 | U | NA | | 2 | U | NA | | 2 | U | NA | | 4 | U | 3 | U | NA | | 2.67 | 2.22 | -- | |
| **Endrin aldehyde** | ug/kg-dry | 2 | U | NA | | 2 | U | NA | | 2 | U | NA | | 4 | U | 5 | U | NA | | NV | NV | NV | |
| **Heptachlor** | ug/kg-dry | 1 | U | NA | | 1 | U | NA | | 1 | U | NA | | 1 | U | 1 | U | NA | | NV | NV | 68 | ORNL |
| **Heptachlor epoxide** | ug/kg-dry | 1 | U | NA | | 1 | U | NA | | 1 | U | NA | | 4 | U | 3 | U | NA | | 0.6 | 2.47 | -- | |
| **Methoxychlor** | ug/kg-dry | 10 | U | NA | | 10 | U | NA | | 9 | U | NA | | 10 | U | 11 | U | NA | | NV | NV | 19 | ORNL & OSWER |
| **Endrin ketone** | ug/kg-dry | 2 | U | NA | | 2 | U | NA | | 2 | U | NA | | 2 | U | 2 | U | NA | | NV | NV | NV | |
| **Toxaphene** | ug/kg-dry | 100 | U | NA | | 100 | U | NA | | 91 | U | NA | | 100 | U | 110 | U | NA | | NV | NV | 28 | OSWER |

**Notes:**
Data presented herein reflect the concentrations, quantitation limits and qualifications as determined by the data validation process. The Data Validation Report is presented in Appendix C.
Detections are in bold.
Shaded concentrations are values above benchmark values.
Second column confirmation was performed and the relative percent difference value between the results on the two columns is ≤ 40%, unless otherwise noted.
NV - No Value
NA - Not Applicable
J - The associated numerical value is an estimate.
U - The analyte was not detected above the reported sample quantitation limit.
-- Not applicable since TEL or TEC are present.
**Ecological Benchmark Values:**
NOAA TEL - Screening Quick Reference Table Threshold Effects Level.
TEC - Threshold Effect Concentration (MacDonald et al. 2000).
Ontario LEL - Ontario Ministry of the Enviornment Lowest Effect Level.
ORNL - Oak Ridge National Laboratory Secondary Chronic Values.

# TABLE 4-3
# ANALYTICAL DATA SUMMARY
# BRADFORD ISLAND LANDFILL - IN WATER RESULTS - SEDIMENTS
# TOTAL ORGANIC CARBON

| **Sample** | | **010502IW07SS** | **010502IW08SS** | **010502IW01SS** | **010502IW02SS** | **010502IW16SS** | **010503IW13SS** | **010502IW14SS** | **010502IW15SS** | **010503IW17SS** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Area** | | **Pile #1** | **Pile #1** | **Pile #2** | **Pile #2** | **Pile #2** | **Pile #2** | **Pile #2** | **Pile #2** | **Pile #2** |
| **Location** | | **Perimeter** | **Perimeter** | **East Perimeter** | **East Perimeter** | **West Perimeter** | **West Perimeter** | **Within Pile** | **Duplicate of 14 SS** | **Within Pile** |
| **Date Collected** | | **5/2/2001** | **5/2/2001** | **5/2/2001** | **5/2/2001** | **5/3/2001** | **5/3/2001** | **5/3/2001** | **5/3/2001** | **5/3/2001** |
| **Total Organic Carbon** | mg/kg-dry | **1500** | **390** | **1900** | **1300** | **1500** | **1300** | **3800** | **2900** | **2400** |
| | % | 0.15 | 0.039 | 0.19 | 0.13 | 0.15 | 0.13 | 0.38 | 0.29 | 0.24 |

Data presented herein reflect the concentrations, quantitation limits and qualifications as determined by the data validation process.
The Data Validation Report is presented in Appendix C.

**TABLE 4-4**
**ANALYTICAL DATA SUMMARY**
**BRADFORD ISLAND LANDFILL - IN WATER RESULTS - SEDIMENTS**
**SEMIVOLATILE ORGANIC COMPOUNDS**

| Sample | | 010502IW07SS | | 010502IW01SS | | 010503IW16SS | | 010503IW14SS | | 010503IW15SS | | Freshwater Sediment Ecological Benchmark Values | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | | Pile #1 | | Pile #2 | | Pile #2 | | Pile #2 | | Pile #2 | | | | | |
| Location | | Perimeter | | East Perimeter | | West Perimeter | | Within Pile | | Duplicate of 14 SS | | NOAA TEL | TEC | Lowest of Other Reference Levels | |
| Date Collected | | 5/2/2001 | | 5/2/2001 | | 5/3/2001 | | 5/3/2001 | | 5/3/2001 | | | | | |
| **1,2,4-Trichlorobenzene** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | 9200 | OSWER |
| **1,2-Dichlorobenzene** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | 330 | ORNL |
| **1,3-Dichlorobenzene** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | 1700 | ORNL & OSWER |
| **1,4-Dichlorobenzene** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | 340 | ORNL |
| **2,4,5-Trichlorophenol** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **2,4,6-Trichlorophenol** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **2,4-Dichlorophenol** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **2,4-Dimethylphenol** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **2,4-Dinitrophenol** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **2,4-Dinitrotoluene** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **2,6-Dinitrotoluene** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **2-Chloronaphthalene** | ug/kg | 9 | U | 8 | U | 8 | U | 8 | U | 9 | U | NV | NV | NV | |
| **2-Chlorophenol** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **2-Methylnaphthalene** | ug/kg | 9 | U | 8 | U | 8 | U | 8 | U | 9 | U | NV | NV | 20.2 | Canadian ISQGs |
| **2-Methylphenol** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | 12 | ORNL |
| **2-Nitroaniline** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **2-Nitrophenol** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **3- & 4-Methylphenol** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | 670 | WA State |
| **3,3'-Dichlorobenzidine** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **3-Nitroaniline** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **4,6-Dinitro-2-methylphenol** | ug/kg | 43 | U | 40 | U | 39 | U | 42 | U | 43 | U | NV | NV | NV | |
| **4-Bromophenylphenylether** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | 1200 | ORNL |
| **4-Chloro-3-methylphenol** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **4-Chloroaniline** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **4-Chlorophenylphenylether** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **4-Nitroaniline** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **4-Nitrophenol** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **Acenaphthene** | ug/kg | 9 | U | 8 | U | 8 | U | 8 | U | 9 | U | NV | NV | 620 | OSWER |
| **Acenaphthylene** | ug/kg | 9 | U | 8 | U | 8 | U | 8 | U | 9 | U | NV | NV | NV | |
| **Anthracene** | ug/kg | 9 | U | 8 | U | **12** | | 8 | U | 9 | U | NV | 57.2 | -- | |
| **Benz(a)anthracene** | ug/kg | 17 | U | 16 | U | **59** | | 17 | U | **7** | J | 31.7 | 108 | -- | |
| **Benzidine** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 70 | U | NV | NV | 1.7 | ORNL |
| **Benzo(a)pyrene** | ug/kg | 9 | U | 8 | U | **78** | | 8 | U | **5** | J | 31.9 | 150 | -- | |
| **Benzo(b)fluoranthene** | ug/kg | 9 | U | 8 | U | **87** | | 8 | U | **12** | | NV | NV | 27.2 | ARCS TEC |
| **Benzo(g,h,i)perylene** | ug/kg | 9 | U | 8 | U | **30** | | 8 | U | 9 | U | NV | NV | 170 | Ontario LEL |
| **Benzo(k)fluoranthene** | ug/kg | 9 | U | 8 | U | 8 | U | 8 | U | 9 | U | 27.2 | NV | -- | |
| **Benzoic Acid** | ug/kg | 43 | UJ | 40 | UJ | 39 | UJ | 42 | UJ | 43 | UJ | NV | NV | NV | |
| **Benzyl Alcohol** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **bis(2-Chloroethoxy)methane** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **bis(2-Chloroethyl)ether** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **bis(2-Chloroisopropyl)ether** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **bis(2-Ethylhexyl)phthalate** | ug/kg | 190 | U | 42 | U | 57 | U | 140 | U | 43 | U | NV | NV | 182 | Region IV |
| **Butylbenzylphthalate** | ug/kg | 17 | U | 17 | U | 20 | U | 17 | U | 17 | U | NV | NV | 11000 | ORNL & OSWER |
| **Carbazole** | ug/kg | 43 | U | 40 | U | 39 | U | 42 | U | 43 | U | NV | NV | NV | |
| **Chrysene** | ug/kg | 9 | U | 8 | U | **58** | | 8 | U | **7** | J | 26.83 | 166 | -- | |
| **Dibenz(a,h)anthracene** | ug/kg | 9 | U | 8 | U | 8 | U | 8 | U | 9 | U | 10 | 33 | -- | |
| **Dibenzofuran** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | 420 | ORNL |
| **Diethylphthalate** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | 600 | ORNL |
| **Dimethylphthalate** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **Di-n-butylphthalate** | ug/kg | 85 | U | 30 | U | 78 | U | 84 | U | 87 | U | NV | NV | 11000 | ORNL & OSWER |
| **Di-n-octylphthalate** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **Fluoranthene** | ug/kg | 9 | U | 8 | U | **98** | | 8 | U | **18** | | 31.46 | 423 | -- | |
| **Fluorene** | ug/kg | 9 | U | 8 | U | 8 | U | 8 | U | 9 | U | 10 | 77.4 | -- | |
| **Hexachlorobenzene** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **Hexachlorobutadiene** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **Hexachlorocyclopentadiene** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **Hexachloroethane** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | 1000 | ORNL |
| **Indeno(1,2,3-cd)pyrene** | ug/kg | 9 | U | 8 | U | **29** | | 8 | U | 9 | U | 17.32 | NV | -- | |
| **Isophorone** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **Naphthalene** | ug/kg | 9 | U | 8 | U | 8 | U | 8 | U | 9 | U | NV | 176 | -- | |
| **Nitrobenzene** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **N-nitrosodimethylamine** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **N-nitroso-di-n-propylamine** | ug/kg | 17 | U | 16 | U | 16 | U | 42 | U | 17 | U | NV | NV | NV | |
| **N-Nitrosodiphenylamine** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **Pentachlorophenol (PCP)** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | NV | |
| **Phenanthrene** | ug/kg | 9 | U | 8 | U | **35** | | 8 | U | **7** | J | 18.73 | 204 | -- | |
| **Phenol** | ug/kg | 17 | U | 16 | U | 16 | U | 17 | U | 17 | U | NV | NV | 31 | ORNL |
| **Pyrene** | ug/kg | 9 | U | 8 | U | **100** | | 8 | U | **19** | | 44.27 | 195 | -- | |

**Notes:**
Data presented herein reflect the concentrations, quantitation limits and qualifications as determined by the data validation process.
The Data Validation Report is presented in Appendix C.
Detections are in bold.
Shaded concentrations are values above benchmark values.
NV - No Value
J - The associated numerical value is an estimate.
U - The analyte was not detected above the reported sample quantitation limit.
Elevated MRLs for diethylphthalate, di-n-butylphthalate, butylbenzylphthalate and bis(20ethylhexyl)phthalate are a result of blank contamir
-- Not applicable since TEL or TEC are present.
**Ecological Benchmark Values:**
NOAA TEL - Screening Quick Reference Table Threshold Effects Level.
TEC - Threshold Effect Concentration (MacDonald et al. 2000).
WA State - Washington State Sediment Quality Criteria "no effects" level.
ARCS TEC - Assessment and Remediation of Contaminated Sediment (ARCS) Project Threshold Effect Concentration.
ORNL - Oak Ridge National Laboratory Secondary Chronic Values.
OSWER - Office of Solid Waste and Emergency Response .
Region IV - U.S. EPA Region IV Ecological Screening Value.

# TABLE 4-5
# ANALYTICAL DATA SUMMARY
# BRADFORD ISLAND LANDFILL - IN WATER RESULTS - SEDIMENTS
# HERBICIDES

| Sample ID | | 010502IW07SS | | 010502IW01SS | | 010502IW16SS | | 010502IW14SS | | 010502IW15SS | | Freshwater Sediment Ecological Benchmark Values | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | | Pile #1 | | Pile #2 | | Pile #2 | | Pile #2 | | Downstream Pile #2 | | NOAA TEL | TEC | Lowest of Other Reference Levels | |
| Location | | Perimeter | | East Perimeter | | West Perimeter | | Within Pile | | Duplicate of 14 SS | | | | | |
| Date Collected | | 5/2/2001 | | 5/2/2001 | | 5/3/2001 | | 5/3/2001 | | 5/3/2001 | | | | | |
| **2,4,5-T** | ug/Kg-dry | 9 | U | 8 | U | 8 | U | 9 | U | 9 | U | NV | NV | NV | |
| **2,4-D** | ug/Kg-dry | 9 | U | 8 | U | 8 | U | 9 | U | 9 | U | NV | NV | NV | |
| **2,4-DB** | ug/Kg-dry | 9 | U | 8 | U | 8 | U | 9 | U | 9 | U | NV | NV | NV | |
| **4-Nitrophenol** | ug/Kg-dry | 9 | U | 8 | U | 8 | U | 9 | U | 9 | U | NV | NV | NV | |
| **Dalapon** | ug/Kg-dry | 9 | U | 8 | U | 8 | U | 9 | U | 9 | U | NV | NV | NV | |
| **Dicamba** | ug/Kg-dry | 9 | U | 8 | U | 8 | U | 9 | U | 9 | U | NV | NV | NV | |
| **Dichloroprop** | ug/Kg-dry | 9 | U | 8 | U | 8 | U | 9 | U | 9 | U | NV | NV | NV | |
| **Dinoseb** | ug/Kg-dry | 9 | U | 8 | U | 8 | U | 9 | U | 9 | U | NV | NV | NV | |
| **MCPA** | ug/Kg-dry | 9 | U | 8 | U | 8 | U | 9 | U | 9 | U | NV | NV | NV | |
| **MCPP** | ug/Kg-dry | 9 | U | 8 | U | 8 | U | 9 | U | 9 | U | NV | NV | NV | |
| **Pentachlorophenol (PCP)** | ug/Kg-dry | 9 | U | 8 | U | 8 | U | 9 | U | 9 | U | NV | NV | NV | |
| **Silvex (2,4,5-TP)** | ug/Kg-dry | 9 | U | 8 | U | 8 | U | 9 | U | 9 | U | NV | NV | NV | |

**Notes:**
Data presented herein reflect the concentrations, quantitation limits and qualifications as determined by the data validation process. The Data Validation Report is presented in Appendix C.
NV - No Value
U - The analyte was not detected above the reported sample quantitation limit.
UJ - The analyte was not detected above the reported, estimated sample quantitation limit.

**TABLE 4-6**
**ANALYTICAL DATA SUMMARY**
**BRADFORD ISLAND LANDFILL - IN WATER RESULTS - SEDIMENTS**
**METALS**

| Sample ID | | 010502IW07SS | | 010502IW01SS | | 010503IW16SS | | 010503IW14SS | | 010503IW15SS | | Background Sediment Values | | Freshwater Sediment Ecological Benchmark Values | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area | | Pile #1 | | Pile #2 | | Pile #2 | | Pile #2 | | Pile #2 | | | | | | | |
| Location | | Perimeter | | East Perimeter | | West Perimeter | | Within Pile | | Duplicate of 14SS | | LCR Rec | | NOAA TEL | TEC | Lowest of Other Reference Levels | |
| Date Collected | | 5/2/2001 | | 5/2/2001 | | 5/3/2001 | | 5/3/2001 | | 5/3/2001 | | Range | Average | | | | |
| **Aluminum** | mg/kg-dry | **12000** | | **12000** | | **9500** | | **11000** | | **13000** | | 2794-10850 | 7079 | NV | NV | 58030 | |
| **Antimony** | mg/kg-dry | 0.72 | U | 0.62 | U | 0.7 | U | 0.7 | U | 0.73 | U | 4.32-6.78 | 5.19 | NV | NV | 2 | NY LEL |
| **Arsenic** | mg/kg-dry | **2.4** | | **4.3** | | **4.3** | | **2.4** | | **2.7** | | 0.6-4.1 | 2.46 | 5.9 | 9.79 | -- | |
| **Barium** | mg/kg-dry | **74** | | **95** | | **83** | | **88** | | **95** | | 28.2-164.5 | 96.66 | NV | NV | NV | |
| **Beryllium** | mg/kg-dry | **0.24** | | **0.23** | | **0.21** | | **0.27** | | **0.30** | | 2.82-4.64 | 3.52 | NV | NV | NV | |
| **Cadmium** | mg/kg-dry | **0.62*** | | **0.73*** | | **0.7*** | | **1*** | | **1*** | | NV | 0.44 | 0.596 | 0.99 | -- | |
| **Calcium** | mg/kg-dry | **7000** | | **4400** | | **5100** | | **4200** | | **6000** | | NV | NV | NV | NV | NV | |
| **Chromium** | mg/kg-dry | **18** | | **17** | | **20** | | **16** | | **22** | | 2.4-9.95 | 7.41 | 37.3 | 43.4 | -- | |
| **Cobalt** | mg/kg-dry | **17** | | **9.6** | | **12** | | **8.6** | | **13** | | NV | NV | NV | NV | NV | |
| **Copper** | mg/kg-dry | **50** | | **27** | | **32** | | **27** | | **37** | | 3.8-17.83 | 9.21 | 35.7 | 31.6 | -- | |
| **Iron** | mg/kg-dry | **30000** | | **21000** | | **25000** | | **18000** | | **24000** | | 8861-17742 | 12,342 | NV | NV | 20000 | NY LEL & Ontario LEL |
| **Lead** | mg/kg-dry | **6.2** | | **7.9** | | **12** | | **9.3** | | **9.0** | | 1.41-13.24 | 7.92 | 35 | 35.8 | -- | |
| **Magnesium** | mg/kg-dry | **12000** | | **6000** | | **6500** | | **4600** | | **8200** | | NV | 0.07 | NV | NV | NV | |
| **Manganese** | mg/kg-dry | **380** | | **340** | | **470** | | **380** | | **600** | | NV | NV | NV | NV | 460 | NY LEL & Ontario LEL |
| **Mercury** | mg/kg-dry | **0.051** | J | **0.065** | J | **0.017** | J | **0.035** | J | 0.025 | U | 0.058-0.107 | NV | 0.174 | 0.18 | -- | |
| **Nickel** | mg/kg-dry | **22** | | **8.5** | | **11** | | **7.6** | | **11** | | 4.21-14.19 | 10.55 | 18 | 22.7 | -- | |
| **Selenium** | mg/kg-dry | **0.31** | J | **0.26** | J | **0.2** | J | 0.7 | U | 0.73 | U | 0.29-0.90 | 0.39 | NV | NV | NV | |
| **Silver** | mg/kg-dry | **0.11** | J | **0.14** | | **0.13** | | **0.16** | | **0.18** | | 0.28-0.41 | 0.31 | 4.5 | NV | -- | |
| **Thallium** | mg/kg-dry | **0.17** | | **0.15** | | **0.21** | | **0.16** | | **0.17** | | 10.36-16.27 | 12.46 | NV | NV | NV | |
| **Potassium** | mg/kg-dry | **500** | | **950** | | **750** | | **1100** | | **1100** | | NV | NV | NV | NV | NV | |
| **Vanadium** | mg/kg-dry | **49** | | **45** | | **56** | | **44** | | **58** | | NV | NV | NV | NV | NV | |
| **Zinc** | mg/kg-dry | **92** | | **78** | | **91** | | **73** | | **89** | | 22.5-161.3 | 80.03 | 123 | 121 | -- | |

**Notes:**
Data presented herein reflect the concentrations, quantitation limits and qualifications as determined by the data validation process. The Data Validation Report is presented in Appendix C.
Detections are in bold.
Shaded concentrations are values above benchmark values.
*Values are similar to or below background sediment values.
NV - No Value
J - The associated numerical value is an estimate.
U - The analyte was not detected above the reported sample quantitation limit.
UJ - The analyte was not detected above the reported, estimated sample quantitation limit.
-- Not applicable since TEL or TEC are present.
**Ecological Benchmark Values:**
NOAA TEL - Screening Quick Reference Table Threshold Effects Level.
TEC - Threshold Effect Concentration (MacDonald et al. 2000).
NY LEL - New York State Sediment Lowest Effect Level for Metals.

# TABLE 4-7
# ANALYTICAL DATA SUMMARY
# BRADFORD ISLAND LANDFILL - IN WATER RESULTS - SEDIMENTS
# TOTAL PETROLEUM HYDROCARBONS

| **Sample ID** | | **010502IW07SS** | | **010502IW01SS** | | **010502IW16SS** | | **010502IW14SS** | | **010502IW15SS** | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Area** | | **Pile #1** | | **Pile #2** | | **Pile #2** | | **Pile #2** | | **Pile #2** | |
| **Location** | | **Perimeter** | | **East Perimeter** | | **West Perimeter** | | **Within Pile** | | **Duplicate of 14 SS** | |
| **Date Collected** | | **5/2/2001** | | **5/2/2001** | | **5/3/2001** | | **5/3/2001** | | **5/3/2001** | |
| **TPH (diesel-range)** | mg/kg-dry | 62 | U | 63 | U | 57 | U | 61 | U | 62 | U |
| **TPH (gasoline-range)** | mg/kg-dry | 25 | U | 25 | U | 23 | U | 24 | U | 25 | U |
| **TPH (lube-oil range)** | mg/kg-dry | 120 | U | 130 | U | 110 | U | 120 | U | 120 | U |

Data presented herein reflect the concentrations, quantitation limits and qualifications as determined by the data validation process.
The Data Validation Report is presented in Appendix C.
U - The analyte was not detected above the reported sample quantitation limit.

# TABLE 4-8
# ANALYTICAL DATA SUMMARY
# BRADFORD ISLAND LANDFILL - IN WATER RESULTS - SEDIMENTS
# GRAIN SIZE

| Sample ID | | 010502IW08SS | 010502IW02SS | 010503IW13SS |
|---|---|---|---|---|
| Area | | Pile #1 | Pile #2 | Pile #2 |
| Location | | Perimeter | East Perimeter | West Perimeter |
| Date Collected | | 5/2/2001 | 5/2/2001 | 5/3/2001 |
| Gravel (12.5-4.75mm) | % | 54.2 | 38.3 | 44.6 |
| Sand (4.74-0.063mm) | % | 44.4 | 61.4 | 52.8 |
| Clay/Silt (<0.063mm) | % | 1.4 | 0.3 | 2.6 |

# TABLE 4-9
# ANALYTICAL DATA SUMMARY
# BRADFORD ISLAND LANDFILL - IN WATER RESULTS - SEMIPERMEABLE MEMBRANE DEVICE SAMPLES
# POLYCHLORINATED BIPHENYLS

| **Sample ID** | | **010619RQ05** | | **010619RQ02** | | **010619RQ03** | | **010619RQ01** | | **010619RQ06** | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Area** | | **Pile #1** | | **Pile #2** | | **Pile #2** | | **Pile #2** | | **Background Location** | |
| **Location** | | **West Perimeter** | | **East Perimeter** | | **Duplicate of 010619RQ02** | | **West Perimeter** | | **Goose Island** | |
| **Date Collected** | | **9/20/2001** | | **9/20/2001** | | **9/20/2001** | | **9/20/2001** | | **9/20/2001** | |
| Aroclor 1242 | ng/SPMD | 32.6 | U | 32.6 | U | 32.6 | U | 32.6 | U | 32.6 | U |
| Aroclor 1248 | ng/SPMD | 32.6 | U | 32.6 | U | 32.6 | U | 32.6 | U | 32.6 | U |
| Aroclor 1254 | ng/SPMD | 32.6 | U | 32.6 | U | 32.6 | U | 32.6 | U | 32.6 | U |
| Aroclor 1260 | ng/SPMD | 32.6 | U | 32.6 | U | 32.6 | U | 32.6 | U | 32.6 | U |

**Notes:**
Data presented herein reflect the concentrations, quantitation limits and qualifications as determined by the data validation process.
The Data Validation Report is presented in Appendix C.
U - The analyte was not detected above the reported sample quantitation limit.

**TABLE 4-10**
**ANALYTICAL DATA SUMMARY**
**BRADFORD ISLAND LANDFILL - IN WATER RESULTS - TISSUE**
**POLYCHLORINATED BIPHENYLS**

| **Sample ID - Clams** | | **010502IW09TS** | | **010502IW23TS** | | **010502IW24TS** | | **010502IW22TS** | | **NA** | | **010502IW21TS** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID - Crayfish** | | **010509IW28TS** | | **010509IW27TS** | | **NA** | | **010509IW26TS** | | **010509IE30TS** | | **010509IW29TS** | |
| **Area** | | **Pile #1** | | **Pile #2** | | **Pile #2** | | **Pile #2** | | **Pile #2** | | **Background Location** | |
| **Location** | | **Within Pile** | | **East End** | | **Duplicate of 010502IW23TS** | | **West End** | | **Duplicate of 010509IW26TS** | | **Goose Island** | |
| **Date Collected** | | **5/2/2001** | | **5/3/2001** | | **5/3/2001** | | **5/3/2001** | | **5/3/2001** | | **5/3/2001** | |
| **Clam Tissue** | | | | | | | | | | | | | |
| **Aroclor 1242** | ug/Kg-wet | 14.2 | U | 14.1 | U | 13.9 | U | 14.3 | U | NA | | 14.2 | U |
| **Aroclor 1248** | ug/Kg-wet | 14.2 | U | 14.1 | U | 13.9 | U | 14.3 | U | NA | | 14.2 | U |
| **Aroclor 1254** | ug/Kg-wet | **604** | | **345** | | **451** | | **344** | | NA | | **23.8** | |
| **Aroclor 1260** | ug/Kg-wet | 14.2 | U | 14.1 | U | 13.9 | U | 14.3 | U | NA | | 14.2 | U |
| **Lipid Content** | % | 3.33 | | 3.91 | | 4.92 | | 3.16 | | NA | | 3.05 | |
| **CrayfishTissue** | | | | | | | | | | | | | |
| **Aroclor 1242** | ug/Kg-wet | 15.4 | U | 14.3 | U | NA | | 13.5 | U | 15.4 | U | 14.3 | U |
| **Aroclor 1248** | ug/Kg-wet | 15.4 | U | 14.3 | U | NA | | 13.5 | U | 15.4 | U | 14.3 | U |
| **Aroclor 1254** | ug/Kg-wet | **75600** | **J** | **11900** | | NA | | **2670** | | **3970** | | **268** | |
| **Aroclor 1260** | ug/Kg-wet | 15.4 | U | 14.3 | U | NA | | 13.5 | U | 15.4 | U | 14.3 | U |
| **Lipid Content** | % | 5.74 | M | 5.61 | | NA | | 6.06 | | 5.54 | | 5.74 | M |

**Notes:**
Data presented herein reflect the concentrations, quantitation limits and qualifications as determined by the data validation process. The Data Validation Report is presented in Appendix C.
Detections are in bold.
U - The analyte was not detected above the reported sample quantitation limit.
J - The associated numerical value is an estimate.
M - Insufficient sample; mean value reported.
NA - Not analyzed
The number and sizes of crayfish collected and analyzed are presented in Table 3-2.

**TABLE 4-11**
**ANALYTICAL DATA SUMMARY**
**BRADFORD ISLAND - SANDBLAST DRAIN SYSTEM - SEDIMENTS**
**POLYCHLORINATED BIPHENYLS**

| **Sample** | | **010501SBMS01SS** | | **010501SBMS02SS** | | **010503SBDS19SS** | | **010504SBDS24SS** | | **010503SBDS18SS** | | **Freshwater Sediment Ecological Benchmark Values** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | | **Catch Basin #1 (In catch basin)** | | **Duplicate of 01SS** | | **Drain outfall #1** | | **Catch Basin #2 (directly above catch basin)** | | **Drain outfall #2** | | **NOAA TEL** | **TEC** |
| **Date Collected** | | **5/1/2001** | | **5/1/2001** | | **5/3/2001** | | **5/4/2001** | | **5/3/2001** | | | |
| **Aroclor 1016** | mg/kg-dry | 0.014 | U | 0.012 | U | 0.013 | U | 0.026 | U | 0.013 | U | 0.0341 | 0.0598 |
| **Aroclor 1221** | mg/kg-dry | 0.014 | U | 0.012 | U | 0.013 | U | 0.026 | U | 0.013 | U | 0.0341 | 0.0598 |
| **Aroclor 1232** | mg/kg-dry | 0.014 | U | 0.012 | U | 0.013 | U | 0.026 | U | 0.013 | U | 0.0341 | 0.0598 |
| **Aroclor 1242** | mg/kg-dry | 0.014 | U | 0.012 | U | 0.013 | U | 0.026 | U | 0.013 | U | 0.0341 | 0.0598 |
| **Aroclor 1248** | mg/kg-dry | 0.014 | U | 0.012 | U | 0.013 | U | 0.026 | U | 0.013 | U | 0.0341 | 0.0598 |
| **Aroclor 1254** | mg/kg-dry | 0.014 | U | 0.012 | U | 0.013 | U | 0.026 | U | 0.013 | U | 0.0341 | 0.0598 |
| **Aroclor 1260** | mg/kg-dry | 0.014 | U | **0.057** | | **0.095** | | **0.018** | J | **0.017** | | 0.0341 | 0.0598 |

**Notes:**
Data presented herein reflect the concentrations, quantitation limits and qualifications as determined by the data validation process. The Data Validation Report is presented in Appendix C.
Detections are in bold.
Shaded concentrations are values above benchmark values.
NV - No Value
J - The associated numerical value is an estimate.
U - The analyte was not detected above the reported sample quantitation limit.
**Ecological Benchmark Values:**
NOAA TEL - Screening Quick Reference Table Threshold Effects Level.

# TABLE 4-12
# ANALYTICAL DATA SUMMARY
# BRADFORD ISLAND - SANDBLAST DRAIN SYSTEM - SEDIMENTS
# TOTAL ORGANIC CARBON

| Sample ID | | 010501SBMS01SS | 010501SBMS02SS | 010503SBDS19SS | 010504SBDS24SS | 010503SBDS18SS |
|---|---|---|---|---|---|---|
| Location | | Catch Basin #1 (In catch basin) | Duplicate of 01SS | Drain outfall #1 | Catch Basin #2 (directly above catch basin) | Drain outfall #2 |
| Date Collected | | 5/1/2001 | 5/1/2001 | 5/3/2001 | 5/4/2001 | 5/3/2001 |
| TOC | mg/kg-dry | 12000 | 11000 | 4100 | 20000 | 12000 |
| TOC | % | 1.2 | 1.1 | 0.41 | 2 | 1.2 |

Data presented herein reflect the concentrations, quantitation limits and qualifications as determined by the data validation process.
The Data Validation Report is presented in Appendix C.

**TABLE 4-13**
**ANALYTICAL DATA SUMMARY**
**BRADFORD ISLAND - SANDBLAST DRAIN SYSTEM - SEDIMENTS**
**SEMIVOLATILE ORGANIC COMPOUNDS**

| Sample | | 010501SBMS01SS | | 010501SBMS02SS | | 010503SBDS19SS | | 010504SBDS24SS | | 010503SBDS18SS | | Freshwater Sediment Ecological Benchmark Values | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | | Catch Basin #1 (In catch basin) | | Duplicate of 01SS | | Drain outfall #1 | | Catch Basin #2 (directly above catch basin) | | Drain outfall #2 | | NOAA TEL | TEC | Lowest of Other Reference Levels | |
| Date Collected | | 5/1/2001 | | 5/1/2001 | | 5/3/2001 | | 5/4/2001 | | 5/3/2001 | | | | | |
| 1,2,4-Trichlorobenzene | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | 9200 | OSWER |
| 1,2-Dichlorobenzene | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | 330 | ORNL |
| 1,3-Dichlorobenzene | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | 1700 | ORNL & OSWER |
| 1,4-Dichlorobenzene | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | 340 | ORNL |
| 2,4,5-Trichlorophenol | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| 2,4,6-Trichlorophenol | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| 2,4-Dichlorophenol | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| 2,4-Dimethylphenol | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| 2,4-Dinitrophenol | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| 2,4-Dinitrotoluene | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | UJ | 170 | U | NV | NV | NV | |
| 2,6-Dinitrotoluene | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| 2-Chloronaphthalene | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| 2-Chlorophenol | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| 2-Methylnaphthalene | ug/kg-dry | 180 | U | 170 | U | 9 | U | 170 | U | 170 | U | NV | NV | 20.2 | Canadian ISQGs |
| 2-Methylphenol | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | 12 | ORNL |
| 2-Nitroaniline | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| 2-Nitrophenol | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| 3- & 4-Methylphenol | ug/kg-dry | **85** | J | **69** | J | **72** | | **370** | | **58** | J | NV | NV | 670 | WA State |
| 3,3'-Dichlorobenzidine | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| 3-Nitroaniline | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| 4,6-Dinitro-2-methylphenol | ug/kg-dry | 450 | U | 420 | U | 44 | U | 850 | UJ | 420 | U | NV | NV | NV | |
| 4-Bromophenylphenylether | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | 1200 | ORNL |
| 4-Chloro-3-methylphenol | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| 4-Chloroaniline | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | UJ | 170 | U | NV | NV | NV | |
| 4-Chlorophenylphenylether | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| 4-Nitroaniline | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| 4-Nitrophenol | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| Acenaphthene | ug/kg-dry | **250** | | **100** | | **36** | | 170 | U | **40** | J | NV | NV | 620 | OSWER |
| Acenaphthylene | ug/kg-dry | **31** | J | 170 | U | 17 | U | 170 | U | 170 | U | NV | NV | NV | |
| Anthracene | ug/kg-dry | **290** | | **96** | | **66** | | 170 | U | **110** | | NV | 57.2 | -- | |
| Benz(a)anthracene | ug/kg-dry | **1000** | | **390** | | **250** | | **140** | J | **240** | | 31.7 | 108 | -- | |
| Benzidine | ug/kg-dry | 360 | U | 340 | U | 34 | U | 340 | U | 170 | U | NV | NV | 1.7 | ORNL |
| Benzo(a)pyrene | ug/kg-dry | **1400** | | **610** | | **400** | | **170** | J | **290** | | 31.9 | 150 | -- | |
| Benzo(b)fluoranthene | ug/kg-dry | **1700** | | **670** | | **490** | | **190** | | **330** | | NV | NV | 27.2 | ARCS TEC |
| Benzo(g,h,i)perylene | ug/kg-dry | **700** | | **260** | | **160** | | **78** | J | **150** | | NV | NV | 170 | Ontario LEL |
| Benzo(k)fluoranthene | ug/kg-dry | **370** | | **140** | | **65** | | **51** | J | 170 | U | 27.2 | NV | -- | |
| Benzoic Acid | ug/kg-dry | 450 | UJ | 420 | U | 44 | UJ | 850 | U | 420 | U | NV | NV | NV | |
| Benzyl Alcohol | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| bis(2-Chloroethoxy)methane | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| bis(2-Chloroethyl)ether | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| bis(2-Chloroisopropyl)ether | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| bis(2-Ethylhexyl)phthalate | ug/kg-dry | **3800** | | 2900 | U | **440** | | **9500** | | 2300 | U | NV | NV | 182 | Revion IV |
| Butylbenzylphthalate | ug/kg-dry | 180 | U | 170 | U | 27 | U | 340 | U | 170 | U | NV | NV | 11000 | ORNL & OSWER |
| Carbazole | ug/kg-dry | **190** | J | **79** | J | **27** | J | 850 | U | **71** | J | NV | NV | NV | |
| Chrysene | ug/kg-dry | **1000** | | **410** | | **270** | | **170** | | **300** | | 26.83 | 166 | -- | |
| Dibenz(a,h)anthracene | ug/kg-dry | **180** | | 84 | U | 9 | U | 170 | U | 170 | U | 10 | 33 | -- | |
| Dibenzofuran | ug/kg-dry | **62** | J | **27** | J | **9** | J | 340 | U | 83 | U | NV | NV | 420 | ORNL |
| Diethylphthalate | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | 600 | ORNL |
| Dimethylphthalate | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| Di-n-butylphthalate | ug/kg-dry | 910 | U | 840 | U | 87 | U | 1700 | U | 830 | U | NV | NV | 11000 | ORNL & OSWER |
| Di-n-octylphthalate | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| Fluoranthene | ug/kg-dry | **2100** | | **860** | | **490** | | **290** | | **530** | | 31.46 | 423 | -- | |
| Fluorene | ug/kg-dry | **160** | | **51** | J | **24** | | 170 | U | **56** | J | 10 | 77.4 | -- | |
| Hexachlorobenzene | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | UJ | 170 | U | NV | NV | NV | |
| Hexachlorobutadiene | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| Hexachlorocyclopentadiene | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| Hexachloroethane | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | 1000 | ORNL |
| Indeno(1,2,3-cd)pyrene | ug/kg-dry | **640** | | **200** | | **150** | | **34** | J | **80** | J | 17.32 | NV | -- | |
| Isophorone | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| Naphthalene | ug/kg-dry | **27** | J | 84 | U | **6** | J | 170 | U | 170 | U | NV | 176 | -- | |
| Nitrobenzene | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| N-nitrosodimethylamine | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | UJ | 170 | U | NV | NV | NV | |
| N-nitroso-di-n-propylamine | ug/kg-dry | 180 | U | 170 | U | 40 | U | 340 | U | 170 | U | NV | NV | NV | |
| N-Nitrosodiphenylamine | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| Pentachlorophenol (PCP) | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | NV | |
| Phenanthrene | ug/kg-dry | **1100** | | **480** | | **190** | | **110** | J | **480** | | 18.73 | 204 | -- | |
| Phenol | ug/kg-dry | 180 | U | 170 | U | 17 | U | 340 | U | 170 | U | NV | NV | 31 | ORNL |
| Pyrene | ug/kg-dry | **1900** | | **760** | | **470** | | **300** | | **520** | | 44.27 | 195 | -- | |

**Notes:**
Data presented herein reflect the concentrations, quantitation limits and qualifications as determined by the data validation process.
The Data Validation Report is presented in Appendix C.
Detections are in bold.
Shaded concentrations are values above benchmark values.
NV - No Value
J - The associated numerical value is an estimate.
U - The analyte was not detected above the reported sample quantitation limit.
Elevated MRLs for diethylphthalate, di-n-butylphthalate, butylbenzylphthalate and bis(2-ethylhexyl)phthalate are a result of blank contamination.
-- Not applicable since TEL or TEC are present.

**Ecological Benchmark Values:**
NOAA TEL - Screening Quick Reference Table Threshold Effects Level.
TEC - Threshold Effect Concentration (MacDonald et al. 2000).
WA State - Washington State Sediment Quality Criteria "no effects" level.
ARCS TEC - Assessment and Remediation of Contaminated Sediment (ARCS) Project Threshold Effect Concentration.
ORNL - Oak Ridge National Laboratory Secondary Chronic Values.
OSWER - Office of Solid Waste and Emergency Response .
Region IV - U.S. EPA Region IV Ecological Screening Value.

**TABLE 4-14**
**ANALYTICAL DATA SUMMARY**
**BRADFORD ISLAND - SANDBLAST DRAIN SYSTEM - SEDIMENTS**
**VOLATILE ORGANIC COMPOUNDS**

| Sample | | 010501SBMS01SS | | 010501SBMS02SS | | 010504SBDS24SS | | Freshwater Sediment Ecological Benchmark Values | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | | Catch Basin #1 (In catch basin) | | Duplicate of 01SS | | Catch Basin #2 (directly above catch basin) | | NOAA TEL | TEC | Lowest of Other Reference Levels | |
| Date Collected | | 5/1/2001 | | 5/1/2001 | | 5/4/2001 | | | | | |
| 1,1,1,2-Tetrachloroethane | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 1400 | ORNL |
| 1,1,1-Trichloroethane (TCA) | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 30 | ORNL |
| 1,1,2,2-Tetrachloroethane | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 940 | OSWER |
| 1,1,2-Trichloroethane | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 1200 | ORNL |
| 1,1-Dichloroethane (1,1-DCA) | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 27 | ORNL |
| 1,1-Dichloroethene (1,1-DCE) | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 31 | ORNL |
| 1,1-Dichloropropene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| 1,2,3-Trichlorobenzene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| 1,2,3-Trichloropropane | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| 1,2,4-Trichlorobenzene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 9200 | OSWER |
| 1,2,4-Trimethylbenzene | ug/kg-dry | **0.4** | J | 0.48 | U | 0.98 | U | NV | NV | NV | |
| 1,2-Dibromo-3-chloropropane (DBCP) | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| 1,2-Dibromoethane (EDB) | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 250 | ORNL |
| 1,2-Dichlorobenzene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 330 | ORNL |
| 1,2-Dichloroethane (EDC) | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| 1,2-Dichloropropane | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| 1,3,5-Trimethylbenzene | ug/kg-dry | **0.29** | J | 0.48 | U | 0.98 | U | NV | NV | NV | |
| 1,3-Dichlorobenzene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 1700 | ORNL & OSWER |
| 1,3-Dichloropropane | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| 1,4-Dichlorobenzene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 340 | ORNL |
| 2,2-Dichloropropane | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| 2-Butanone | ug/kg-dry | **10** | J | **7.5** | J | **25** | J | NV | NV | 270 | ORNL |
| 2-Chlorotoluene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| 2-Hexanone | ug/kg-dry | 2.5 | U | 2.4 | U | 4.9 | U | NV | NV | 22 | ORNL |
| 4-Chlorotoluene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| 4-Isopropyltoluene | ug/kg-dry | **9.5** | | **4** | | **2.5** | | NV | NV | NV | |
| 4-Methyl-2-pentanone | ug/kg-dry | 2.5 | U | 2.4 | U | 4.9 | U | NV | NV | 12 | ORNL |
| Acetone | ug/kg-dry | **59** | J | **27** | J | **130** | J | NV | NV | 8.7 | ORNL |
| Benzene | ug/kg-dry | **0.94** | | **1.2** | | **0.58** | J | NV | NV | 160 | ORNL |
| Bromobenzene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| Bromochloromethane | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| Bromodichloromethane | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| Bromoform | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| Bromomethane | ug/kg-dry | 0.86 | U | 0.76 | U | 1.8 | U | NV | NV | NV | |
| Carbon disulfide | ug/kg-dry | **1.5** | | **1.6** | | **5.6** | | NV | NV | 0.85 | ORNL |
| Carbon Tetrachloride | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 47 | ORNL |
| Chlorobenzene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 410 | ORNL |
| Chloroethane | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| Chloroform | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 22 | ORNL |
| Chloromethane | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| cis-1,2-Dichloroethene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| cis-1,3-Dichloropropene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| Dibromochloromethane | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| Dibromomethane | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| Dichlorodifluoromethane (CFC 12) | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| Ethylbenzene | ug/kg-dry | **0.41** | J | **0.4** | J | 0.98 | U | NV | NV | 89 | ORNL |
| Hexachlorobutadiene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| Isopropylbenzene (Cumene) | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| m,p-Xylenes | ug/kg-dry | **0.56** | J | **0.52** | J | 2 | U | NV | NV | 25 | OSWER |
| Methylene chloride | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 370 | ORNL |
| Naphthalene | ug/kg-dry | **0.7** | | **0.27** | J | 0.98 | U | 14.65 | 176 | -- | |
| n-Butylbenzene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| n-Propylbenzene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| o-Xylene | ug/kg-dry | **0.3** | J | **0.26** | J | 0.98 | U | NV | NV | 25 | OSWER |
| sec-Butylbenzene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| Styrene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| tert-Butylbenzene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| Tetrachloroethene (PCE) | ug/kg-dry | **0.31** | J | 0.48 | U | 0.98 | U | NV | NV | 410 | ORNL |
| Toluene | ug/kg-dry | **24** | | **9.5** | | **53** | | NV | NV | 50 | ORNL |
| trans-1,2-Dichloroethene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| trans-1,3-Dichloropropene | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| Trichloroethene (TCE) | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | 220 | ORNL |
| Trichlorofluoromethane | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |
| Vinyl acetate | ug/kg-dry | 2.5 | U | 2.4 | U | 4.9 | U | NV | NV | 0.84 | ORNL |
| Vinyl chloride | ug/kg-dry | 0.51 | U | 0.48 | U | 0.98 | U | NV | NV | NV | |

**Notes:**
Data presented herein reflect the concentrations, quantitation limits and qualifications as determined by the data validation process. The Data Validation Report is presented in Appendix C.
Detections are in bold.
Shaded concentrations are values above benchmark values.
NV = No Value
J - The associated numerical value is an estimate.
U - The analyte was not detected above the reported sample quantitation limit.
-- Not applicable since TEL or TEC are present.
**Ecological Benchmark Values:**
NOAA TEL - Screening Quick Reference Table Threshold Effects Level.
TEC - Threshold Effect Concentration (MacDonald et al. 2000).
ORNL - Oak Ridge National Laboratory Secondary Chronic Values.
OSWER - Office of Solid Waste and Emergency Response .

# TABLE 4-16
# ANALYTICAL DATA SUMMARY
# BRADFORD ISLAND - SANDBLAST DRAIN SYSTEM - SEDIMENTS
# TOTAL PETROLEUM HYDROCARBONS

| **Sample** | | **010501SBMS01SS** | | **010501SBMS02SS** | | **010503SBDS19SS** | | **010504SBDS24SS** | | **010503SBDS18SS** | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Location** | | **Catch Basin #1 (In catch basin)** | | **Duplicate of 01SS** | | **Drain outfall #1** | | **Catch Basin #2 (directly above catch basin)** | | **Drain outfall #2** | |
| **Date Collected** | | **5/1/2001** | | **5/1/2001** | | **5/3/2001** | | **5/4/2001** | | **5/3/2001** | |
| **NWTPH-HCID** | | | | | | | | | | | |
| **Diesel (>nC12-nC24)** | mg/kg-dry | >68 | X2 | >61 | X2 | <64 | | <120 | | >63 | X2 |
| **Gasoline (Toluene-nC12)** | mg/kg-dry | <27 | | <24 | | <26 | | <48 | | <25 | |
| **Motor Oil (>nC24-nC32)** | mg/kg-dry | **>140** | X2 | **>120** | X2 | **>130** | X2 | **>240** | | **>130** | X2 |
| **NWTPH-Dx** | | | | | | | | | | | |
| **2 Diesel** | mg/kg-dry | 130 | X2 | 95 | X2 | 40 | X2 | 180 | X1 | 40 | X1 |
| **Motor Oil** | mg/kg-dry | **600** | | **410** | | 170 | X2 | **1400** | | **410** | |

**Notes:**
Data presented herein reflect the concentrations, quantitation limits and qualifications as determined by the data validation process. The Data Validation Report is presented in Appendix C.
Detections are in bold.
X1 = the pattern suggests that the contamination is diesel with overlap from the motor oil range.
X2 = the elution patterns for the contamination detected do not appear to be typical diesel or motor oil product.

**TABLE 4-17**
**ANALYTICAL DATA SUMMARY**
**BRADFORD ISLAND - SANDBLAST DRAIN SYSTEM - SEDIMENTS**
**BUTYLTINS**

| Sample | | 010501SBMS01SS | | 010501SBMS02SS | | 010503SBDS19SS | | 010503SBDS20SS | | 010504SBDS24SS | | 010503SBDS18SS | | Sediment Ecological Benchmark Values | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | | Catch Basin #1 (In catch basin) | | Duplicate of 01SS | | Drain outfall #1 | | Duplicate of 19SS | | Catch Basin #2 (directly above catch basin) | | Drain outfall #2 | | NOAA TEL | Puget Sound SL |
| Date Collected | | 5/1/2001 | | 5/1/2001 | | 5/3/2001 | | 5/3/2001 | | 5/4/2001 | | 5/3/2001 | | | |
| **BULK SEDIMENT** | | | | | | | | | | | | | | | |
| **Dibutyltin** | ug/kg-dry | 2.7 | U | 2.6 | U | **9.6** | | NA | | **310** | | **2** | J | NV | NV |
| **Monobutyltin** | ug/kg-dry | 3.6 | U | 3.5 | U | **6.1** | | NA | | **110** | | 3.4 | U | NV | NV |
| **Tetrabutyltin** | ug/kg-dry | 1.8 | U | 1.7 | U | 3 | U | NA | | 30 | U | 1.7 | U | NV | NV |
| **Tributyltin** | ug/kg-dry | 3.6 | U | 3.5 | U | **15** | | NA | | **680** | | **12** | | NV | 73 |
| **PORE WATER** | | | | | | | | | | | | | | **NOAA TEL** | **Puget Sound NEL** |
| **Dibutyltin** | ug/L | NA | | NA | | 0.02 | U | 0.02 | U | NA | | **0.082** | | NV | NV |
| **Monobutyltin** | ug/L | NA | | NA | | 0.02 | U | 0.02 | U | NA | | **0.57** | | NV | NV |
| **Tetrabutyltin** | ug/L | NA | | NA | | 0.02 | U | 0.02 | U | NA | | 0.04 | U | NV | NV |
| **Tributyltin** | ug/L | NA | | NA | | 0.02 | U | 0.02 | U | NA | | 0.04 | U | 0.063 | 0.05 |

**Notes:**
Data presented herein reflect the concentrations, quantitation limits and qualifications as determined by the data validation process. The Data Validation Report is presented in Appendix C.
Detections are in bold.
Shaded concentrations are values above benchmark values.
J - The associated numerical value is an estimate
U - The analyte was not detected above the reported sample quantitation limit.
**Ecological Benchmark Values:**
NOAA TEL - NOAA Screening Quick Reference Table Threshold Effects Level.
Puget Sound SL/NEL - Puget Sound Tributyltin Screening Level/No Adverse Effects Level.
NV - No Value

## TABLE 4–18
## SUMMARY AND DESCRIPTION OF BENCHMARK VALUES

| | Benchmark Value | Applicability of Benchmark Value |
|---|---|---|
| | | |
| NOAA TEL | Screening Quick Reference Table Threshold Effects Level. | Ensures, with a high degree of confidence, that any contaminant sources eliminated from future consideration pose no potential threat. It does not necessarily predict toxicity. |
| TEC | Threshold Effect Concentration (MacDonald et al. 2000). | TECs predict the absence of sediment toxicity. |
| ISQGs | Canadian Sediment Quality Guidelines for the Protection of Aquatic Life, Interim freshwater sediment quality guidelines (ISQGs). | ISQGs represent concentrations of individual chemicals below which adverse biological effects are not expected. They are developed with the intention to be conservative, national benchmarks to protect and sustain important resource uses. |
| Ontario LEL | Ontario Ministry of the Environment Lowest Effect Level. | A level of contamination which has no effect on the majority of the sediment-dwelling organisms. The sediment is clean to marginally polluted. |
| ARCS | Assessment and Remediation of Contaminated Sediment (ARCS) Project Threshold Effect Concentration. | TECs are conservative screening values, below which effects are rarely expected to occur. |
| ORNL | Oak Ridge National Laboratory Secondary Chronic Values. | Secondary chronic values are intended to be conservative predictors of effects. |
| OSWER | Office of Solid Waste and Emergency Response . | Contaminant concentrations above which there is sufficient concern regarding adverse ecological effects to warrant further site investigation. |
| Region IV | U.S. EPA Region IV Ecological Screening Value. | Screening values are based on contaminant levels associated with a low probability of unacceptable risks to ecological receptors. |
| WA State | Washington State Sediment Quality Criteria “no effects” level. | Marine sediment quality that will result in no adverse effects, including no acute or chronic adverse effects on biological resources and no significant health risk to humans. |
| NY LEL | New York State Sediment Lowest Effect Level for Metals. | The LEL indicates a level of sediment contamination that can be tolerated by the majority of benthic organisms, but still causes toxicity to a few species. |
| Puget Sound NEL | Puget Sound Tributyltin No Adverse Effect Level. | The NEL corresponds to a no adverse effects level that would protect approximately 95% of the Puget Sound species that have been tested. |
| **Surface Water** | | |
| WQC | Ambient Water Quality Criterion Continuous Concentration | An estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect. |

**TABLE 4-19**
**Compounds for which Sediment Benchmark Values were not Available**

| **In Water Samples** | | **Drain Samples** | | |
|---|---|---|---|---|
| **SVOCs** | **Herbicides** | **VOCs** | **SVOCs** | **Metals** |
| 2,4,5-Trichlorophenol | 2,4,5-T | 1,1-Dichloropropene | 2,4,5-Trichlorophenol | Barium* |
| 2,4,6-Trichlorophenol | 2,4-D | 1,2,3-Trichlorobenzene | 2,4,6-Trichlorophenol | Beryllium* |
| 2,4-Dichlorophenol | 2,4-DB | 1,2,3-Trichloropropane | 2,4-Dichlorophenol | Calcium* |
| 2,4-Dimethylphenol | 4-Nitrophenol | 1,2,4-Trimethylbenzene* | 2,4-Dimethylphenol | Cobalt* |
| 2,4-Dintriophenol | Dalapon | 1,2-Dibromo-3-chloropropane (DBCP) | 2,4-Dintriophenol | Magnesium* |
| 2,4-Dinitrotoluene | Dicamba | 1,2-Dichloroethane (EDC) | 2,4-Dinitrotoluene | Selenium* |
| 2,6-Dinitriotoluene* | Dichloroprop | 1,2-Dichloropropane | 2,6-Dinitriotoluene* | Thallium* |
| 2-Choronapthlanene | Dinoseb | 1,3,5-Trimethylbenzne | 2-Choronapthlanene | Potassium* |
| 2-Chlorophenol | MCPA | 1,3-Dichloropropane | 2-Chlorophenol | Vanadium* |
| 2-Nitroaniline | MCPP | 2,2-Dichloropropane | 2-Nitroaniline | **Butyltins** |
| 2-Nitrophenol | Pentachlorophenol (PCP) | 2-Chlorotoluene | 2-Nitrophenol | Monobutyltin (bulk and pore)* |
| 3,3'-Dipchlorobenzidine | Silvex (2,4,5-TP) | 4-Chlorotoluene | 3,3'-Dipchlorobenzidine | Dibutyltin (bulk and pore)* |
| 3-Nitroaniline | Pesticides | 4-Isopropyltoluene* | 3-Nitroaniline | Tetrabutyltin (bulk and pore) |
| 4,6-Dinitro-2-methylphenol | Endosulfan sulfate | Bromobenzene | 4,6-Dinitro-2-methylphenol | **NWTPH** |
| 4-Chloro-3-methylphenol | Endrin aldehyde | Bromochloromethane | 4-Chloro-3-methylphenol | Diesel range hydrocarbons* |
| 4-Chloroaniline | Endrin ketone | Bromodichloromethane | 4-Chloroaniline | |
| 4-Chlorophenylphenylether | **Metals** | Bromoform | 4-Chlorophenylphenylether | |
| 4-Nitroaniline | Barium* | Bromomethane* | 4-Nitroaniline | |
| 4-Nitrophenol | Beryllium* | Chloroethane | 4-Nitrophenol | |
| Acenaphthylene | Calcium* | Chloromethane | Acenaphthylene | |
| Benzoic Acid | Cobalt* | cis-1,2-Dichloroethene | Benzoic Acid | |
| Benzyl Alcohol | Magnesium* | cis-1,3-Dichloropropene | Benzyl Alcohol | |
| bis(2-Chloroethoxy)methane | Selenium* | Dibromochloromethane | bis(2-Chloroethoxy)methane | |
| bis(2-Chloroethyl)ether | Thallium* | Dibromomethane | bis(2-Chloroethyl)ether | |
| bis(2-Chloroisopropyl)ether | Potassium* | Dichlorodifluoromethane (CFC 12) | bis(2-Chloroisopropyl)ether | |
| Carbazole | Vanadium* | Isopropylbenzene (Cumene) | Carbazole | |
| Dimethylphthalate | | n-Butylbenzene | Dimethylphthalate | |
| Di-n-octylphthatlate | | n-Propylbenzene | Di-n-octylphthatlate | |
| Hexachlorobenzene | | sec-Butylbenzene | Hexachlorobenzene | |
| Hexachlorobutadiene | | Styrene | Hexachlorobutadiene | |
| Hexachlorocyclopentadiene | | tert-Butylbenzene | Hexachlorocyclopentadiene | |
| Isophorone | | trans-1,2-Dichloroethene | Isophorone | |
| Nitrobenzene | | trans-1,3-Dichloropropene | Nitrobenzene | |
| N-nitrosodimethylamine | | Trichlorofluoromethane | N-nitrosodimethylamine | |
| N-nitroso-di-n-propylamine | | Vinyl chloride | N-nitroso-di-n-propylamine | |
| N-nitrosodiphenylamine | | **Hydrocarbons** | N-nitrosodiphenylamine | |
| Pentachlorophenol (PCP) | | Diesel range organics | Pentachlorophenol (PCP) | |
| | | Motor oil range organics | | |

*Compound was detected at the site.

# TABLE 4-20
# ANALYTICAL DATA SUMMARY
# BRADFORD ISLAND LANDFILL - IN WATER RESULTS - WASTE CHARACTERIZATION
# POLYCHLORINATED BIPHENYLS

| **Sample ID** | | **20-11-5** | | **20-11-4** | | **20-11-3** | | **20-11-7a** | |
|---|---|---|---|---|---|---|---|---|---|
| **Type of Electrical Equipment** | | **Interteen Capacitor** | | **Coupling Capacitor** | | **Lightening Ballast** | | **Felt on end of Fuse** | |
| **Date Collected** | | **11/7/2001** | | **11/7/2001** | | **11/7/2001** | | **11/7/2001** | |
| **Aroclor 1242** | ug/Kg | 500000 | U | 500000 | U | 500000 | U | 500000 | U |
| **Aroclor 1248** | ug/Kg | 500000 | U | 500000 | U | 500000 | U | 500000 | U |
| **Aroclor 1254** | ug/Kg | **>200,000,0000** | **J** | **1990** | | **258000** | | **6350** | |
| **Aroclor 1260** | ug/Kg | 500000 | U | 500000 | U | 500000 | U | 500000 | U |

**Notes:**
U - The analyte was not detected above the reported sample quantitation limit.
J - The associated numerical value is an estimate.