

**Table 3-1
Summary of 2011 Sediment Samples
Supplemental Site Investigation Report
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island**

| Location | Date Sample | Field Sample ID | Sample Depth | Metals | Inorganics | AVS/SEM | Dioxins |
|----------|-------------|-----------------|--------------|------------------------------|----------------------|---------|---------|
| SED/SW33 | 19-Dec-11 | SED-33-01 | 0-1 ft | SW6010B SW7471A SW7841 | E160.3 Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW33 | 19-Dec-11 | SED-33-18 | 1-8 ft | | E160.3 Lloyd Kahn | | |
| SED/SW34 | 20-Dec-11 | SED-34-01 | 0-1 ft | SW6010B SW7471A SW7841 | E160.3 Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW34 | 20-Dec-11 | SED-34-18 | 1-8 ft | | E160.3 Lloyd Kahn | | |
| SED/SW35 | 16-Dec-11 | SED-35-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW35 | 16-Dec-11 | SED-35-18 | 1-8 ft | | Lloyd Kahn | | |
| SED/SW36 | 14-Dec-11 | SED-36-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW36 | 14-Dec-11 | SED-36-01 Dup | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW36 | 14-Dec-11 | SED-36-18 | 1-8 ft | | Lloyd Kahn | | |
| SED/SW37 | 15-Dec-11 | SED-37-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW37 | 15-Dec-11 | SED-37-18 | 1-8 ft | | Lloyd Kahn | | |
| SED/SW38 | 13-Dec-11 | SED-38-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW38 | 13-Dec-11 | SED-38-18 | 1-8 ft | | Lloyd Kahn | | |
| SED/SW39 | 14-Dec-11 | SED-39-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW39 | 14-Dec-11 | SED-39-18 | 1-8 ft | | Lloyd Kahn | | |
| SED/SW40 | 16-Dec-11 | SED-40-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW40 | 16-Dec-11 | SED-40-18 | 1-8 ft | | Lloyd Kahn | | |
| SED/SW41 | 15-Dec-11 | SED-41-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW41 | 15-Dec-11 | SED-41-18 | 1-8 ft | | Lloyd Kahn | | |
| SED/SW42 | 14-Dec-11 | SED-42-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW42 | 14-Dec-11 | SED-42-18 | 1-8 ft | | Lloyd Kahn | | |
| SED/SW43 | 19-Dec-11 | SED-43-01 | 0-1 ft | SW6010B SW7471A SW7841 | E160.3 Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW43 | 19-Dec-11 | SED-43-01 Dup | 0-1 ft | SW6010B SW7471A SW7841 | | AVS/SEM | 8290 |
| SED/SW43 | 19-Dec-11 | SED-43-18 | 1-8 ft | | E160.3 Lloyd Kahn | | |
| SED/SW44 | 15-Dec-11 | SED-44-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |

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|----------|-------------|-----------------|--------------|------------------------------|----------------------|---------|---------|
| SED/SW44 | 15-Dec-11 | SED-44-18 | 1-8 ft | | Lloyd Kahn | | |
| SED/SW45 | 14-Dec-11 | SED-45-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW45 | 14-Dec-11 | SED-45-18 | 1-8 ft | | Lloyd Kahn | | |
| SED/SW46 | 20-Dec-11 | SED-46-01 | 0-1 ft | SW6010B SW7471A SW7841 | E160.3 Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW46 | 20-Dec-11 | SED-46-18 | 1-8 ft | | E160.3 Lloyd Kahn | | |
| SED/SW47 | 15-Dec-11 | SED-47-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW47 | 15-Dec-11 | SED-47-18 | 1-8 ft | | Lloyd Kahn | | |
| SED/SW48 | 14-Dec-11 | SED-48-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW48 | 14-Dec-11 | SED-48-18 | 1-8 ft | | Lloyd Kahn | | |
| SED/SW59 | 20-Dec-11 | SED-59-01 | 0-1 ft | SW6010B SW7471A SW7841 | E160.3 Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW59 | 20-Dec-11 | SED-59-18 | 1-8 ft | | E160.3 Lloyd Kahn | | |
| SED/SW60 | 20-Dec-11 | SED-60-01 | 0-1 ft | SW6010B SW7471A SW7841 | E160.3 Lloyd Kahn | AVS/SEM | 8290 |
| SED/SW60 | 20-Dec-11 | SED-60-18 | 1-8 ft | | E160.3 Lloyd Kahn | | |
| SED49 | 13-Dec-11 | SED-49-08 | 0-8 ft | | Lloyd Kahn | | |
| SED50 | 13-Dec-11 | SED-50-08 | 0-8 ft | | Lloyd Kahn | | |
| SED51 | 13-Dec-11 | SED-51-08 | 0-8 ft | | Lloyd Kahn | | |
| SED52 | 16-Dec-11 | SED-52-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED53 | 16-Dec-11 | SED-53-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED54 | 16-Dec-11 | SED-54-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED55 | 16-Dec-11 | SED-55-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED56 | 16-Dec-11 | SED-56-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED57 | 16-Dec-11 | SED-57-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |
| SED58 | 16-Dec-11 | SED-58-01 | 0-1 ft | SW6010B SW7471A SW7841 | Lloyd Kahn | AVS/SEM | 8290 |

[a] Metals analyzed for include: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc.

ft = feet

Prepared by / Date: KJC 08/15/12
Checked by / Date: ARM 09/04/12

**Table 3-2
Summary of 2011 Surface Water Samples
Supplemental Site Investigation Report
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island**

| Location | Date Sample | Field Sample ID | Metals, Total | Metals, Dissolved | Inorganics |
|----------|-------------|-----------------|---|---|-------------|
| SED/SW33 | 19-Dec-11 | SW-33 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW34 | 20-Dec-11 | SW-34 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW35 | 16-Dec-11 | SW-35 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW36 | 14-Dec-11 | SW-36 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW36 | 14-Dec-11 | SW-36 Dup | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW37 | 15-Dec-11 | SW-37 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW38 | 13-Dec-11 | SW-38 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW39 | 14-Dec-11 | SW-39 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW40 | 16-Dec-11 | SW-40 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW40 | 16-Dec-11 | SW-40 Dup | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | |
| SED/SW41 | 15-Dec-11 | SW-41 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |

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 Summary of 2011 Surface Water Samples
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 Phase II Area - Mashapaug Pond and Cove
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| Location | Date Sample | Field Sample ID | Metals, Total | Metals, Dissolved | Inorganics |
|----------|-------------|-----------------|---|---|-------------|
| SED/SW42 | 13-Dec-11 | SW-42 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW43 | 19-Dec-11 | SW-43 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW44 | 15-Dec-11 | SW-44 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW45 | 14-Dec-11 | SW-45 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW46 | 20-Dec-11 | SW-46 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW47 | 16-Dec-11 | SW-47 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW48 | 14-Dec-11 | SW-48 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW49 | 20-Dec-11 | SW-49 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |
| SED/SW60 | 20-Dec-11 | SW-60 | SW6010B SW7041 SW7060A SW7470A SW7841 | SW6010B SW7041 SW7060A SW7470A SW7841 | A5310_DOC_B |

[a] Metals analyzed for include: Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc.

Prepared by / Date: KJC 08/15/12

Checked by / Date: ARM 09/04/12

Table 4.1
 Summary of Analytical Results for Surface Water - Inner Cove
 Phase II Area - Mashapaug Pond and Cove
 Former Gorham Manufacturing Facility
 333 Adelaide Avenue
 Providence, Rhode Island

| Parameter | Frequency of Detection | Range of Reporting Limits for Non Detects | Range of Detected Concentrations | Average [1] | RIDEM AWQC Fresh Water Acute [2] | RIDEM AWQC Fresh Water Chronic [2] | RIDEM AWQC Water plus Organisms [2] | RIDEM AWQC Organisms Only [2] | NRWQC Fresh Water Acute [3] | NRWQC Fresh Water Chronic [3] | NRWQC Water plus Organisms [3] | NRWQC Organisms Only [3] | SW16 6/21/2006 | SW17 6/21/2006 | SW18 6/21/2006 | SW19 6/21/2006 | SW20 6/21/2006 |
|-------------------------------------|------------------------|---|----------------------------------|--------------|----------------------------------|------------------------------------|-------------------------------------|-------------------------------|-----------------------------|-------------------------------|--------------------------------|--------------------------|----------------|----------------|----------------|----------------|----------------|
| Total PeCDD | 1 / 2 | 0.00000001 - 0.00000001 | 0.000000046 : 0.000000046 | 0.000000026 | | | | | | | | | | | | | 0.00000001 U |
| Total PeCDF | 1 / 2 | 0.00000001 - 0.00000001 | 0.000000029 : 0.000000029 | 0.000000017 | | | | | | | | | | | | | 0.00000001 U |
| Total TCDD | 1 / 2 | 0.000000002 - 0.000000002 | 0.0000000031 : 0.0000000031 | 0.0000000021 | | | | | | | | | | | | | 0.000000002 U |
| Total TCDF | 2 / 2 | | 0.0000000034 : 0.0000000032 | 0.000000018 | | | | | | | | | | | | | 0.0000000034 J |
| Metals, Total [6] (mg/L) | | | | | | | | | | | | | | | | | |
| Antimony | 0 / 12 | 0.005 - 0.005 | | 0.0025 | 0.45 | 0.01 | 0.0056 | 0.64 | | | 0.0056 | 640 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Arsenic | 0 / 12 | 0.005 - 0.005 | | 0.0025 | 0.34 | 0.15 | 0.00018 | 0.0014 | 0.34 | 0.15 | 0.000018 | 0.14 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Barium | 0 / 12 | 0.05 - 0.05 | | 0.025 | | | | | | | 1 | | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Beryllium | 0 / 12 | 0.001 - 0.001 | | 0.0005 | 0.0075 | 0.00017 | | | | | | | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Cadmium | 0 / 12 | 0.005 - 0.005 | | 0.0025 | 0.0016 | 0.00021 | | | 0.002 | 0.00025 | | | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Chromium | 3 / 12 | 0.02 - 0.02 | 0.034 : 0.06 | 0.019 | 0.48 | 0.062 | | | | | | | 0.02 U | 0.02 U | 0.06 | 0.02 U | 0.02 U |
| Copper | 5 / 12 | 0.02 - 0.02 | 0.023 : 0.126 | 0.035 | 0.011 | 0.0075 | 1.3 | | 0.013 | 0.009 | 1.3 | | 0.02 U | 0.02 U | 0.099 | 0.029 | 0.02 U |
| Lead | 5 / 12 | 0.005 - 0.005 | 0.0083 : 0.0318 | 0.011 | 0.051 | 0.0022 | | | 0.065 | 0.0025 | | | 0.005 U | 0.005 U | 0.0318 | 0.0121 | 0.005 U |
| Mercury | 0 / 12 | 0.0005 - 0.0005 | | 0.00025 | 0.0014 | 0.00077 | 0.00014 | 0.00015 | 0.0014 | 0.00077 | | | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U |
| Nickel | 0 / 12 | 0.05 - 0.05 | | 0.025 | 0.39 | 0.044 | 0.61 | 4.6 | 0.47 | 0.052 | 0.61 | 4600 | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Selenium | 0 / 12 | 0.05 - 0.05 | | 0.025 | 0.02 | 0.005 | 0.17 | 4.2 | | 0.005 | 0.17 | 4200 | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Silver | 3 / 12 | 0.005 - 0.005 | 0.005 : 0.008 | 0.0035 | 0.0024 | | | | 0.0032 | | | | 0.005 U | 0.005 U | 0.008 | 0.005 U | 0.005 U |
| Thallium | 0 / 12 | 0.002 - 0.002 | | 0.001 | 0.046 | 0.001 | 0.00024 | 0.00047 | | | 0.00024 | 0.47 | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Zinc | 4 / 12 | 0.05 - 0.05 | 0.068 : 0.146 | 0.051 | 0.098 | 0.099 | 7.4 | 26 | 0.12 | 0.12 | 7.4 | 26000 | 0.05 U | 0.05 U | 0.107 | 0.068 | 0.05 U |
| Metals, Dissolved [6] (mg/L) | | | | | | | | | | | | | | | | | |
| Antimony | 0 / 12 | 0.005 - 0.005 | | 0.0025 | 0.45 | 0.01 | 0.0056 | 0.64 | | | 0.0056 | 640 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Arsenic | 0 / 12 | 0.005 - 0.005 | | 0.0025 | 0.34 | 0.15 | 0.00018 | 0.0014 | 0.34 | 0.15 | 0.000018 | 0.14 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Barium | 0 / 12 | 0.05 - 0.05 | | 0.025 | | | | | | | 1 | | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Beryllium | 0 / 12 | 0.001 - 0.001 | | 0.0005 | 0.0075 | 0.00017 | | | | | | | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Cadmium | 0 / 12 | 0.005 - 0.005 | | 0.0025 | 0.0016 | 0.00021 | | | 0.002 | 0.00025 | | | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Chromium | 0 / 12 | 0.02 - 0.02 | | 0.01 | 0.48 | 0.062 | | | | | | | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Copper | 0 / 12 | 0.02 - 0.02 | | 0.01 | 0.011 | 0.0075 | 1.3 | | 0.013 | 0.009 | 1.3 | | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Lead | 0 / 12 | 0.005 - 0.005 | | 0.0025 | 0.051 | 0.0020 | | | 0.065 | 0.0025 | | | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Mercury | 0 / 12 | 0.0005 - 0.0005 | | 0.00025 | 0.0014 | 0.00077 | 0.00014 | 0.00015 | 0.0014 | 0.00077 | | | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U |
| Nickel | 0 / 12 | 0.05 - 0.05 | | 0.025 | 0.39 | 0.044 | 0.61 | 4.6 | 0.47 | 0.052 | 0.61 | 4600 | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Selenium | 0 / 12 | 0.05 - 0.05 | | 0.025 | 0.02 | 0.005 | 0.17 | 4.2 | | 0.005 | 0.17 | 4200 | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Silver | 0 / 12 | 0.005 - 0.005 | | 0.0025 | 0.0024 | | | | 0.0032 | | | | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | 0 / 12 | 0.002 - 0.002 | | 0.001 | 0.046 | 0.001 | 0.00024 | 0.00047 | | | 0.00024 | 0.47 | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Zinc | 0 / 12 | 0.05 - 0.05 | | 0.025 | 0.098 | 0.099 | 7.4 | 26 | 0.12 | 0.12 | 7.4 | 26000 | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Inorganics (mg/L) | | | | | | | | | | | | | | | | | |
| Hardness | 12 / 12 | | 73.6 : 87.3 | 81 | | | | | | | | | 78.4 | 73.6 | 87.3 | 76.1 | 77.3 |

Notes:
 [1] Average calculated using 1/2 the reporting limit for non-detects
 [2] Values are the 2009 RIDEM Ambient Water Quality Criteria.
<http://www.dem.ri.gov/pubs/regs/regs/water/h2oq10.pdf>
 [3] Values are the National Recommended Water Quality Criteria from USEPA.
<http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm>
 [4] RIDEM AWQC values for Total Xylene was used for o-Xylenes and m,p-Xylenes
 [5] RIDEM AWQC values for Total PCBs was used for individual Aroclor mixtures
 [6] RIDEM AWQC values for Cadmium, Chromium (Chromium III was used for Chromium), Copper, Lead, Nickel and Zinc were calculated for acute $\{CF \times e^{(m_a \times [\ln \text{Hardness}] + b_a))}$ and chronic $\{CF \times e^{(m_c \times [\ln \text{Hardness}] + b_c))}$ values for dissolved metals using the average hardness concentration. Values were also used for total metals
 mg/L - milligram per liter
 U - not detected, value is reporting limit
 J - value is estimated
 B - analyte detected in sample and the associated blank
 E - PCDE interference

Table 4.1
 Summary of Analytical Results for Surface Water - Inner Cove
 Phase II Area - Mashapaug Pond and Cove
 Former Gorham Manufacturing Facility
 333 Adelaide Avenue
 Providence, Rhode Island

| Parameter | SW21 6/21/2006 | SW22 6/21/2006 | SW23 6/21/2006 | SW24 6/21/2006 | SW25 6/22/2006 | SW26 6/21/2006 | SW27 6/22/2006 |
|--|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Volatile Organic Compounds (mg/L) | | | | | | | |
| 1,1,1,2-Tetrachloroethane | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,1,1-Trichloroethane | 0.0012 | 0.001 | 0.001 | 0.0013 | 0.0018 | 0.0015 | 0.0018 |
| 1,1,2,2-Tetrachloroethane | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U |
| 1,1,2-Trichloroethane | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,1-Dichloroethane | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.0012 | 0.001 U | 0.0013 |
| 1,1-Dichloroethene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,1-Dichloropropene | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| 1,2,3-Trichlorobenzene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,2,3-Trichloropropane | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,2,4-Trichlorobenzene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,2,4-Trimethylbenzene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.0011 |
| 1,2-Dibromo-3-chloropropane | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| 1,2-Dibromoethane (EDB) | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,2-Dichlorobenzene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,2-Dichloroethane | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,2-Dichloropropane | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,3,5-Trimethylbenzene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,3-Dichlorobenzene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,3-Dichloropropane | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,4-Dichlorobenzene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 1,4-Dioxane | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 0.5 U |
| 1-Chlorohexane | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 2,2-Dichloropropane | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 2-Butanone | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U |
| 2-Chlorotoluene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 2-Hexanone | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| 4-Chlorotoluene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 4-Isopropyltoluene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| 4-Methyl-2-Pentanone | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U |
| Acetone | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U |
| Benzene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Bromobenzene | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Bromochloromethane | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Bromodichloromethane | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Bromoform | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Bromomethane | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Carbon disulfide | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Carbon tetrachloride | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Chlorobenzene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Chloroethane | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Chloroform | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Chloromethane | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| cis-1,2-Dichloroethene | 0.0054 | 0.0044 | 0.0044 | 0.0059 | 0.0045 | 0.0025 | 0.0054 |
| cis-1,3-Dichloropropene | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U |
| Dibromochloromethane | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Dibromomethane | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Dichlorodifluoromethane | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Diethyl ether | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Diisopropyl ether | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Ethyl tertiary-butyl ether | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Ethylbenzene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 |
| Hexachlorobutadiene | 0.0006 U | 0.0006 U | 0.0006 U | 0.0006 U | 0.0006 U | 0.0006 U | 0.0006 U |
| Isopropylbenzene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| m,p-Xylene [4] | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.0023 | 0.002 U | 0.0028 |
| Methylene chloride | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Methyl-t-butyl ether | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Naphthalene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| n-Butylbenzene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| n-Propyl Benzene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| o-Xylene [4] | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.0012 |
| sec-Butylbenzene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Styrene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| tert-Butylbenzene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Tertiary-amyl methyl ether | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Tetrachloroethene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Tetrahydrofuran | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Toluene | 0.0011 | 0.0014 | 0.0019 | 0.0029 | 0.0033 | 0.0015 | 0.0041 |
| trans-1,2-Dichloroethene | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| trans-1,3-Dichloropropene | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U |
| Trichloroethene | 0.0016 | 0.0013 | 0.0017 | 0.0014 | 0.0012 | 0.001 U | 0.0014 |
| Trichlorofluoromethane | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Vinyl acetate | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Vinyl chloride | 0.0013 | 0.0011 | 0.001 | 0.0018 | 0.0015 | 0.001 U | 0.002 |
| Xylenes, Total | 0.003 U | 0.003 U | 0.003 U | 0.003 U | 0.003 U | 0.003 U | 0.004 |

Table 4.1
 Summary of Analytical Results for Surface Water - Inner Cove
 Phase II Area - Mashapaug Pond and Cove
 Former Gorham Manufacturing Facility
 333 Adelaide Avenue
 Providence, Rhode Island

| Parameter | SW21 6/21/2006 | SW22 6/21/2006 | SW23 6/21/2006 | SW24 6/21/2006 | SW25 6/22/2006 | SW26 6/21/2006 | SW27 6/22/2006 |
|---|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Semi-Volatile Organic Compounds (mg/L) | | | | | | | |
| 2-Methylnaphthalene | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Acenaphthene | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Acenaphthylene | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Anthracene | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Benzo(a)anthracene | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Benzo(a)pyrene | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Benzo(b)fluoranthene | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Benzo(g,h,i)perylene | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Benzo(k)fluoranthene | 0.0003 U | 0.0003 U | 0.0003 U | 0.0003 U | 0.0003 U | 0.00031 U | 0.0003 U |
| Chrysene | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Dibenzo(a,h)anthracene | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Fluoranthene | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Fluorene | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Indeno(1,2,3-cd)pyrene | 0.0003 U | 0.0003 U | 0.0003 U | 0.0003 U | 0.0003 U | 0.00031 U | 0.0003 U |
| Naphthalene | 0.0002 U | 0.0002 U | 0.0002 | 0.0003 | 0.00024 | 0.0002 U | 0.0002 U |
| Phenanthrene | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Pyrene | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U | 0.0002 U |
| Pesticides (mg/L) | | | | | | | |
| 4,4'-DDD | | | | | | | 0.00005 U |
| 4,4'-DDE | | | | | | | 0.00005 U |
| 4,4'-DDT | | | | | | | 0.00005 U |
| Aldrin | | | | | | | 0.00005 U |
| alpha-BHC | | | | | | | 0.00005 U |
| alpha-Chlordane | | | | | | | 0.00005 U |
| beta-BHC | | | | | | | 0.00005 U |
| Chlordane | | | | | | | 0.0005 U |
| delta-BHC | | | | | | | 0.00005 U |
| Dieldrin | | | | | | | 0.00005 U |
| Endosulfan I | | | | | | | 0.00005 U |
| Endosulfan II | | | | | | | 0.00005 U |
| Endosulfan sulfate | | | | | | | 0.00005 U |
| Endrin | | | | | | | 0.00005 U |
| Endrin aldehyde | | | | | | | 0.00005 U |
| Endrin ketone | | | | | | | 0.00005 U |
| gamma-BHC (Lindane) | | | | | | | 0.00005 U |
| gamma-Chlordane | | | | | | | 0.00005 U |
| Heptachlor | | | | | | | 0.00005 U |
| Heptachlor epoxide | | | | | | | 0.00005 U |
| Hexachlorobenzene | | | | | | | 0.00005 U |
| Methoxychlor | | | | | | | 0.00005 U |
| Toxaphene | | | | | | | 0.0025 U |
| Polychlorinated Biphenyls [5] (mg/L) | | | | | | | |
| Aroclor-1016 | | | | | | | 0.0001 U |
| Aroclor-1221 | | | | | | | 0.0001 U |
| Aroclor-1232 | | | | | | | 0.0001 U |
| Aroclor-1242 | | | | | | | 0.0001 U |
| Aroclor-1248 | | | | | | | 0.0001 U |
| Aroclor-1254 | | | | | | | 0.0001 U |
| Aroclor-1260 | | | | | | | 0.0001 U |
| Aroclor-1262 | | | | | | | 0.0001 U |
| Aroclor-1268 | | | | | | | 0.0001 U |
| Dioxins/Furans (mg/L) | | | | | | | |
| 1,2,3,4,6,7,8-HpCDD | | | | | | | 0.00000043 BJ |
| 1,2,3,4,6,7,8-HpCDF | | | | | | | 0.00000001 U |
| 1,2,3,4,7,8,9-HpCDF | | | | | | | 0.00000001 U |
| 1,2,3,4,7,8-HxCDD | | | | | | | 0.00000001 U |
| 1,2,3,4,7,8-HxCDF | | | | | | | 0.00000001 U |
| 1,2,3,6,7,8-HxCDD | | | | | | | 0.000000013 J |
| 1,2,3,6,7,8-HxCDF | | | | | | | 0.00000001 U |
| 1,2,3,7,8,9-HxCDD | | | | | | | 0.000000051 |
| 1,2,3,7,8,9-HxCDF | | | | | | | 0.00000001 U |
| 1,2,3,7,8-PeCDD | | | | | | | 0.000000046 J |
| 1,2,3,7,8-PeCDF | | | | | | | 0.00000001 UE |
| 2,3,4,6,7,8-HxCDF | | | | | | | 0.00000001 U |
| 2,3,4,7,8-PeCDF | | | | | | | 0.00000001 U |
| 2,3,7,8-TCDD | | | | | | | 0.000000031 J |
| 2,3,7,8-TCDF | | | | | | | 0.000000089 J |
| OCDD | | | | | | | 0.00000035 B |
| OCDF | | | | | | | 0.00000002 U |
| Dioxin Toxicity Equivalent (USEPA, 2010) | | | | | | | 0.00000061 |
| Total HpCDD | | | | | | | 0.00000061 B |
| Total HpCDF | | | | | | | 0.00000013 J |
| Total HxCDD | | | | | | | 0.00000064 |
| Total HxCDF | | | | | | | 0.00000001 U |

Table 4.1
 Summary of Analytical Results for Surface Water - Inner Cove
 Phase II Area - Mashapaug Pond and Cove
 Former Gorham Manufacturing Facility
 333 Adelaide Avenue
 Providence, Rhode Island

| Parameter | SW21 6/21/2006 | SW22 6/21/2006 | SW23 6/21/2006 | SW24 6/21/2006 | SW25 6/22/2006 | SW26 6/21/2006 | SW27 6/22/2006 |
|-------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Total PeCDD | | | | | | | 0.000000046 J |
| Total PeCDF | | | | | | | 0.000000029 J |
| Total TCDD | | | | | | | 0.000000031 J |
| Total TCDF | | | | | | | 0.000000032 |
| Metals, Total [6] (mg/L) | | | | | | | |
| Antimony | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Arsenic | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Barium | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Beryllium | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Cadmium | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Chromium | 0.034 | 0.046 | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Copper | 0.071 | 0.126 | 0.023 | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Lead | 0.0258 | 0.0309 | 0.0083 | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Mercury | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U |
| Nickel | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Selenium | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Silver | 0.005 | 0.006 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Zinc | 0.089 | 0.146 | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Metals, Dissolved [6] (mg/L) | | | | | | | |
| Antimony | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Arsenic | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Barium | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Beryllium | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Cadmium | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Chromium | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Copper | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U | 0.02 U |
| Lead | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Mercury | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U |
| Nickel | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Selenium | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Silver | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U | 0.002 U |
| Zinc | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U | 0.05 U |
| Inorganics (mg/L) | | | | | | | |
| Hardness | 86.7 | 86.7 | 86.6 | 83.4 | 77.7 | 73.7 | 80 |

Notes:
 [1] Average calculated using 1/2 the reporting limit for non-detects
 [2] Values are the 2009 RIDEM Ambient Water Quality Criteria.
<http://www.dem.ri.gov/pubs/regs/regs/water/h2oq10.pdf>
 [3] Values are the National Recommended Water Quality Criteria from USEPA.
<http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm>
 [4] RIDEM AWQC values for Total Xylene was used for o-Xylenes and m,p-Xylenes
 [5] RIDEM AWQC values for Total PCBs was used for individual Aroclor mixtures
 [6] RIDEM AWQC values for Cadmium, Chromium (Chromium III was used for Chromium), Copper, Lead, Nickel and Zinc were calculated for acute $\{CF \times e^{(m_t \times [\ln \text{Hardness}] + b_a)}\}$ and chronic $\{CF \times e^{(m_t \times [\ln \text{Hardness}] + b_c)}\}$ values for dissolved metals using the average hardness concentration. Values were also used for total metals
 mg/L - milligram per liter
 U - not detected, value is reporting limit
 J - value is estimated
 B - analyte detected in sample and the associated blank
 E - PCDE interference

Prepared By: EYM 12/6/12
 Checked By: KJC 12/6/12

Table 4.2
Summary of Analytical Results for Surface Water - Outer Cove Study Area
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | Frequency of Detection | Range of Reporting Limits for Non-Detects | | Range of Detected Concentrations | Average [1] | RIDEM AWQC | RIDEM AWQC | RIDEM AWQC | RIDEM AWQC | NRWQC Fresh Water Acute [3] | NRWQC Fresh Water Chronic [3] | NRWQC Water plus Organisms [3] | NRWQC Organisms Only [3] | SW11 6/21/2006 | SW-33 12/19/2011 | SW-34 12/20/2011 | SW-35 12/16/2011 | SW-36 12/14/2011 | |
|-------------------------------------|------------------------|---|-------------------------|----------------------------------|--------------|--------------------------|--------------------|------------|------------|-----------------------------|-------------------------------|--------------------------------|--------------------------|----------------|------------------|------------------|------------------|------------------|--|
| | | Fresh Water Acute [2] | Fresh Water Chronic [2] | | | Water plus Organisms [2] | Organisms Only [2] | | | | | | | | | | | | |
| Total PeCDD | 0 / 1 | 0.00000001 | - 0.00000001 | | 0.000000005 | | | | | | | | | 0.00000001 U | | | | | |
| Total PeCDF | 0 / 1 | 0.00000001 | - 0.00000001 | | 0.000000005 | | | | | | | | | 0.00000001 U | | | | | |
| Total TCDD | 0 / 1 | 0.0000000021 | - 0.0000000021 | | 0.0000000011 | | | | | | | | | 0.0000000021 U | | | | | |
| Total TCDF | 0 / 1 | 0.0000000021 | - 0.0000000021 | | 0.0000000011 | | | | | | | | | 0.0000000021 U | | | | | |
| Metals, Total [6](mg/L) | | | | | | | | | | | | | | | | | | | |
| Antimony | 0 / 19 | 0.0025 | - 0.005 | | 0.0013 | 0.45 | 0.01 | 0.0056 | 0.64 | | | 0.0056 | 640 | 0.005 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | |
| Arsenic | 0 / 19 | 0.0025 | - 0.005 | | 0.0013 | 0.34 | 0.15 | 0.00018 | 0.0014 | 0.34 | 0.15 | 0.000018 | 0.14 | 0.005 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | |
| Barium | 0 / 1 | 0.05 | - 0.05 | | 0.025 | | | | | | | 1 | | 0.05 U | | | | | |
| Beryllium | 0 / 19 | 0.0005 | - 0.001 | | 0.00026 | 0.0075 | 0.00017 | | | | | | | 0.001 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | |
| Cadmium | 0 / 19 | 0.0025 | - 0.005 | | 0.0013 | 0.0013 | 0.00018 | | | 0.002 | 0.00025 | | | 0.005 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | |
| Chromium | 0 / 19 | 0.01 | - 0.02 | | 0.0053 | 0.39 | 0.051 | | | | | | | 0.02 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | |
| Copper | 2 / 19 | 0.01 | - 0.02 | 0.02 : 0.15 | 0.014 | 0.0087 | 0.0060 | 1.3 | | 0.013 | 0.009 | 1.3 | | 0.02 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | |
| Lead | 0 / 19 | 0.005 | - 0.01 | | 0.0049 | 0.039 | 0.0016 | | | 0.065 | 0.0025 | | | 0.005 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | |
| Mercury | 0 / 19 | 0.0005 | - 0.0005 | | 0.00025 | 0.0014 | 0.00077 | 0.00014 | 0.00015 | 0.0014 | 0.00077 | | | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | |
| Nickel | 0 / 19 | 0.025 | - 0.05 | | 0.013 | 0.316742764 | 0.035180342 | 0.61 | 4.6 | 0.47 | 0.052 | 0.61 | 4600 | 0.05 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | |
| Selenium | 0 / 19 | 0.025 | - 0.05 | | 0.013 | 0.02 | 0.005 | 0.17 | 4.2 | | 0.005 | 0.17 | 4200 | 0.05 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | |
| Silver | 0 / 19 | 0.005 | - 0.005 | | 0.0025 | 0.00155842 | | | | 0.0032 | | | | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | |
| Thallium | 0 / 19 | 0.001 | - 0.002 | | 0.00053 | 0.046 | 0.001 | 0.00024 | 0.00047 | | | 0.00024 | 0.47 | 0.002 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | |
| Zinc | 11 / 19 | 0.025 | - 0.05 | 0.026 : 0.059 | 0.025 | 0.079220289 | 0.079868308 | 7.4 | 26 | 0.12 | 0.12 | 7.4 | 26000 | 0.05 U | 0.029 | 0.026 | 0.029 | 0.025 U | |
| Metals, Dissolved [6] (mg/L) | | | | | | | | | | | | | | | | | | | |
| Antimony | 0 / 19 | 0.0025 | - 0.005 | | 0.0013 | 0.45 | 0.01 | 0.0056 | 0.64 | | | 0.0056 | 640 | 0.005 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | |
| Arsenic | 0 / 19 | 0.0025 | - 0.005 | | 0.0013 | 0.34 | 0.15 | 0.00018 | 0.0014 | 0.34 | 0.15 | 0.000018 | 0.14 | 0.005 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | |
| Barium | 0 / 1 | 0.05 | - 0.05 | | 0.025 | | | | | | | 1 | | 0.05 U | | | | | |
| Beryllium | 0 / 19 | 0.0005 | - 0.001 | | 0.00026 | 0.0075 | 0.00017 | | | | | | | 0.001 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | |
| Cadmium | 0 / 19 | 0.0025 | - 0.005 | | 0.0013 | 0.0013 | 0.00018 | | | 0.002 | 0.00025 | | | 0.005 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | |
| Chromium | 0 / 19 | 0.01 | - 0.02 | | 0.0053 | 0.39 | 0.051 | | | | | | | 0.02 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | |
| Copper | 0 / 19 | 0.01 | - 0.02 | | 0.0053 | 0.0087 | 0.0060 | 1.3 | | 0.013 | 0.009 | 1.3 | | 0.02 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | |
| Lead | 0 / 19 | 0.005 | - 0.01 | | 0.0049 | 0.039 | 0.0015 | | | 0.065 | 0.0025 | | | 0.005 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | |
| Mercury | 0 / 19 | 0.0005 | - 0.0005 | | 0.00025 | 0.0014 | 0.00077 | 0.00014 | 0.00015 | 0.0014 | 0.00077 | | | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | |
| Nickel | 0 / 19 | 0.025 | - 0.05 | | 0.013 | 0.32 | 0.035 | 0.61 | 4.6 | 0.47 | 0.052 | 0.61 | 4600 | 0.05 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | |
| Selenium | 0 / 19 | 0.025 | - 0.05 | | 0.013 | 0.02 | 0.005 | 0.17 | 4.2 | | 0.005 | 0.17 | 4200 | 0.05 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | |
| Silver | 0 / 19 | 0.005 | - 0.005 | | 0.0025 | 0.0016 | | | | 0.0032 | | | | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | |
| Thallium | 0 / 19 | 0.0015 | - 0.002 | | 0.00076 | 0.046 | 0.001 | 0.00024 | 0.00047 | | | 0.00024 | 0.47 | 0.002 U | 0.0015 U | 0.0015 U | 0.0015 U | 0.0015 U | |
| Zinc | 9 / 19 | 0.025 | - 0.05 | 0.025 : 0.032 | 0.021 | 0.079 | 0.080 | 7.4 | 26 | 0.12 | 0.12 | 7.4 | 26000 | 0.05 U | 0.025 U | 0.025 U | 0.031 | 0.025 U | |
| Inorganics (mg/L) | | | | | | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | 18 / 18 | | | 2.7 : 4.8 | 3.6 | | | | | | | | | | 2.8 B | 2.8 B | 3.7 | 3.8 | |
| Hardness | 19 / 19 | | | 58.5 : 71.9 | 63 | | | | | | | | | 71.9 | 61.1 | 60.1 | 65.7 | 67.2 | |

Notes:
 [1] Average calculated using 1/2 the reporting limit for non-detects
 [2] Values are the 2009 RIDEM Ambient Water Quality Criteria.
<http://www.dem.ri.gov/pubs/regs/regs/water/h2oq10.pdf>
 [3] Values are the National Recommended Water Quality Criteria from USEPA.
<http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm>
 [4] RIDEM AWQC values for Total Xylene was used for o-Xylenes and m,p-Xylenes
 [5] RIDEM AWQC values for Total PCBs was used for individual Aroclor mixtures
 [6] RIDEM AWQC values for Cadmium, Chromium (Chromium III was used for Chromium), Copper, Lead, Nickel and Zinc were calculated for acute $\{CF \times e^{\lambda(m_c \times [\ln \text{Hardness}] + b_c))}$ and chronic $\{CF \times e^{\lambda(m_c \times [\ln \text{Hardness}] + b_c))}$ values for dissolved metals using the average hardness concentration. Values were also used for total metals
 mg/L - milligram per liter
 U - not detected, value is reporting limit
 J - value is estimated
 B - analyte detected in sample and the associated blank
 A - detection limit based on signal-to-noise measurement

Table 4.2
 Summary of Analytical Results for Surface Water - Outer Cove Study Area
 Phase II Area - Mashapaug Pond and Cove
 Former Gorham Manufacturing Facility
 333 Adelaide Avenue
 Providence, Rhode Island

| Parameter | SW-37 12/15/2011 | SW-38 12/13/2011 | SW-39 12/14/2011 | SW-40 12/16/2011 | SW-41 12/15/2011 | SW-42 12/13/2011 | SW-43 12/19/2011 | SW-44 12/15/2011 | SW-45 12/14/2011 | SW-46 12/20/2011 | SW-47 12/16/2011 | SW-48 12/14/2011 | SW-49 12/20/2011 | SW-60 12/20/2011 |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Volatile Organic Compounds (mg/L) | | | | | | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | | | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | | | | | | | | | | | | |
| 1,1,2-Trichloroethane | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | | | | | | | | | | | | | | |
| 1,1-Dichloroethene | | | | | | | | | | | | | | |
| 1,1-Dichloropropene | | | | | | | | | | | | | | |
| 1,2,3-Trichlorobenzene | | | | | | | | | | | | | | |
| 1,2,3-Trichloropropane | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | | | | | | | | | | | | | | |
| 1,2,4-Trimethylbenzene | | | | | | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | | | | | | | | | | | | | | |
| 1,2-Dibromoethane (EDB) | | | | | | | | | | | | | | |
| 1,2-Dichlorobenzene | | | | | | | | | | | | | | |
| 1,2-Dichloroethane | | | | | | | | | | | | | | |
| 1,2-Dichloropropane | | | | | | | | | | | | | | |
| 1,3,5-Trimethylbenzene | | | | | | | | | | | | | | |
| 1,3-Dichlorobenzene | | | | | | | | | | | | | | |
| 1,3-Dichloropropane | | | | | | | | | | | | | | |
| 1,4-Dichlorobenzene | | | | | | | | | | | | | | |
| 1,4-Dioxane | | | | | | | | | | | | | | |
| 1-Chlorohexane | | | | | | | | | | | | | | |
| 2,2-Dichloropropane | | | | | | | | | | | | | | |
| 2-Butanone | | | | | | | | | | | | | | |
| 2-Chlorotoluene | | | | | | | | | | | | | | |
| 2-Hexanone | | | | | | | | | | | | | | |
| 4-Chlorotoluene | | | | | | | | | | | | | | |
| 4-Isopropyltoluene | | | | | | | | | | | | | | |
| 4-Methyl-2-Pentanone | | | | | | | | | | | | | | |
| Acetone | | | | | | | | | | | | | | |
| Benzene | | | | | | | | | | | | | | |
| Bromobenzene | | | | | | | | | | | | | | |
| Bromochloromethane | | | | | | | | | | | | | | |
| Bromodichloromethane | | | | | | | | | | | | | | |
| Bromoform | | | | | | | | | | | | | | |
| Bromomethane | | | | | | | | | | | | | | |
| Carbon disulfide | | | | | | | | | | | | | | |
| Carbon tetrachloride | | | | | | | | | | | | | | |
| Chlorobenzene | | | | | | | | | | | | | | |
| Chloroethane | | | | | | | | | | | | | | |
| Chloroform | | | | | | | | | | | | | | |
| Chloromethane | | | | | | | | | | | | | | |
| cis-1,2-Dichloroethene | | | | | | | | | | | | | | |
| cis-1,3-Dichloropropene | | | | | | | | | | | | | | |
| Dibromochloromethane | | | | | | | | | | | | | | |
| Dibromomethane | | | | | | | | | | | | | | |
| Dichlorodifluoromethane | | | | | | | | | | | | | | |
| Diethyl ether | | | | | | | | | | | | | | |
| Diisopropyl ether | | | | | | | | | | | | | | |
| Ethyl tertiary-butyl ether | | | | | | | | | | | | | | |
| Ethylbenzene | | | | | | | | | | | | | | |
| Hexachlorobutadiene | | | | | | | | | | | | | | |
| Isopropylbenzene | | | | | | | | | | | | | | |
| m,p-Xylene [4] | | | | | | | | | | | | | | |
| Methylene chloride | | | | | | | | | | | | | | |
| Methyl-t-butyl ether | | | | | | | | | | | | | | |
| Naphthalene | | | | | | | | | | | | | | |
| n-Butylbenzene | | | | | | | | | | | | | | |
| n-Propyl Benzene | | | | | | | | | | | | | | |
| o-Xylene [4] | | | | | | | | | | | | | | |
| sec-Butylbenzene | | | | | | | | | | | | | | |
| Styrene | | | | | | | | | | | | | | |
| tert-Butylbenzene | | | | | | | | | | | | | | |
| Tertiary-amyl methyl ether | | | | | | | | | | | | | | |
| Tetrachloroethene | | | | | | | | | | | | | | |
| Tetrahydrofuran | | | | | | | | | | | | | | |
| Toluene | | | | | | | | | | | | | | |
| trans-1,2-Dichloroethene | | | | | | | | | | | | | | |
| trans-1,3-Dichloropropene | | | | | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | | | | | |
| Trichlorofluoromethane | | | | | | | | | | | | | | |
| Vinyl acetate | | | | | | | | | | | | | | |
| Vinyl chloride | | | | | | | | | | | | | | |
| Xylenes, Total | | | | | | | | | | | | | | |

Table 4.2
Summary of Analytical Results for Surface Water - Outer Cove Study Area
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | SW-37 12/15/2011 | SW-38 12/13/2011 | SW-39 12/14/2011 | SW-40 12/16/2011 | SW-41 12/15/2011 | SW-42 12/13/2011 | SW-43 12/19/2011 | SW-44 12/15/2011 | SW-45 12/14/2011 | SW-46 12/20/2011 | SW-47 12/16/2011 | SW-48 12/14/2011 | SW-49 12/20/2011 | SW-60 12/20/2011 |
|---|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Semi-Volatile Organic Compounds (mg/L) | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | | | | | | | | | | | | | | |
| Acenaphthene | | | | | | | | | | | | | | |
| Acenaphthylene | | | | | | | | | | | | | | |
| Anthracene | | | | | | | | | | | | | | |
| Benzo(a)anthracene | | | | | | | | | | | | | | |
| Benzo(a)pyrene | | | | | | | | | | | | | | |
| Benzo(b)fluoranthene | | | | | | | | | | | | | | |
| Benzo(g,h,i)perylene | | | | | | | | | | | | | | |
| Benzo(k)fluoranthene | | | | | | | | | | | | | | |
| Chrysene | | | | | | | | | | | | | | |
| Dibenzo(a,h)anthracene | | | | | | | | | | | | | | |
| Fluoranthene | | | | | | | | | | | | | | |
| Fluorene | | | | | | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | | | | | | | | | | | | | | |
| Naphthalene | | | | | | | | | | | | | | |
| Phenanthrene | | | | | | | | | | | | | | |
| Pyrene | | | | | | | | | | | | | | |
| Pesticides (mg/L) | | | | | | | | | | | | | | |
| 4,4'-DDD | | | | | | | | | | | | | | |
| 4,4'-DDE | | | | | | | | | | | | | | |
| 4,4'-DDT | | | | | | | | | | | | | | |
| Aldrin | | | | | | | | | | | | | | |
| alpha-BHC | | | | | | | | | | | | | | |
| alpha-Chlordane | | | | | | | | | | | | | | |
| beta-BHC | | | | | | | | | | | | | | |
| Chlordane | | | | | | | | | | | | | | |
| delta-BHC | | | | | | | | | | | | | | |
| Dieldrin | | | | | | | | | | | | | | |
| Endosulfan I | | | | | | | | | | | | | | |
| Endosulfan II | | | | | | | | | | | | | | |
| Endosulfan sulfate | | | | | | | | | | | | | | |
| Endrin | | | | | | | | | | | | | | |
| Endrin aldehyde | | | | | | | | | | | | | | |
| Endrin ketone | | | | | | | | | | | | | | |
| gamma-BHC (Lindane) | | | | | | | | | | | | | | |
| gamma-Chlordane | | | | | | | | | | | | | | |
| Heptachlor | | | | | | | | | | | | | | |
| Heptachlor epoxide | | | | | | | | | | | | | | |
| Hexachlorobenzene | | | | | | | | | | | | | | |
| Methoxychlor | | | | | | | | | | | | | | |
| Toxaphene | | | | | | | | | | | | | | |
| Polychlorinated Biphenyls [5] (mg/L) | | | | | | | | | | | | | | |
| Aroclor-1016 | | | | | | | | | | | | | | |
| Aroclor-1221 | | | | | | | | | | | | | | |
| Aroclor-1232 | | | | | | | | | | | | | | |
| Aroclor-1242 | | | | | | | | | | | | | | |
| Aroclor-1248 | | | | | | | | | | | | | | |
| Aroclor-1254 | | | | | | | | | | | | | | |
| Aroclor-1260 | | | | | | | | | | | | | | |
| Aroclor-1262 | | | | | | | | | | | | | | |
| Aroclor-1268 | | | | | | | | | | | | | | |
| Dioxins/Furans (mg/L) | | | | | | | | | | | | | | |
| 1,2,3,4,6,7,8-HpCDD | | | | | | | | | | | | | | |
| 1,2,3,4,6,7,8-HpCDF | | | | | | | | | | | | | | |
| 1,2,3,4,7,8,9-HpCDF | | | | | | | | | | | | | | |
| 1,2,3,4,7,8-HxCDD | | | | | | | | | | | | | | |
| 1,2,3,4,7,8-HxCDF | | | | | | | | | | | | | | |
| 1,2,3,6,7,8-HxCDD | | | | | | | | | | | | | | |
| 1,2,3,6,7,8-HxCDF | | | | | | | | | | | | | | |
| 1,2,3,7,8,9-HxCDD | | | | | | | | | | | | | | |
| 1,2,3,7,8,9-HxCDF | | | | | | | | | | | | | | |
| 1,2,3,7,8-PeCDD | | | | | | | | | | | | | | |
| 1,2,3,7,8-PeCDF | | | | | | | | | | | | | | |
| 2,3,4,6,7,8-HxCDF | | | | | | | | | | | | | | |
| 2,3,4,7,8-PeCDF | | | | | | | | | | | | | | |
| 2,3,7,8-TCDD | | | | | | | | | | | | | | |
| 2,3,7,8-TCDF | | | | | | | | | | | | | | |
| OCDD | | | | | | | | | | | | | | |
| OCDF | | | | | | | | | | | | | | |
| Dioxin Toxicity Equivalent (USEPA, 2010) | | | | | | | | | | | | | | |
| Total HpCDD | | | | | | | | | | | | | | |
| Total HpCDF | | | | | | | | | | | | | | |
| Total HxCDD | | | | | | | | | | | | | | |
| Total HxCDF | | | | | | | | | | | | | | |

Table 4.2
Summary of Analytical Results for Surface Water - Outer Cove Study Area
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
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| Parameter | SW-37 12/15/2011 | SW-38 12/13/2011 | SW-39 12/14/2011 | SW-40 12/16/2011 | SW-41 12/15/2011 | SW-42 12/13/2011 | SW-43 12/19/2011 | SW-44 12/15/2011 | SW-45 12/14/2011 | SW-46 12/20/2011 | SW-47 12/16/2011 | SW-48 12/14/2011 | SW-49 12/20/2011 | SW-60 12/20/2011 |
|-------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Total PeCDD | | | | | | | | | | | | | | |
| Total PeCDF | | | | | | | | | | | | | | |
| Total TCDD | | | | | | | | | | | | | | |
| Total TCDF | | | | | | | | | | | | | | |
| Metals, Total [6](mg/L) | | | | | | | | | | | | | | |
| Antimony | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U |
| Arsenic | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U |
| Barium | | | | | | | | | | | | | | |
| Beryllium | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U |
| Cadmium | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U |
| Chromium | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Copper | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.15 | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.02 | 0.01 U | 0.01 U | 0.01 U |
| Lead | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Mercury | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U |
| Nickel | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U |
| Selenium | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U |
| Silver | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U | 0.001 U |
| Zinc | 0.029 | 0.025 U | 0.026 | 0.027 | 0.059 | 0.025 U | 0.025 U | 0.03 | 0.025 U | 0.033 | 0.037 | 0.025 U | 0.029 | 0.025 U |
| Metals, Dissolved [6] (mg/L) | | | | | | | | | | | | | | |
| Antimony | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U |
| Arsenic | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U |
| Barium | | | | | | | | | | | | | | |
| Beryllium | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U |
| Cadmium | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U | 0.0025 U |
| Chromium | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Copper | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Lead | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U | 0.01 U |
| Mercury | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U | 0.0005 U |
| Nickel | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U |
| Selenium | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U | 0.025 U |
| Silver | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.005 U |
| Thallium | 0.0015 U | 0.0015 U | 0.0015 U | 0.0015 U | 0.0015 U | 0.0015 U | 0.0015 U | 0.0015 U | 0.0015 U | 0.0015 U | 0.0015 U | 0.0015 U | 0.0015 U | 0.0015 U |
| Zinc | 0.028 | 0.025 U | 0.025 U | 0.028 | 0.031 | 0.025 U | 0.029 | 0.032 | 0.025 U | 0.025 | 0.025 | 0.025 U | 0.032 | 0.025 U |
| Inorganics (mg/L) | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | 4 | 4.8 | 3.7 | 4.3 | 4 | 4 | 2.9 B | 3.8 | 3.8 | 2.8 B | 3.7 | 4 | 2.8 B | 2.7 B |
| Hardness | 60.7 | 60.7 | 65.7 | 58.5 | 61.4 | 60.1 | 61.4 | 60.4 | 65.6 | 61.5 | 60.4 | 65.5 | 59.3 | 61.9 |

Notes:
[1] Average calculated using 1/2 the reporting limit for non-detects
[2] Values are the 2009 RIDEM Ambient Water Quality Criteria.
<http://www.dem.ri.gov/pubs/regs/regs/water/h2oq10.pdf>
[3] Values are the National Recommended Water Quality Criteria from USEPA.
<http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm>
[4] RIDEM AWQC values for Total Xylene was used for o-Xylenes and m,p-Xylenes
[5] RIDEM AWQC values for Total PCBs was used for individual Aroclor mixtures
[6] RIDEM AWQC values for Cadmium, Chromium (Chromium III was used for Chromium), Copper, Lead, Nickel and Zinc were calculated for acute $\{CF \times e^{(m_c \times [ln \text{ Hardness}] + b_c))}$ and chronic $\{CF \times e^{(m_c \times [ln \text{ Hardness}] + b_c)}\}$ values for dissolved metals using the average hardness concentration. Values were also used for total metals
mg/L - milligram per liter
U - not detected, value is reporting limit
J - value is estimated
B - analyte detected in sample and the associated blank
A - detection limit based on signal-to-noise measurement

Prepared By: EYM 12/6/12
Checked By: KJC 12/6/12

Table 4.3
Summary of Analytical Results for Surface Water - Remainder of the Pond
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | Frequency of Detection | Range of Reporting Limits for Non Detects | Range of Detected Concentrations | Average [1] | RIDEM AWQC Fresh Water Acute [2] | RIDEM AWQC Fresh Water Chronic [2] | RIDEM AWQC Water plus Organisms [2] | RIDEM AWQC Organisms Only [2] | NRWQC Fresh Water Acute [3] | NRWQC Fresh Water Chronic [3] | NRWQC Water plus Organisms [3] | NRWQC Organisms Only [3] | SW10 6/21/2006 | SW12 6/21/2006 |
|-------------------------------------|------------------------|---|----------------------------------|-------------|----------------------------------|------------------------------------|-------------------------------------|-------------------------------|-----------------------------|-------------------------------|--------------------------------|--------------------------|----------------|----------------|
| Thallium | 0 / 2 | 0.002 - 0.002 | | 0.001 | 0.046 | 0.001 | 0.00024 | 0.00047 | | | 0.00024 | 0.47 | 0.002 U | 0.002 U |
| Zinc | 0 / 2 | 0.05 - 0.05 | | 0.025 | 0.086 | 0.086 | 7.4 | 26 | 0.12 | 0.12 | 7.4 | 26000 | 0.05 U | 0.05 U |
| Metals, Dissolved [6] (mg/L) | | | | | | | | | | | | | | |
| Antimony | 0 / 2 | 0.005 - 0.005 | | 0.0025 | 0.45 | 0.01 | 0.0056 | 0.64 | | | 0.0056 | 640 | 0.005 U | 0.005 U |
| Arsenic | 0 / 2 | 0.005 - 0.005 | | 0.0025 | 0.34 | 0.15 | 0.00018 | 0.0014 | 0.34 | 0.15 | 0.000018 | 0.14 | 0.005 U | 0.005 U |
| Barium | 0 / 2 | 0.05 - 0.05 | | 0.025 | | | | | | | 1 | | 0.05 U | 0.05 U |
| Beryllium | 0 / 2 | 0.001 - 0.001 | | 0.0005 | 0.0075 | 0.00017 | | | | | | | 0.001 U | 0.001 U |
| Cadmium | 0 / 2 | 0.005 - 0.005 | | 0.0025 | 0.0014 | 0.00019 | | | 0.002 | 0.00025 | | | 0.005 U | 0.005 U |
| Chromium | 0 / 2 | 0.02 - 0.02 | | 0.01 | 0.42 | 0.055 | | | | | | | 0.02 U | 0.02 U |
| Copper | 0 / 2 | 0.02 - 0.02 | | 0.01 | 0.0095 | 0.0065 | 1.3 | | 0.013 | 0.009 | 1.3 | | 0.02 U | 0.02 U |
| Lead | 0 / 2 | 0.005 - 0.005 | | 0.0025 | 0.043 | 0.0017 | | | 0.065 | 0.0025 | | | 0.005 U | 0.005 U |
| Mercury | 0 / 2 | 0.0005 - 0.0005 | | 0.00025 | 0.0014 | 0.00077 | 0.00014 | 0.00015 | 0.0014 | 0.00077 | | | 0.0005 U | 0.0005 U |
| Nickel | 0 / 2 | 0.05 - 0.05 | | 0.025 | 0.34 | 0.038 | 0.61 | 4.6 | 0.47 | 0.052 | 0.61 | 4600 | 0.05 U | 0.05 U |
| Selenium | 0 / 2 | 0.05 - 0.05 | | 0.025 | 0.02 | 0.005 | 0.17 | 4.2 | | 0.005 | 0.17 | 4200 | 0.05 U | 0.05 U |
| Silver | 0 / 2 | 0.005 - 0.005 | | 0.0025 | 0.0018 | | | | 0.0032 | | | | 0.005 U | 0.005 U |
| Thallium | 0 / 2 | 0.002 - 0.002 | | 0.001 | 0.046 | 0.001 | 0.00024 | 0.00047 | | | 0.00024 | 0.47 | 0.002 U | 0.002 U |
| Zinc | 0 / 2 | 0.05 - 0.05 | | 0.025 | 0.086 | 0.086 | 7.4 | 26 | 0.12 | 0.12 | 7.4 | 26000 | 0.05 U | 0.05 U |
| Inorganics (mg/L) | | | | | | | | | | | | | | |
| Hardness | 2 / 2 | | 67 : 70.8 | 69 | | | | | | | | | 70.8 | 67 |

Notes:

[1] Average calculated using 1/2 the reporting limit for non-detects

[2] Values are the 2009 RIDEM Ambient Water Quality Criteria.

<http://www.dem.ri.gov/pubs/regs/regs/water/h2oq10.pdf>

[3] Values are the National Recommended Water Quality Criteria from USEPA.

<http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm>

[4] RIDEM AWQC values for Total Xylene was used for o-Xylenes and m,p-Xylenes

[5] RIDEM AWQC values for Total PCBs was used for individual Aroclor mixtures

[6] RIDEM AWQC values for Cadmium, Chromium (Chromium III was used for Chromium), Copper, Lead, Nickel and Zinc were calculated for acute $\{CF \times e^{(m_a \times [\ln \text{Hardness}] + b_a))}$ and chronic $\{CF \times e^{(m_c \times [\ln \text{Hardness}] + b_c))}$ values for dissolved metals using the average hardness concentration. Values were also used for total metals

mg/L - milligram per liter

U - not detected, value is reporting limit

Prepared By: EYM 12/6/12

Checked By: KJC 12/6/12

Table 4.4
Summary of Analytical Results Detected in Shallow Sediment (0-1 ft) - Inner Cove
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | Frequency of Detection | Range of Reporting Limits for Non Detects | Range of Detected Concentrations | Average [1] | SD-1001 12/28/2005 0 - 2 ft | SD-1002 12/28/2005 0 - 2 ft | SD-1003 12/28/2005 0 - 2 ft | SD-1004 12/28/2005 0 - 2 ft | SD-1005 12/28/2005 0 - 2 ft | SED1601 6/22/2006 0 - 1 ft | SED1701 6/22/2006 0.5 - 1 ft |
|--|------------------------|---|----------------------------------|-------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------------------|------------------------------------|
| 2,3,7,8-TCDF | 17 / 22 | 0.00000014 - 0.0000042 | 0.0000016 : 0.00012 | 0.000030 | 0.000018 | 0.000015 | 0.000027 | 0.000029 | 0.000043 | 0.000082 A | 0.0000014 UEA |
| OCDD | 22 / 22 | | 0.0000035 : 0.0029 | 0.00083 | 0.00075 | 0.00024 | 0.00042 | 0.00048 | 0.00077 | 0.0023 | 0.00007 |
| OCDF | 21 / 22 | 0.0000014 - 0.0000014 | 0.0000022 : 0.0003 | 0.00011 | 0.000075 | 0.00019 | 0.00019 | 0.00007 | 0.000076 | 0.00025 | 0.000008 |
| Dioxin Toxicity Equivalent (USEPA, 2010) | 22 / 22 | | 0.00000078 : 0.0024 | 0.00044 | 0.000044 | 0.000047 | 0.00016 | 0.00017 | 0.00019 | 0.0011 | 0.000077 |
| Total HpCDD | 21 / 22 | 0.00000068 - 0.00000068 | 0.0000088 : 0.0013 | 0.00036 | 0.0002 | 0.00012 | 0.00027 | 0.00026 | 0.00036 | 0.00097 | 0.000044 |
| Total HpCDF | 21 / 22 | 0.00000068 - 0.00000068 | 0.0000059 : 0.0028 | 0.00067 | 0.00018 | 0.00024 | 0.00062 | 0.00055 | 0.00073 | 0.0014 | 0.000087 |
| Total HxCDD | 21 / 22 | 0.00000068 - 0.00000068 | 0.000013 : 0.0026 | 0.00063 | 0.00012 | 0.00013 | 0.00049 | 0.00042 | 0.00048 | 0.0014 | 0.00007 |
| Total HxCDF | 22 / 22 | | 0.0000017 : 0.025 | 0.0062 | 0.00078 | 0.001 | 0.0055 | 0.0058 | 0.00079 | 0.016 | 0.0009 |
| Total PeCDD | 21 / 22 | 0.00000068 - 0.00000068 | 0.0000081 : 0.002 | 0.00046 | 0.000074 | 0.000056 | 0.00031 | 0.00029 | 0.00022 | 0.001 | 0.000041 |
| Total PeCDF | 22 / 22 | | 0.0000044 : 0.04 | 0.0075 | 0.00068 | 0.00088 | 0.0051 | 0.0054 | 0.00075 | 0.0073 | 0.0021 |
| Total TCDD | 21 / 22 | 0.00000014 - 0.00000014 | 0.0000036 : 0.0008 | 0.00020 | 0.000077 | 0.000045 | 0.00012 | 0.00011 | 0.00011 | 0.00038 | 0.000023 |
| Total TCDF | 22 / 22 | | 0.0000012 : 0.015 | 0.0033 | 0.00029 | 0.00029 | 0.0013 | 0.0013 | 0.00017 | 0.0069 | 0.0006 |
| Inorganics (mg/kg) | | | | | | | | | | | |
| Antimony | 2 / 22 | 0.54 - 25.7 | 1.6 : 2.7 | 6.0 | 2.7 | 1.6 | 2.7 U | 2 U | 0.54 U | 22.6 U | 7.6 U |
| Arsenic | 18 / 22 | 0.4 - 1.8 | 2.1 : 45 | 17.9 | 19 | 12 | 45 | 32 | 3.8 | 20 | 0.4 U |
| Barium | 22 / 22 | | 12.4 : 466 | 141 | 190 | 76 | 250 | 69 | 19 | 194 | 12.4 |
| Beryllium | 19 / 22 | 0.07 - 0.13 | 0.075 : 3.5 | 0.64 | 1.1 | 0.46 | 1.4 | 3.5 | 0.075 | 0.6 | 0.08 U |
| Cadmium | 18 / 22 | 0.74 - 1.31 | 0.14 : 7.11 | 2.9 | 1.8 | 0.91 | 4.1 | 3.2 | 0.14 | 5.66 | 0.76 U |
| Chromium | 22 / 22 | | 4.8 : 640 | 231 | 71 | 12 | 100 | 59 | 4.8 | 565 | 11.1 |
| Copper | 22 / 22 | | 8.6 : 2670 | 1185 | 1200 | 180 | 740 | 1500 | 19 | 2050 | 34.8 |
| Lead | 21 / 22 | 7.4 - 7.4 | 12.2 : 1120 | 423 | 340 | 140 | 590 | 140 | 23 | 763 | 20.9 |
| Mercury | 17 / 22 | 0.043 - 0.12 | 0.031 : 2.52 | 0.50 | 0.3 | 0.087 | 1.3 | 0.2 | 0.031 | 0.162 | 0.047 U |
| Nickel | 20 / 22 | 3.7 - 6.6 | 5.7 : 853 | 161 | 48 | 20 | 120 | 810 | 10 | 130 | 5.7 |
| Selenium | 3 / 22 | 0.54 - 25.7 | 1.8 : 17.9 | 6.6 | 3.2 | 1.8 | 2.7 U | 2 U | 0.54 U | 22.6 U | 7.6 U |
| Silver | 20 / 22 | 0.74 - 1.31 | 2.77 : 227 | 83 | 120 | 15 | 95 | 24 | 2.9 | 164 | 5.27 |
| Zinc | 22 / 22 | | 9.5 : 1940 | 947 | 570 | 200 | 770 | 1200 | 34 | 1630 | 39.3 |
| Total Organic Carbon (TOC) | 17 / 17 | | 2800 : 115000 | 35994 | | | | | | 73000 | 5800 |
| AVS/SEM (umol/kg) | | | | | | | | | | | |
| Antimony | 4 / 4 | | 0.76 : 45.46 | 13.8 | | | | | | | |
| Copper | 4 / 4 | | 2223.92 : 88206.4 | 26600 | | | | | | | |
| Lead | 4 / 4 | | 657.89 : 3249.11 | 1671 | | | | | | | |
| Silver | 4 / 4 | | 94.46 : 529.87 | 219 | | | | | | | |
| Zinc | 4 / 4 | | 3446.37 : 20240.53 | 11595 | | | | | | | |
| AVS | 4 / 4 | | 87.4 : 594.29 | 253 | | | | | | | |
| SEM | 4 / 4 | | 7627.21 : 32436.04 | 20098 | | | | | | | |
| Total Petroleum Hydrocarbon (mg/kg) | | | | | | | | | | | |
| Total Petroleum Hydrocarbon | 19 / 22 | 50.1 - 291 | 57.8 : 2600 | 677 | 1900 | 2600 | 1700 | 740 | 370 | 275 U | 83.4 |

Notes:
[1] Average calculated using one-half the reporting limit for non-detects
AVS/SEM - Acid Volatile Sulfide/Simultaneously Extracted Metals
mg/kg - milligram per kilogram
umol/kg - micromole per kilogram
U - not detected, value is reporting limit
J - value is estimated
B - analyte detected in sample and the associated blank
E - for dioxin/furan - PCDE interference
E - for other analytes - exceeds calibration range
A - detection limit based on signal-to-noise measurement
I - interference
N2 - value obtained from additional analysis

Table 4.4
Summary of Analytical Results Detected in Shallow Sediment (0-1 ft) - Inner Cove
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | SED1801 6/22/2006 0 - 1 ft | SED1901 6/22/2006 0 - 1 ft | SED20 6/29/2006 | SED2001 6/22/2006 0.5 - 1 ft | SED2101 6/22/2006 0 - 1 ft | SED22 6/29/2006 | SED2201 6/22/2006 0 - 1 ft | SED2301 6/22/2006 0 - 1 ft | SED24 6/29/2006 | SED2401 6/22/2006 0 - 1 ft | SED2501 6/22/2006 0 - 1 ft |
|--|----------------------------------|----------------------------------|--------------------|------------------------------------|----------------------------------|--------------------|----------------------------------|----------------------------------|--------------------|----------------------------------|----------------------------------|
| 2,3,7,8-TCDF | 0.00012 A | 0.000058 A | | 0.0000093 A | 0.0000017 UE | | 0.000027 A | 0.00000014 U | | 0.00000026 UE | 0.000053 A |
| OCDD | 0.0027 | 0.00093 | | 0.00024 A | 0.000025 B | | 0.0005 | 0.0000035 BJ | | 0.00017 | 0.0019 A |
| OCDF | 0.0003 | 0.0001 | | 0.000082 A | 0.0000022 J | | 0.000044 | 0.0000014 U | | 0.000017 | 0.00017 |
| Dioxin Toxicity Equivalent (USEPA, 2010) | 0.0024 | 0.0014 | | 0.00014 | 0.000018 | | 0.00047 | 0.00000078 | | 0.000038 | 0.00089 |
| Total HpCDD | 0.0013 | 0.00058 | | 0.00019 | 0.0000088 | | 0.00024 | 0.00000068 U | | 0.000058 | 0.00065 |
| Total HpCDF | 0.0028 | 0.0014 | | 0.0005 | 0.000017 | | 0.00042 | 0.00000068 U | | 0.000066 | 0.0011 |
| Total HxCDD | 0.0026 | 0.0016 | | 0.00047 | 0.000013 | | 0.00031 | 0.00000068 U | | 0.00005 | 0.0011 |
| Total HxCDF | 0.023 | 0.012 | | 0.0046 | 0.0002 | | 0.0055 | 0.0000017 J | | 0.00049 | 0.012 |
| Total PeCDD | 0.002 | 0.0014 | | 0.00039 | 0.0000081 | | 0.0002 | 0.00000068 U | | 0.000029 | 0.00091 |
| Total PeCDF | 0.0096 | 0.0088 | | 0.0069 | 0.00046 | | 0.014 | 0.0000044 | | 0.0011 | 0.012 |
| Total TCDD | 0.0008 | 0.00051 | | 0.00016 | 0.0000036 | | 0.00015 | 0.00000014 U | | 0.000017 | 0.0005 |
| Total TCDF | 0.012 | 0.0065 | | 0.0014 | 0.00014 | | 0.0045 | 0.0000012 | | 0.00032 | 0.0069 |
| Inorganics (mg/kg) | | | | | | | | | | | |
| Antimony | 25.7 U | 23.6 U | | 13.1 U | 7.4 U | | 15.9 U | 7.4 U | | 9.8 U | 13.1 U |
| Arsenic | 22.2 | 36 | | 0.7 U | 2.1 | | 12 | 1.8 U | | 9.3 | 22.4 |
| Barium | 278 | 224 | | 25.3 | 13 | | 125 | 13.1 | | 82.4 | 207 |
| Beryllium | 0.72 | 1.03 | | 0.13 U | 0.14 | | 0.32 | 0.07 U | | 0.28 | 0.58 |
| Cadmium | 6.9 | 7.11 | | 1.31 U | 0.74 U | | 2.8 | 0.74 U | | 2.87 | 4.56 |
| Chromium | 640 | 387 | | 7.5 | 7.1 | | 616 | 333 | | 532 | 300 |
| Copper | 2590 | 1880 | | 14.6 | 20.1 | | 1970 | 8.6 | | 1930 | 1890 |
| Lead | 961 | 927 | | 34.1 | 12.2 | | 426 | 7.4 U | | 520 | 672 |
| Mercury | 0.163 | 2.52 | | 0.067 U | 0.043 U | | 0.677 | 0.044 U | | 0.653 | 0.159 |
| Nickel | 157 | 433 | | 6.6 U | 6.8 | | 86 | 3.7 U | | 55.6 | 113 |
| Selenium | 25.7 U | 23.6 U | | 13.1 U | 7.4 U | | 15.9 U | 7.4 U | | 9.8 U | 13.1 U |
| Silver | 227 | 192 | | 1.31 U | 2.77 | | 163 | 0.74 U | | 107 | 140 |
| Zinc | 1940 | 1830 | | 38.8 | 71.6 | | 1360 | 9.5 | | 1920 | 1360 |
| Total Organic Carbon (TOC) | 115000 > | 69600 > | | 26000 | 5300 | | 24000 | 2800 | | 23000 | 46100 > |
| AVS/SEM (umol/kg) | | | | | | | | | | | |
| Antimony | | | 0.93 | | | 0.76 | | | 8.16 | | |
| Copper | | | 2223.92 | | | 88206.4 | | | 7597.52 | | |
| Lead | | | 1835.4 | | | 940.87 | | | 657.89 | | |
| Silver | | | 120.59 | | | 131.14 | | | 94.46 | | |
| Zinc | | | 3446.37 | | | 14376.89 | | | 8314.74 | | |
| AVS | | | 237.81 | | | 93.06 | | | 87.4 | | |
| SEM | | | 7627.21 | | | 23656.05 | | | 16672.77 | | |
| Total Petroleum Hydrocarbon (mg/kg) | | | | | | | | | | | |
| Total Petroleum Hydrocarbon | 291 U | 756 | | 1810 | 57.8 | | 190 | 50.1 U | | 226 | 380 |

Notes:
 [1] Average calculated using one-half the reporting limit for non-detects
 AVS/SEM - Acid Volatile Sulfide/Simultaneously Extracted Metals
 mg/kg - milligram per kilogram
 umol/kg - micromole per kilogram
 U - not detected, value is reporting limit
 J - value is estimated
 B - analyte detected in sample and the associated blank
 E - for dioxin/furan - PCDE interference
 E - for other analytes - exceeds calibration range
 A - detection limit based on signal-to-noise measurement
 I - interference
 N2 - value obtained from additional analysis

Table 4.4
Summary of Analytical Results Detected in Shallow Sediment (0-1 ft) - Inner Cove
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | SED26 6/29/2006 | SED2601 6/22/2006 0 - 1 ft | SED2701 6/22/2006 0 - 1 ft | SED2801 6/21/2006 0.5 - 1 ft | SED2901 6/21/2006 0.5 - 1 ft | SED3001 6/21/2006 0.5 - 1 ft | SED3101 6/21/2006 0.5 - 1 ft | SED3201 6/21/2006 0.5 - 1 ft |
|--|--------------------|----------------------------------|----------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| Volatile Organic Compound (mg/kg) | | | | | | | | |
| 1,1,1-Trichloroethane | | 0.008 U | 0.0198 U | 0.0226 U | 0.025 U | 0.0043 U | 0.0289 U | 0.005 U |
| 1,1-Dichloroethane | | 0.008 U | 4.67 | 0.0266 | 0.025 U | 0.0043 U | 1.92 | 0.005 U |
| 1,1-Dichloroethene | | 0.008 U | 2.34 | 0.0226 U | 0.025 U | 0.0043 U | 0.0289 U | 0.005 U |
| Acetone | | 0.0856 | 0.198 U | 0.384 | 0.27 | 0.0434 U | 0.522 | 0.0496 U |
| Carbon disulfide | | 0.008 U | 0.0398 | 0.0226 U | 0.025 U | 0.0043 U | 0.0289 U | 0.005 U |
| cis-1,2-Dichloroethene | | 0.008 U | 103 | 0.0226 U | 0.025 U | 0.0043 U | 10.6 | 0.005 U |
| Isopropylbenzene | | 0.008 U | 0.0198 U | 0.0514 | 0.025 U | 0.0043 U | 0.0289 U | 0.005 U |
| sec-Butylbenzene | | 0.008 U | 0.0198 U | 0.0303 | 0.025 U | 0.0043 U | 0.0289 U | 0.005 U |
| Tetrachloroethene | | 0.008 U | 0.0198 U | 0.0226 U | 0.025 U | 0.0043 U | 0.0289 U | 0.005 U |
| Toluene | | 0.008 U | 0.0198 U | 0.0226 U | 0.025 U | 0.0043 U | 1.92 | 0.005 U |
| trans-1,2-Dichloroethene | | 0.008 U | 3.62 | 0.0226 U | 0.025 U | 0.0043 U | 0.0289 U | 0.005 U |
| Trichloroethene | | 0.008 U | 15.1 | 0.0226 U | 0.025 U | 0.0043 U | 0.797 | 0.005 U |
| Vinyl chloride | | 0.016 U | 5.42 | 0.0499 | 0.05 U | 0.0087 U | 11.7 | 0.0099 U |
| Semivolatiles Organic Compounds (mg/kg) | | | | | | | | |
| Acenaphthene | | 0.0463 U | 0.124 U | 0.0912 U | 0.101 U | 0.0311 U | 0.109 U | 0.12 |
| Acenaphthylene | | 0.0463 U | 0.124 U | 0.0912 U | 0.101 U | 0.0311 U | 0.109 U | 0.034 U |
| Anthracene | | 0.0463 U | 0.124 U | 0.403 | 0.169 | 0.0852 | 0.171 | 0.438 |
| Benzo(a)anthracene | | 0.241 | 0.134 | 1.29 | 0.687 | 0.376 | 0.671 | 0.64 |
| Benzo(a)pyrene | | 0.273 | 0.124 U | 0.993 | 0.543 | 0.239 | 0.503 | 0.497 |
| Benzo(b)fluoranthene | | 0.256 | 0.285 | 1.49 | 0.882 | 0.433 | 1.18 | 0.892 |
| Benzo(g,h,i)perylene | | 0.144 | 0.124 U | 0.296 | 0.117 | 0.152 | 0.124 | 0.191 |
| Benzo(k)fluoranthene | | 0.0463 U | 0.124 U | 0.668 | 0.396 | 0.137 | 0.326 | 0.43 |
| Chrysene | | 0.227 | 0.124 U | 1.16 | 0.617 | 0.299 | 0.579 | 0.551 |
| Dibenzo(a,h)anthracene | | 0.0463 U | 0.124 U | 0.0912 | 0.101 U | 0.0404 | 0.109 U | 0.0667 |
| Di-n-butylphthalate | | | | | | | | |
| Fluoranthene | | 0.419 | 0.354 | 2.31 | 1.34 | 0.535 | 1.51 | 1.56 |
| Fluorene | | 0.0463 U | 0.124 U | 0.135 | 0.101 U | 0.0802 | 0.109 U | 0.156 |
| Indeno(1,2,3-cd)pyrene | | 0.133 | 0.124 U | 0.314 | 0.125 | 0.124 | 0.128 | 0.207 |
| Naphthalene | | 0.0463 U | 0.124 U | 0.0912 U | 0.101 U | 0.0342 | 0.109 U | 0.0456 |
| Phenanthrene | | 0.158 | 0.124 U | 1.14 | 0.689 | 0.466 | 0.757 | 1.23 |
| Pyrene | | 0.348 | 0.196 | 1.29 | 0.874 | 0.81 E | 0.953 | 1.07 |
| Pesticides/PCBs (mg/kg) | | | | | | | | |
| 4,4'-DDD | | 0.0189 U | 0.0481 U | 0.0193 U | 0.0211 U | 0.00635 U | 0.0207 U | 0.0301 |
| 4,4'-DDE | | 0.0189 U | 0.0481 U | 0.0193 U | 0.0211 U | 0.00635 U | 0.0207 U | 0.0109 |
| 4,4'-DDT | | 0.0189 U | 0.0481 U | 0.0193 U | 0.0211 U | 0.00635 U | 0.0207 U | 0.0635 |
| Endrin ketone | | 0.0189 U | 0.0481 U | 0.0193 U | 0.0211 U | 0.00635 U | 0.0207 U | 0.00678 U |
| Aroclor-1254 | | 0.093 U | 0.245 U | 0.193 U | 0.21 U | 0.528 | 0.207 U | 0.0677 U |
| Aroclor-1260 | | 0.093 U | 0.245 U | 0.193 U | 0.21 U | 0.0634 U | 0.207 U | 0.0677 U |
| Dioxins/Furans (mg/kg) | | | | | | | | |
| 1,2,3,4,6,7,8-HpCDD | | 0.00002 | 0.00018 | 0.00049 | 0.00018 | 0.000066 | 0.00043 | 0.000074 |
| 1,2,3,4,6,7,8-HpCDF | | 0.0000059 J | 0.00023 | 0.00064 | 0.00035 | 0.000036 | 0.00071 | 0.00004 |
| 1,2,3,4,7,8,9-HpCDF | | 0.0000014 U | 0.000036 | 0.000099 | 0.000069 A | 0.0000061 | 0.00017 | 0.0000051 |
| 1,2,3,4,7,8-HxCDD | | 0.0000014 U | 0.000021 U | 0.000039 | 0.000018 A | 0.0000034 J | 0.000055 | 0.0000018 J |
| 1,2,3,4,7,8-HxCDF | | 0.0000024 J | 0.00013 | 0.0003 | 0.00021 A | 0.000018 | 0.00032 | 0.000011 |
| 1,2,3,6,7,8-HxCDD | | 0.0000036 J | 0.000037 | 0.00011 | 0.00007 A | 0.000012 | 0.00015 | 0.0000048 |
| 1,2,3,6,7,8-HxCDF | | 0.0000014 U | 0.00015 | 0.00052 | 0.00029 A | 0.000014 | 0.00075 | 0.000012 |
| 1,2,3,7,8,9-HxCDD | | 0.0000017 J | 0.000022 | 0.000068 | 0.000031 | 0.0000072 | 0.000078 | 0.0000028 J |
| 1,2,3,7,8,9-HxCDF | | 0.0000014 U | 0.000075 | 0.0002 | 0.00014 A | 0.0000096 | 0.00042 | 0.0000053 |
| 1,2,3,7,8-PeCDD | | 0.0000014 U | 0.000029 | 0.000076 | 0.000041 | 0.0000052 | 0.00012 | 0.0000022 J |
| 1,2,3,7,8-PeCDF | | 0.0000014 U | 0.000035 | 0.000018 UE | 0.0000018 UEA | 0.0000007 UEA | 0.00023 AN2 | 0.00000073 UEA |
| 2,3,4,6,7,8-HxCDF | | 0.0000014 U | 0.00018 | 0.00042 | 0.00023 A | 0.000013 | 0.00064 | 0.000012 |
| 2,3,4,7,8-PeCDF | | 0.0000017 J | 0.00091 | 0.00031 | 0.00016 A | 0.000076 | 0.0016 A | 0.000028 |
| 2,3,7,8-TCDD | | 0.00000028 UA | 0.0000081 A | 0.000022 A | 0.000012 A | 0.00000062 JA | 0.000033 A | 0.0000052 JA |

Table 4.4
Summary of Analytical Results Detected in Shallow Sediment (0-1 ft) - Inner Cove
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | SED26 6/29/2006 | SED2601 6/22/2006 0 - 1 ft | SED2701 6/22/2006 0 - 1 ft | SED2801 6/21/2006 0.5 - 1 ft | SED2901 6/21/2006 0.5 - 1 ft | SED3001 6/21/2006 0.5 - 1 ft | SED3101 6/21/2006 0.5 - 1 ft | SED3201 6/21/2006 0.5 - 1 ft |
|--|--------------------|----------------------------------|----------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| 2,3,7,8-TCDF | | 0.000016 | 0.000042 UE | 0.000084 A | 0.000032 A | 0.000047 A | 0.000076 A | 0.000006 A |
| OCDD | | 0.000043 | 0.00083 | 0.0029 | 0.00084 | 0.00054 | 0.0016 | 0.00081 |
| OCDF | | 0.000062 J | 0.00013 | 0.00021 | 0.00017 | 0.000037 | 0.00019 | 0.00008 |
| Dioxin Toxicity Equivalent (USEPA, 2010) | | 0.000029 | 0.00038 | 0.0012 | 0.00021 | 0.000038 | 0.0009 | 0.000018 |
| Total HpCDD | | 0.000033 | 0.00038 | 0.001 | 0.0004 | 0.00013 | 0.00094 | 0.00017 |
| Total HpCDF | | 0.000059 J | 0.00051 | 0.0016 | 0.00087 | 0.000094 | 0.002 | 0.00012 |
| Total HxCDD | | 0.000064 | 0.00045 | 0.0014 | 0.0009 | 0.00013 | 0.002 | 0.000051 |
| Total HxCDF | | 0.000054 J | 0.0048 | 0.01 | 0.0083 | 0.00038 | 0.025 | 0.00032 |
| Total PeCDD | | 0.000022 | 0.00024 | 0.00095 | 0.00053 | 0.000055 | 0.0016 | 0.000025 |
| Total PeCDF | | 0.000061 J | 0.0098 | 0.024 | 0.014 | 0.00059 | 0.04 | 0.0005 |
| Total TCDD | | 0.000021 | 0.00013 | 0.00042 | 0.00027 | 0.000021 | 0.00064 | 0.000012 |
| Total TCDF | | 0.000021 | 0.003 | 0.0088 | 0.0037 | 0.00017 | 0.015 | 0.00016 |
| Inorganics (mg/kg) | | | | | | | | |
| Antimony | | 10.1 U | 16.6 U | 19.7 U | 20.4 U | 7 U | 21.3 U | 7.4 U |
| Arsenic | | 36.1 | 36.6 | 33.8 | 31.7 | 2.2 | 14.8 | 1.8 U |
| Barium | | 466 | 123 | 202 | 372 | 25.1 | 113 | 13.4 |
| Beryllium | | 0.87 | 0.85 | 0.64 | 0.65 | 0.11 | 0.61 | 0.1 |
| Cadmium | | 1.57 | 4.39 | 4.73 | 6.44 | 0.75 | 4.13 | 0.93 |
| Chromium | | 18.8 | 148 | 372 | 252 | 172 | 449 | 28.9 |
| Copper | | 180 | 892 | 1930 | 1260 | 1320 | 1790 | 2670 |
| Lead | | 219 | 507 | 659 | 772 | 159 | 1120 | 304 |
| Mercury | | 0.637 | 0.12 U | 1.21 | 1.53 | 0.113 | 1.11 | 0.061 |
| Nickel | | 274 | 853 | 118 | 147 | 19.2 | 99.8 | 22.8 |
| Selenium | | 17.9 | 16.6 U | 19.7 U | 20.4 U | 7 U | 21.3 U | 7.4 U |
| Silver | | 37.9 | 78.3 | 132 | 130 | 38.4 | 131 | 30.3 |
| Zinc | | 209 | 1300 | 1420 | 1480 | 893 | 1440 | 1110 |
| Total Organic Carbon (TOC) | | 29600 > | 46000 | 41000 | 45000 | 6700 | 46000 | 7000 |
| AVS/SEM (umol/kg) | | | | | | | | |
| Antimony | 45.46 | | | | | | | |
| Copper | 8371.08 | | | | | | | |
| Lead | 3249.11 | | | | | | | |
| Silver | 529.87 | | | | | | | |
| Zinc | 20240.53 | | | | | | | |
| AVS | 594.29 | | | | | | | |
| SEM | 32436.04 | | | | | | | |
| Total Petroleum Hydrocarbon (mg/kg) | | | | | | | | |
| Total Petroleum Hydrocarbon | | 88.8 | 413 | 394 | 459 | 1240 | 961 | 209 |

Notes:

[1] Average calculated using one-half the reporting limit for non-detects

AVS/SEM - Acid Volatile Sulfide/Simultaneously Extracted Metals

mg/kg - milligram per kilogram

umol/kg - micromole per kilogram

U - not detected, value is reporting limit

J - value is estimated

B - analyte detected in sample and the associated blank

E - for dioxin/furan - PCDE interference

E - for other analytes - exceeds calibration range

A - detection limit based on signal-to-noise measurement

I - interference

N2 - value obtained from additional analysis

Prepared By: EYM 12/6/12

Checked By: KJC 12/6/12

**Table 4.5
Summary of Analytical Results Detected in Shallow Sediment (0-1 ft) - Outer Cove Study Area
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island**

| Parameter | Frequency of Detection | Range of Reporting Limits for Non Detects | Range of Detected Concentrations | Average [1] | SED1101 6/22/2006 0 - 1 ft | SED1301 6/22/2006 0 - 0.5 ft | SED1401 6/22/2006 0 - 1 ft | SED1501 6/22/2006 0 - 1 ft | SED-33-01 12/19/2011 0 - 1 ft |
|--|------------------------|---|----------------------------------|-------------|----------------------------|------------------------------|----------------------------|----------------------------|-------------------------------|
| Volatile Organic Compound (mg/kg) | | | | | | | | | |
| 1,1,1-Trichloroethane | 1 / 4 | 0.0045 - 0.0427 | 0.863 : 0.863 | 0.22 | 0.0427 U | 0.0045 U | 0.012 U | 0.863 | |
| 1,1-Dichloroethane | 1 / 4 | 0.0045 - 0.0427 | 0.0518 : 0.0518 | 0.020 | 0.0427 U | 0.0045 U | 0.012 U | 0.0518 | |
| 1,1-Dichloroethene | 1 / 4 | 0.0045 - 0.0427 | 0.0467 : 0.0467 | 0.019 | 0.0427 U | 0.0045 U | 0.012 U | 0.0467 | |
| Acetone | 3 / 4 | 0.0461 - 0.0461 | 0.105 : 0.649 | 0.24 | 0.649 | 0.105 | 0.202 | 0.0461 U | |
| Carbon disulfide | 2 / 4 | 0.012 - 0.0427 | 0.0046 : 0.021 | 0.013 | 0.0427 U | 0.0046 | 0.012 U | 0.021 | |
| cis-1,2-Dichloroethene | 1 / 4 | 0.0045 - 0.0427 | 0.296 : 0.296 | 0.081 | 0.0427 U | 0.0045 U | 0.012 U | 0.296 | |
| Tetrachloroethene | 1 / 4 | 0.0045 - 0.0427 | 0.0161 : 0.0161 | 0.011 | 0.0427 U | 0.0045 U | 0.012 U | 0.0161 | |
| trans-1,2-Dichloroethene | 1 / 4 | 0.0045 - 0.0427 | 0.0053 : 0.0053 | 0.0087 | 0.0427 U | 0.0045 U | 0.012 U | 0.0053 | |
| Trichloroethene | 1 / 4 | 0.0045 - 0.0427 | 1.47 : 1.47 | 0.37 | 0.0427 U | 0.0045 U | 0.012 U | 1.47 | |
| Semivolatile Organic Compound (mg/kg) | | | | | | | | | |
| Benzo(b)fluoranthene | 2 / 4 | 0.0315 - 0.0943 | 0.0378 : 0.245 | 0.086 | 0.245 | 0.0378 | 0.0943 U | 0.0315 U | |
| Fluoranthene | 3 / 4 | 0.0315 - 0.0315 | 0.0833 : 0.327 | 0.16 | 0.327 | 0.0833 | 0.204 | 0.0315 U | |
| Phenanthrene | 2 / 4 | 0.0315 - 0.163 | 0.0333 : 0.0999 | 0.058 | 0.163 U | 0.0333 | 0.0999 | 0.0315 U | |
| Pyrene | 3 / 4 | 0.0315 - 0.0315 | 0.0513 : 0.258 | 0.12 | 0.258 | 0.0513 | 0.153 | 0.0315 U | |
| Dioxins/Furans (mg/kg) | | | | | | | | | |
| 1,2,3,4,6,7,8-HpCDD | 12 / 22 | 0.0000008 - 0.000005 | 0.0000022 : 0.00059 | 0.00011 | 0.00028 | 0.0000022 J | 0.000071 | 0.0000008 U | 0.000005 U |
| 1,2,3,4,6,7,8-HpCDF | 11 / 22 | 0.00000076 - 0.000005 | 0.0000075 : 0.00028 | 0.000057 | 0.00014 | 0.00000076 U | 0.000037 | 0.0000008 U | 0.000005 U |
| 1,2,3,4,7,8,9-HpCDF | 8 / 22 | 0.00000076 - 0.000005 | 0.0000044 : 0.000024 | 0.000071 | 0.000018 | 0.00000076 U | 0.000044 J | 0.0000008 U | 0.000005 U |
| 1,2,3,4,7,8-HxCDD | 8 / 22 | 0.00000076 - 0.000005 | 0.0000033 : 0.000014 | 0.000046 | 0.0000095 J | 0.00000076 U | 0.000033 J | 0.0000008 U | 0.000005 U |
| 1,2,3,4,7,8-HxCDF | 6 / 22 | 0.00000076 - 0.000005 | 0.000018 : 0.000075 | 0.000015 | 0.000036 A | 0.00000076 U | 0.000017 UE | 0.0000008 U | 0.000005 U |
| 1,2,3,6,7,8-HxCDD | 8 / 22 | 0.00000076 - 0.000005 | 0.0000068 : 0.000044 | 0.000011 | 0.000025 | 0.00000076 U | 0.000068 J | 0.0000008 U | 0.000005 U |
| 1,2,3,6,7,8-HxCDF | 9 / 22 | 0.00000076 - 0.000005 | 0.0000058 : 0.00015 | 0.000028 | 0.000086 A | 0.00000076 U | 0.000026 | 0.0000008 U | 0.000005 U |
| 1,2,3,7,8,9-HxCDD | 8 / 22 | 0.00000076 - 0.000005 | 0.0000034 : 0.000031 | 0.000080 | 0.000017 | 0.00000076 U | 0.000034 J | 0.0000008 U | 0.000005 U |
| 1,2,3,7,8,9-HxCDF | 6 / 22 | 0.00000076 - 0.000005 | 0.0000084 : 0.000041 | 0.000077 | 0.00003 A | 0.00000076 U | 0.000084 J | 0.0000008 U | 0.000005 U |
| 1,2,3,7,8-PeCDD | 8 / 22 | 0.00000076 - 0.000005 | 0.0000048 : 0.000022 | 0.000062 | 0.000011 J | 0.00000076 U | 0.000048 J | 0.0000008 U | 0.000005 U |
| 1,2,3,7,8-PeCDF | 5 / 22 | 0.00000076 - 0.000005 | 0.0000084 : 0.000043 | 0.000074 | 0.000032 A | 0.00000076 U | 0.000084 JA | 0.0000008 U | 0.000005 U |
| 2,3,4,6,7,8-HxCDF | 10 / 22 | 0.00000076 - 0.000005 | 0.0000053 : 0.00011 | 0.000028 | 0.00008 | 0.00000076 U | 0.000051 | 0.0000008 U | 0.000005 U |
| 2,3,4,7,8-PeCDF | 12 / 22 | 0.0000008 - 0.000005 | 0.0000086 : 0.00066 | 0.00010 | 0.00043 A | 0.00000086 J | 0.00015 A | 0.0000008 U | 0.000005 U |
| 2,3,7,8-TCDD | 8 / 22 | 0.00000015 - 0.000001 | 0.0000014 : 0.00001 | 0.000019 | 0.000042 A | 0.00000015 U | 0.000014 JA | 0.00000016 U | 0.000001 U |
| 2,3,7,8-TCDF | 11 / 22 | 0.00000016 - 0.000001 | 0.0000019 : 0.00012 | 0.000018 | 0.0000057 UEA | 0.00000019 J | 0.000076 A | 0.00000016 U | 0.000001 U |
| OCDD | 13 / 22 | 0.00001 - 0.00001 | 0.0000044 : 0.0045 | 0.00081 | 0.0018 | 0.000016 B | 0.00047 | 0.0000044 BJ | 0.00001 U |
| OCDF | 10 / 22 | 0.0000016 - 0.00001 | 0.0000016 : 0.00027 | 0.000048 | 0.000087 | 0.0000016 J | 0.000036 | 0.0000016 U | 0.00001 U |
| Dioxin Toxicity Equivalent (USEPA, 2010) | 13 / 22 | 0.0000057 - 0.0000057 | 0.0000091 : 0.00027 | 0.000052 | 0.00018 | 0.000001 | 0.000063 | 0.0000091 | 0.0000057 U |
| Total HpCDD | 12 / 22 | 0.0000008 - 0.000005 | 0.0000039 : 0.0014 | 0.00027 | 0.00063 | 0.0000039 | 0.00014 | 0.0000008 U | 0.000005 U |
| Total HpCDF | 12 / 22 | 0.0000008 - 0.000005 | 0.0000011 : 0.00056 | 0.00011 | 0.00033 | 0.0000011 J | 0.000089 | 0.0000008 U | 0.000005 U |
| Total HxCDD | 10 / 22 | 0.00000076 - 0.000005 | 0.000007 : 0.00056 | 0.00012 | 0.0003 | 0.00000076 U | 0.000087 | 0.0000008 U | 0.000005 U |
| Total HxCDF | 13 / 22 | 0.000005 - 0.000005 | 0.0000011 : 0.0038 | 0.00085 | 0.0023 | 0.000003 J | 0.00051 | 0.0000011 J | 0.000005 U |
| Total PeCDD | 8 / 22 | 0.00000076 - 0.000005 | 0.000047 : 0.00023 | 0.000052 | 0.00014 | 0.00000076 U | 0.000047 | 0.0000008 U | 0.000005 U |
| Total PeCDF | 13 / 22 | 0.000005 - 0.000005 | 0.0000031 : 0.0075 | 0.0016 | 0.0055 | 0.0000074 | 0.0013 | 0.0000031 J | 0.000005 U |
| Total TCDD | 10 / 22 | 0.00000015 - 0.000001 | 0.000001 : 0.00012 | 0.000027 | 0.000089 | 0.00000015 U | 0.000029 | 0.00000016 U | 0.000001 U |
| Total TCDF | 13 / 22 | 0.000001 - 0.000001 | 0.0000013 : 0.0022 | 0.00054 | 0.0016 | 0.0000031 | 0.00042 | 0.0000013 | 0.000001 U |
| Inorganics (mg/kg) | | | | | | | | | |
| Arsenic | 21 / 22 | 2 - 2 | 3.7 : 47.6 | 16.4 | 4.8 | 11.5 | 47.6 | 12.6 | 5 |
| Barium | 4 / 4 | | 9.7 : 156 | 77 | 156 | 11.5 | 130 | 9.7 | |
| Beryllium | 18 / 22 | 0.07 - 0.08 | 0.1 : 0.91 | 0.34 | 0.47 | 0.07 U | 0.35 | 0.07 U | 0.16 |
| Cadmium | 8 / 22 | 0.35 - 0.71 | 1.57 : 3.24 | 1.1 | 3.24 | 0.67 U | 2.26 | 0.66 U | 0.38 U |
| Chromium | 22 / 22 | | 1.8 : 213 | 56 | 213 | 4.7 | 49.1 | 2.9 | 4.3 |
| Copper | 21 / 22 | 2 - 2 | 3.1 : 423 | 131 | 423 | 5.3 | 215 | 5.8 | 18 |

Table 4.5
Summary of Analytical Results Detected in Shallow Sediment (0-1 ft) - Outer Cove Study Area
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | Frequency of Detection | Range of Reporting Limits for Non Detects | Range of Detected Concentrations | Average [1] | SED1101 6/22/2006 0 - 1 ft | SED1301 6/22/2006 0 - 0.5 ft | SED1401 6/22/2006 0 - 1 ft | SED1501 6/22/2006 0 - 1 ft | SED-33-01 12/19/2011 0 - 1 ft |
|--------------------------|------------------------|---|----------------------------------|-------------|----------------------------------|------------------------------------|----------------------------------|----------------------------------|-------------------------------------|
| Lead | 17 / 22 | 3.9 - 6.7 | 3.5 : 611 | 191 | 590 | 6.7 U | 250 | 6.6 U | 127 |
| Mercury | 9 / 22 | 0.015 - 0.208 | 0.07 : 1.32 | 0.30 | 0.208 U | 0.04 U | 0.116 U | 0.041 U | 0.018 U |
| Nickel | 22 / 22 | | 2.1 : 85.7 | 28 | 85.7 | 22.5 | 31.4 | 6.8 | 41 |
| Silver | 13 / 22 | 0.35 - 0.67 | 0.38 : 29.7 | 8.0 | 29.7 | 0.67 U | 18.5 | 0.66 U | 0.38 |
| Zinc | 22 / 22 | | 10.5 : 620 | 194 | 620 | 41.4 | 363 | 12.6 | 35.1 |
| Percent Solid (%) | 6 / 6 | | 14.7 : 83.8 | 64 | | | | | 76.7 |
| Total Organic Carbon | 21 / 22 | 1200 - 1200 | 1500 : 140000 | 44330 | 65000 | 2700 | 31000 | 7000 | 8870 H |
| AVS/SEM (umol/kg) | | | | | | | | | |
| Arsenic | 12 / 18 | 38.3 - 41.6 | 44.6 : 372 | 117 | | | | | 40 U |
| Beryllium | 12 / 18 | 6.44 - 6.92 | 7.69 : 75.4 | 28 | | | | | 10.9 |
| Cadmium | 7 / 18 | 2.55 - 5.11 | 5.01 : 33 | 9.3 | | | | | 2.67 U |
| Chromium | 14 / 18 | 22.3 - 24 | 24.1 : 1780 | 539 | | | | | 23.1 U |
| Copper | 18 / 18 | | 26 : 4960 | 1424 | | | | | 119 |
| Lead | 18 / 18 | | 12.3 : 3070 | 934 | | | | | 170 |
| Nickel | 9 / 18 | 48.8 - 97.8 | 138 : 767 | 250 | | | | | 733 |
| Silver | 9 / 18 | 5.31 - 10.6 | 8.11 : 81.6 | 24 | | | | | 13.1 |
| Zinc | 18 / 18 | | 94.4 : 8540 | 2863 | | | | | 581 |
| AVS | 14 / 18 | 1.83 - 3.39 | 7.91 : 15600 | 2532 | | | | | 18.3 |

Notes:

- [1] Average calculated using one-half the reporting limit for non-detects
- AVS/SEM - Acid Volatile Sulfide/Simultaneously Extracted Metals
- mg/kg - milligram per kilogram
- umol/kg - micromole per kilogram
- U - not detected, value is reporting limit
- J - value is estimated
- B - analyte detected in sample and the associated blank
- H - holding time exceeded
- E - PCDE interference
- A - detection limit based on signal-to-noise measurement
- D - value is from a diluted analyses

Table 4.5
Summary of Analytical Results Detected in Shallow Sediment (0-1 ft) - Outer Cove Study Area
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | SED-34-01 12/20/2011 0 - 1 ft | SED-35-01 12/16/2011 0 - 1 ft | SED-36-01 12/14/2011 0 - 1 ft | SED-37-01 12/15/2011 0 - 1 ft | SED-38-01 12/13/2011 0 - 1 ft | SED-39-01 12/14/2011 0 - 1 ft | SED-40-01 12/16/2011 0 - 1 ft | SED-41-01 12/15/2011 0 - 1 ft | SED-42-01 12/14/2011 0 - 1 ft | SED-43-01 12/19/2011 0 - 1 ft |
|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Volatile Organic Compound (mg/kg) | | | | | | | | | | |
| 1,1,1-Trichloroethane | | | | | | | | | | |
| 1,1-Dichloroethane | | | | | | | | | | |
| 1,1-Dichloroethene | | | | | | | | | | |
| Acetone | | | | | | | | | | |
| Carbon disulfide | | | | | | | | | | |
| cis-1,2-Dichloroethene | | | | | | | | | | |
| Tetrachloroethene | | | | | | | | | | |
| trans-1,2-Dichloroethene | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | |
| Semivolatile Organic Compound (mg/kg) | | | | | | | | | | |
| Benzo(b)fluoranthene | | | | | | | | | | |
| Fluoranthene | | | | | | | | | | |
| Phenanthrene | | | | | | | | | | |
| Pyrene | | | | | | | | | | |
| Dioxins/Furans (mg/kg) | | | | | | | | | | |
| 1,2,3,4,6,7,8-HpCDD | 0.000005 U | 0.000005 U | 0.000014 | 0.000005 U | 0.000005 U | 0.0003 | 0.000005 U | 0.00032 | 0.000005 U | 0.000018 |
| 1,2,3,4,6,7,8-HpCDF | 0.000005 U | 0.000005 U | 0.000013 | 0.000005 U | 0.000005 U | 0.00018 | 0.000005 U | 0.00018 | 0.000005 U | 0.0000095 |
| 1,2,3,4,7,8,9-HpCDF | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000023 | 0.000005 U | 0.00002 | 0.000005 U | 0.000005 U |
| 1,2,3,4,7,8-HxCDD | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.00001 | 0.000005 U | 0.00001 | 0.000005 U | 0.000005 U |
| 1,2,3,4,7,8-HxCDF | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000075 | 0.000005 U | 0.000005 U |
| 1,2,3,6,7,8-HxCDD | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000033 | 0.000005 U | 0.000032 | 0.000005 U | 0.000005 U |
| 1,2,3,6,7,8-HxCDF | 0.000005 U | 0.000005 U | 0.0000058 | 0.000005 U | 0.000005 U | 0.00015 | 0.000005 U | 0.00013 | 0.000005 U | 0.0000066 |
| 1,2,3,7,8,9-HxCDD | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000021 | 0.000005 U | 0.000022 | 0.000005 U | 0.000005 U |
| 1,2,3,7,8,9-HxCDF | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000013 | 0.000005 U | 0.000041 | 0.000005 U | 0.000005 U |
| 1,2,3,7,8-PeCDD | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.00002 | 0.000005 U | 0.000018 | 0.000005 U | 0.000005 U |
| 1,2,3,7,8-PeCDF | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000043 | 0.000005 U | 0.000005 U |
| 2,3,4,6,7,8-HxCDF | 0.000005 U | 0.000005 U | 0.0000056 | 0.000005 U | 0.000005 U | 0.00011 | 0.000005 U | 0.000082 | 0.000005 U | 0.0000053 |
| 2,3,4,7,8-PeCDF | 0.000005 U | 0.000005 U | 0.000009 | 0.000005 U | 0.000005 U | 0.00011 | 0.000005 U | 0.00066 | 0.000005 U | 0.0000082 |
| 2,3,7,8-TCDD | 0.000001 U | 0.000001 U | 0.000001 U | 0.000001 U | 0.000001 U | 0.00001 | 0.000001 U | 0.0000052 | 0.000001 U | 0.000001 U |
| 2,3,7,8-TCDF | 0.000001 U | 0.000001 U | 0.0000041 | 0.000001 U | 0.000001 U | 0.000054 | 0.000001 U | 0.000054 | 0.000001 U | 0.0000036 |
| OCDD | 0.00001 U | 0.00001 U | 0.0001 | 0.00001 U | 0.00001 U | 0.0021 | 0.00001 U | 0.0021 | 0.00001 U | 0.00012 |
| OCDF | 0.00001 U | 0.00001 U | 0.000014 | 0.00001 U | 0.00001 U | 0.00014 | 0.00001 U | 0.00012 | 0.00001 U | 0.00001 U |
| Dioxin Toxicity Equivalent (USEPA, 2010) | 0.0000057 U | 0.0000057 U | 0.0000089 | 0.0000057 U | 0.0000057 U | 0.00011 | 0.0000057 U | 0.00027 | 0.0000057 U | 0.0000087 |
| Total HpCDD | 0.000005 U | 0.000005 U | 0.000028 | 0.000005 U | 0.000005 U | 0.00071 | 0.000005 U | 0.00078 | 0.000005 U | 0.00004 |
| Total HpCDF | 0.000005 U | 0.000005 U | 0.000021 | 0.000005 U | 0.000005 U | 0.00045 | 0.000005 U | 0.00022 | 0.000005 U | 0.000019 |
| Total HxCDD | 0.000005 U | 0.000005 U | 0.000007 | 0.000005 U | 0.000005 U | 0.00042 | 0.000005 U | 0.00043 | 0.000005 U | 0.0000087 |
| Total HxCDF | 0.000005 U | 0.000005 U | 0.00014 | 0.000005 U | 0.000005 U | 0.0038 | 0.000005 U | 0.0038 | 0.000005 U | 0.00015 |
| Total PeCDD | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.00023 | 0.000005 U | 0.00018 | 0.000005 U | 0.000005 U |
| Total PeCDF | 0.000005 U | 0.000005 U | 0.00026 | 0.000005 U | 0.000005 U | 0.0075 E | 0.000005 U | 0.0062 E | 0.000005 U | 0.00023 |
| Total TCDD | 0.000001 U | 0.000001 U | 0.0000026 | 0.000001 U | 0.000001 U | 0.00011 | 0.000001 U | 0.00012 | 0.000001 U | 0.000001 U |
| Total TCDF | 0.000001 U | 0.000001 U | 0.00013 | 0.000001 U | 0.000001 U | 0.0021 E | 0.000001 U | 0.0022 E | 0.000001 U | 0.00011 |
| Inorganics (mg/kg) | | | | | | | | | | |
| Arsenic | 3.7 | 18.5 | 16.3 | 4.6 | 4.1 | 24.7 | 5.6 | 25.2 | 2 U | 20.2 |
| Barium | | | | | | | | | | |
| Beryllium | 0.11 | 0.18 | 0.32 | 0.13 | 0.1 | 0.77 | 0.17 | 0.83 | 0.08 U | 0.2 |
| Cadmium | 0.42 U | 0.58 U | 0.71 U | 0.39 U | 0.39 U | 2.11 | 0.54 U | 2.27 | 0.4 U | 0.63 U |
| Chromium | 4.5 | 7.6 | 27.9 | 3.5 | 3.7 | 127 | 3.2 | 150 | 1.8 | 12.7 |
| Copper | 210 | 5.9 | 82.7 | 3.1 | 6.6 | 328 | 4.6 | 333 | 2 U | 24.7 |

Table 4.5
Summary of Analytical Results Detected in Shallow Sediment (0-1 ft) - Outer Cove Study Area
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | SED-34-01 12/20/2011 0 - 1 ft | SED-35-01 12/16/2011 0 - 1 ft | SED-36-01 12/14/2011 0 - 1 ft | SED-37-01 12/15/2011 0 - 1 ft | SED-38-01 12/13/2011 0 - 1 ft | SED-39-01 12/14/2011 0 - 1 ft | SED-40-01 12/16/2011 0 - 1 ft | SED-41-01 12/15/2011 0 - 1 ft | SED-42-01 12/14/2011 0 - 1 ft | SED-43-01 12/19/2011 0 - 1 ft |
|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Lead | 23.6 | 8.1 | 88.1 | 3.9 U | 6.6 | 475 | 5.4 U | 467 | 4 U | 43.4 |
| Mercury | 0.015 U | 0.023 U | 0.141 | 0.018 U | 0.019 U | 1.32 | 0.02 U | 1.01 | 0.016 U | 0.102 |
| Nickel | 3.8 | 8.5 | 18.7 | 3.3 | 7 | 50.7 | 3.2 | 58.8 | 2.1 | 6.4 |
| Silver | 6.79 | 0.58 U | 6.38 | 0.39 U | 0.39 U | 23.8 | 0.54 U | 22.9 | 0.4 U | 1.12 |
| Zinc | 30.7 | 17.4 | 157 | 10.5 | 37.8 | 491 | 13.1 | 494 | 10.7 | 40.8 |
| Percent Solid (%) | 83.8 | | | | | | | | | 45.4 |
| Total Organic Carbon | 1500 | 10000 | 37000 | 6700 | 5400 | 140000 | 2000 | 130000 | 4300 | 37700 H |
| AVS/SEM (umol/kg) | | | | | | | | | | |
| Arsenic | 40.6 U | 104 | 125 | 41.6 U | 44.6 | 186 | 38.8 U | 197 | 40.7 U | 118 |
| Beryllium | 6.75 U | 6.8 U | 21.7 | 6.92 U | 6.6 U | 60.9 | 6.44 U | 58.1 | 7.69 | 17.6 |
| Cadmium | 2.71 U | 2.73 U | 5.01 | 2.77 U | 2.65 U | 20.2 | 2.58 U | 24.1 | 2.71 U | 5.11 U |
| Chromium | 27.5 | 28.1 | 229 | 24 U | 22.9 U | 1370 | 22.3 U | 1780 | 24.1 | 105 |
| Copper | 482 | 47.6 | 674 | 26 | 48.7 | 3870 | 33 | 4130 | 27.6 | 274 |
| Lead | 79.6 | 17.4 | 313 | 12.9 | 18.4 | 2320 | 13.2 | 2460 | 12.3 | 265 |
| Nickel | 51.8 U | 52.2 U | 149 | 53.1 U | 138 | 416 | 49.5 U | 502 | 51.9 U | 97.8 U |
| Silver | 8.11 | 5.68 U | 19.4 | 5.78 U | 5.51 U | 64.2 | 5.38 U | 75.8 | 5.65 U | 10.6 U |
| Zinc | 415 | 157 | 1880 | 94.4 | 775 | 7640 | 123 | 8090 | 319 | 727 |
| AVS | 80.2 | 8.46 | 3.39 U | 7.91 | 14.8 | 4160 D | 1.83 U | 6490 D | 1.93 U | 2180 D |

Notes:

- [1] Average calculated using one-half the reporting limit for non-detects
- AVS/SEM - Acid Volatile Sulfide/Simultaneously Extracted Metals
- mg/kg - milligram per kilogram
- umol/kg - micromole per kilogram
- U - not detected, value is reporting limit
- J - value is estimated
- B - analyte detected in sample and the associated blank
- H - holding time exceeded
- E - PCDE interference
- A - detection limit based on signal-to-noise measurement
- D - value is from a diluted analyses

Table 4.5
Summary of Analytical Results Detected in Shallow Sediment (0-1 ft) - Outer Cove Study Area
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | SED-44-01 12/15/2011 0 - 1 ft | SED-45-01 12/14/2011 0 - 1 ft | SED-46-01 12/20/2011 0 - 1 ft | SED-47-01 12/15/2011 0 - 1 ft | SED-48-01 12/14/2011 0 - 1 ft | SED-59-01 12/20/2011 0 - 1 ft | SED-60-01 12/20/2011 0 - 1 ft |
|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Volatile Organic Compound (mg/kg) | | | | | | | |
| 1,1,1-Trichloroethane | | | | | | | |
| 1,1-Dichloroethane | | | | | | | |
| 1,1-Dichloroethene | | | | | | | |
| Acetone | | | | | | | |
| Carbon disulfide | | | | | | | |
| cis-1,2-Dichloroethene | | | | | | | |
| Tetrachloroethene | | | | | | | |
| trans-1,2-Dichloroethene | | | | | | | |
| Trichloroethene | | | | | | | |
| Semivolatile Organic Compound (mg/kg) | | | | | | | |
| Benzo(b)fluoranthene | | | | | | | |
| Fluoranthene | | | | | | | |
| Phenanthrene | | | | | | | |
| Pyrene | | | | | | | |
| Dioxins/Furans (mg/kg) | | | | | | | |
| 1,2,3,4,6,7,8-HpCDD | 0.00023 | 0.000014 | 0.00032 | 0.00034 | 0.00059 | 0.000005 U | 0.000005 U |
| 1,2,3,4,6,7,8-HpCDF | 0.00014 | 0.0000075 | 0.00011 | 0.00014 | 0.00028 | 0.000005 U | 0.000005 U |
| 1,2,3,4,7,8,9-HpCDF | 0.000016 | 0.000005 U | 0.000009 | 0.000012 | 0.000024 | 0.000005 U | 0.000005 U |
| 1,2,3,4,7,8-HxCDD | 0.0000077 | 0.000005 U | 0.0000065 | 0.0000092 | 0.000014 | 0.000005 U | 0.000005 U |
| 1,2,3,4,7,8-HxCDF | 0.000056 | 0.000005 U | 0.000018 | 0.000036 | 0.00007 | 0.000005 U | 0.000005 U |
| 1,2,3,6,7,8-HxCDD | 0.000023 | 0.000005 U | 0.000018 | 0.000024 | 0.000044 | 0.000005 U | 0.000005 U |
| 1,2,3,6,7,8-HxCDF | 0.000099 | 0.000005 U | 0.000037 | 0.000058 | 0.000005 U | 0.000005 U | 0.000005 U |
| 1,2,3,7,8,9-HxCDD | 0.000016 | 0.000005 U | 0.000016 | 0.000019 | 0.000031 | 0.000005 U | 0.000005 U |
| 1,2,3,7,8,9-HxCDF | 0.00003 | 0.000005 U | 0.000005 U | 0.000012 | 0.000005 U | 0.000005 U | 0.000005 U |
| 1,2,3,7,8-PeCDD | 0.000012 | 0.000005 U | 0.0000074 | 0.00001 | 0.000022 | 0.000005 U | 0.000005 U |
| 1,2,3,7,8-PeCDF | 0.000023 | 0.000005 U | 0.000005 U | 0.000018 | 0.000005 U | 0.000005 U | 0.000005 U |
| 2,3,4,6,7,8-HxCDF | 0.000084 | 0.000005 U | 0.000025 | 0.000046 | 0.000096 | 0.000005 U | 0.000005 U |
| 2,3,4,7,8-PeCDF | 0.00045 | 0.0000057 | 0.000038 | 0.00021 | 0.00014 | 0.000005 U | 0.000005 U |
| 2,3,7,8-TCDD | 0.0000031 | 0.000001 U | 0.0000024 | 0.0000024 | 0.000006 A | 0.000001 U | 0.000001 U |
| 2,3,7,8-TCDF | 0.000038 | 0.0000029 | 0.000043 | 0.000057 | 0.00012 A | 0.000001 U | 0.000001 U |
| OCDD | 0.0015 | 0.00012 | 0.0025 | 0.0025 | 0.0045 | 0.00001 U | 0.00001 U |
| OCDF | 0.000081 | 0.00001 U | 0.00014 | 0.00012 | 0.00027 | 0.00001 U | 0.00001 U |
| Dioxin Toxicity Equivalent (USEPA, 2010) | 0.00019 | 0.0000071 | 0.000043 | 0.00011 | 0.00012 | 0.0000057 U | 0.0000057 U |
| Total HpCDD | 0.00056 | 0.000031 | 0.00073 | 0.00082 | 0.0014 | 0.000005 U | 0.000005 U |
| Total HpCDF | 0.00016 | 0.000014 | 0.00024 | 0.00026 | 0.00056 | 0.000005 U | 0.000005 U |
| Total HxCDD | 0.00032 | 0.000005 U | 0.00022 | 0.00033 | 0.00056 | 0.000005 U | 0.000005 U |
| Total HxCDF | 0.0027 | 0.000058 | 0.00081 | 0.0015 | 0.003 | 0.000005 U | 0.000005 U |
| Total PeCDD | 0.00012 | 0.000005 U | 0.000066 | 0.000095 | 0.00023 | 0.000005 U | 0.000005 U |
| Total PeCDF | 0.0045 E | 0.000098 | 0.0013 | 0.0018 | 0.0054 | 0.000005 U | 0.000005 U |
| Total TCDD | 0.000089 | 0.000001 | 0.000031 | 0.000062 | 0.000053 | 0.000001 U | 0.000001 U |
| Total TCDF | 0.0018 E | 0.000043 | 0.00042 | 0.0011 | 0.0019 | 0.000001 U | 0.000001 U |
| Inorganics (mg/kg) | | | | | | | |
| Arsenic | 23 | 7.1 | 42 | 26.4 | 23.7 | 28.1 | 4.3 |
| Barium | | | | | | | |
| Beryllium | 0.82 | 0.16 | 0.65 | 0.9 | 0.91 | 0.08 U | 0.12 |
| Cadmium | 1.57 | 0.61 U | 2.64 | 2.83 | 2.66 | 0.37 U | 0.35 U |
| Chromium | 87.6 | 8 | 127 | 196 | 189 | 3.9 | 3.2 |
| Copper | 189 | 14 | 336 | 342 | 327 | 5.6 | 5.1 |

Table 4.5
Summary of Analytical Results Detected in Shallow Sediment (0-1 ft) - Outer Cove Study Area
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | SED-44-01 12/15/2011 0 - 1 ft | SED-45-01 12/14/2011 0 - 1 ft | SED-46-01 12/20/2011 0 - 1 ft | SED-47-01 12/15/2011 0 - 1 ft | SED-48-01 12/14/2011 0 - 1 ft | SED-59-01 12/20/2011 0 - 1 ft | SED-60-01 12/20/2011 0 - 1 ft |
|--------------------------|--|--|--|--|--|--|--|
| Lead | 393 | 25.1 | 490 | 580 | 611 | 4.5 | 3.5 |
| Mercury | 0.972 | 0.07 | 0.482 | 1.03 | 1.22 | 0.016 U | 0.019 U |
| Nickel | 34.2 | 4.1 | 69.4 | 77.3 | 69.2 | 5 | 2.8 |
| Silver | 13.9 | 0.66 | 17 | 16.7 | 16 | 0.37 U | 0.35 U |
| Zinc | 363 | 31.8 | 467 | 496 | 501 | 18.3 | 15.3 |
| Percent Solid (%) | | | 14.7 | | | 78.6 | 83.4 |
| Total Organic Carbon | 99000 | 19000 | 123000 | 130000 | 110000 | 4500 | 1200 U |
| AVS/SEM (umol/kg) | | | | | | | |
| Arsenic | 205 | 63.3 | 372 | 235 | 223 | 121 | 38.3 U |
| Beryllium | 66.9 | 11 | 75.2 | 67.6 | 75.4 | 6.85 U | 9.59 |
| Cadmium | 17 | 4.18 U | 33 | 27.6 | 24.5 | 2.74 U | 2.55 U |
| Chromium | 1010 | 72.3 | 1450 | 1730 | 1730 | 35.8 | 64.2 |
| Copper | 2680 | 172 | 4960 | 4480 | 3510 | 40.6 | 57.6 |
| Lead | 2300 | 138 | 2640 | 2950 | 3070 | 14.8 | 15.7 |
| Nickel | 291 | 80 U | 767 | 737 | 498 | 52.6 U | 48.8 U |
| Silver | 37.1 | 8.71 U | 81.6 | 61.7 | 33.8 | 5.72 U | 5.31 U |
| Zinc | 6190 | 525 | 8540 | 7640 | 7410 | 219 | 214 |
| AVS | 6530 D | 205 | 15600 D | 5300 D | 4970 D | 1.95 U | 11.7 |

Notes:

- [1] Average calculated using one-half the reporting limit for non-detects
- AVS/SEM - Acid Volatile Sulfide/Simultaneously Extracted Metals
- mg/kg - milligram per kilogram
- umol/kg - micromole per kilogram
- U - not detected, value is reporting limit
- J - value is estimated
- B - analyte detected in sample and the associated blank
- H - holding time exceeded
- E - PCDE interference
- A - detection limit based on signal-to-noise measurement
- D - value is from a diluted analyses

Prepared By: EYM 12/6/12
Checked By: KJC 12/6/12

Table 4.6
Summary of Analytical Results Detected in Shallow Sediment (0-1 ft) - Remainder of the Pond
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | Frequency of Detection | Range of Reporting Limits for Non Detects | Range of Detected Concentrations | Average [1] | SED1001 6/22/2006 0_5 - 1 ft | SED1201 6/22/2006 0_5 - 1 ft |
|--|------------------------|---|----------------------------------|-------------|------------------------------|------------------------------|
| Volatile Organic Compound (mg/kg) | | | | | | |
| Acetone | 1 / 2 | 0.0403 - 0.0403 | 0.0757 : 0.0757 | 0.048 | 0.0403 U | 0.0757 |
| Semivolatile Organic Compound (mg/kg) | | | | | | |
| Acenaphthene | 1 / 2 | 0.0305 - 0.0305 | 0.0564 : 0.0564 | 0.036 | 0.0305 U | 0.0564 |
| Anthracene | 1 / 2 | 0.0305 - 0.0305 | 0.276 : 0.276 | 0.15 | 0.0305 U | 0.276 |
| Benzo(a)anthracene | 1 / 2 | 0.0305 - 0.0305 | 0.685 : 0.685 | 0.35 | 0.0305 U | 0.685 |
| Benzo(a)pyrene | 1 / 2 | 0.0305 - 0.0305 | 0.862 : 0.862 | 0.44 | 0.0305 U | 0.862 |
| Benzo(b)fluoranthene | 1 / 2 | 0.0305 - 0.0305 | 1.41 : 1.41 | 0.71 | 0.0305 U | 1.41 |
| Benzo(g,h,i)perylene | 1 / 2 | 0.0305 - 0.0305 | 0.244 : 0.244 | 0.13 | 0.0305 U | 0.244 |
| Benzo(k)fluoranthene | 1 / 2 | 0.0305 - 0.0305 | 0.636 : 0.636 | 0.33 | 0.0305 U | 0.636 |
| Chrysene | 1 / 2 | 0.0305 - 0.0305 | 0.625 : 0.625 | 0.32 | 0.0305 U | 0.625 |
| Dibenzo(a,h)anthracene | 1 / 2 | 0.0305 - 0.0305 | 0.0807 : 0.0807 | 0.048 | 0.0305 U | 0.0807 |
| Fluoranthene | 1 / 2 | 0.0305 - 0.0305 | 1.92 : 1.92 | 0.97 | 0.0305 U | 1.92 |
| Fluorene | 1 / 2 | 0.0305 - 0.0305 | 0.107 : 0.107 | 0.061 | 0.0305 U | 0.107 |
| Indeno(1,2,3-cd)pyrene | 1 / 2 | 0.0305 - 0.0305 | 0.259 : 0.259 | 0.14 | 0.0305 U | 0.259 |
| Phenanthrene | 1 / 2 | 0.0305 - 0.0305 | 1.14 : 1.14 | 0.58 | 0.0305 U | 1.14 |
| Pyrene | 1 / 2 | 0.0305 - 0.0305 | 1.01 : 1.01 | 0.51 | 0.0305 U | 1.01 |
| Pesticides (mg/kg) | | | | | | |
| 4,4'-DDD | 1 / 2 | 0.0056 - 0.0056 | 0.0214 : 0.0214 | 0.012 | 0.0056 U | 0.0214 |
| Dioxins/Furans (mg/kg) | | | | | | |
| 1,2,3,4,6,7,8-HpCDD | 9 / 11 | 0.00000075 - 0.0000005 | 0.0000074 : 0.000023 | 0.000060 | 0.00000075 U | 0.0000074 |
| 1,2,3,4,6,7,8-HpCDF | 8 / 11 | 0.00000075 - 0.0000005 | 0.000002 : 0.00012 | 0.000040 | 0.00000075 U | 0.000002 J |
| 1,2,3,4,7,8,9-HpCDF | 4 / 11 | 0.00000071 - 0.0000005 | 0.0000067 : 0.000081 | 0.000017 | 0.00000075 U | 0.0000071 U |
| 1,2,3,4,7,8-HxCDD | 3 / 11 | 0.00000071 - 0.0000005 | 0.0000063 : 0.000079 | 0.000016 | 0.00000075 U | 0.0000071 U |
| 1,2,3,4,7,8-HxCDF | 6 / 11 | 0.00000071 - 0.0000005 | 0.00001 : 0.00007 | 0.000021 | 0.00000075 U | 0.0000071 U |
| 1,2,3,6,7,8-HxCDD | 6 / 11 | 0.00000071 - 0.0000005 | 0.0000065 : 0.000075 | 0.000018 | 0.00000075 U | 0.0000071 U |
| 1,2,3,6,7,8-HxCDF | 6 / 11 | 0.00000071 - 0.0000005 | 0.000022 : 0.000077 | 0.000028 | 0.00000075 U | 0.0000071 U |
| 1,2,3,7,8,9-HxCDD | 4 / 11 | 0.00000071 - 0.0000005 | 0.0000082 : 0.00008 | 0.000017 | 0.00000075 U | 0.0000071 U |
| 1,2,3,7,8,9-HxCDF | 5 / 11 | 0.00000071 - 0.0000005 | 0.0000078 : 0.000075 | 0.000017 | 0.00000075 U | 0.0000071 U |
| 1,2,3,7,8-PeCDD | 3 / 11 | 0.00000071 - 0.0000005 | 0.0000066 : 0.000065 | 0.000013 | 0.00000075 U | 0.0000071 U |
| 1,2,3,7,8-PeCDF | 6 / 11 | 0.00000071 - 0.0000005 | 0.0000075 : 0.000078 | 0.000018 | 0.00000075 U | 0.0000071 U |
| 2,3,4,6,7,8-HxCDF | 6 / 11 | 0.00000071 - 0.0000005 | 0.000033 : 0.000076 | 0.000027 | 0.00000075 U | 0.0000071 U |
| 2,3,4,7,8-PeCDF | 7 / 11 | 0.00000075 - 0.0000005 | 0.0000073 : 0.00025 | 0.000073 | 0.00000075 U | 0.0000073 J |
| 2,3,7,8-TCDD | 5 / 11 | 0.00000014 - 0.0000001 | 0.0000014 : 0.000014 | 0.000032 | 0.00000015 U | 0.0000014 U |
| 2,3,7,8-TCDF | 8 / 11 | 0.00000015 - 0.0000001 | 0.0000024 : 0.000038 | 0.000010 | 0.00000015 U | 0.0000024 JA |
| OCDD | 10 / 11 | 0.00001 - 0.00001 | 0.0000044 : 0.0018 | 0.00038 | 0.0000044 BJ | 0.000064 |
| OCDF | 7 / 11 | 0.0000015 - 0.00001 | 0.0000031 : 0.00013 | 0.000043 | 0.0000015 U | 0.0000031 J |
| Dioxin Toxicity Equivalent (USEPA, 2010) | 8 / 9 | 0.0000058 - 0.0000058 | 0.00000086 : 0.0001 | 0.000033 | 0.00000086 | 0.000001 |

Table 4.6
Summary of Analytical Results Detected in Shallow Sediment (0-1 ft) - Remainder of the Pond
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | Frequency of Detection | Range of Reporting Limits for Non Detects | Range of Detected Concentrations | Average [1] | SED1001 6/22/2006 0_5 - 1 ft | SED1201 6/22/2006 0_5 - 1 ft |
|----------------------------|------------------------|---|----------------------------------|-------------|------------------------------|------------------------------|
| Total HpCDD | 7 / 11 | 0.0000007 - 0.000005 | 0.000013 : 0.00055 | 0.00011 | 0.00000075 U | 0.000013 |
| Total HpCDF | 6 / 11 | 0.0000007 - 0.000005 | 0.000002 : 0.00014 | 0.000035 | 0.00000075 U | 0.000002 J |
| Total HxCDD | 5 / 11 | 0.0000007 - 0.000005 | 0.0000011 : 0.00024 | 0.000051 | 0.00000075 U | 0.0000011 J |
| Total HxCDF | 7 / 11 | 0.0000007 - 0.000005 | 0.0000039 : 0.0014 | 0.00032 | 0.00000075 U | 0.0000039 |
| Total PeCDD | 4 / 11 | 0.0000007 - 0.000005 | 0.0000069 : 0.00006 | 0.000015 | 0.00000075 U | 0.00000071 U |
| Total PeCDF | 7 / 11 | 0.0000007 - 0.000005 | 0.0000056 : 0.002 | 0.00058 | 0.00000075 U | 0.0000056 |
| Total TCDD | 5 / 11 | 0.00000014 - 0.000001 | 0.00000031 : 0.000053 | 0.000013 | 0.00000015 U | 0.00000031 J |
| Total TCDF | 7 / 11 | 0.00000014 - 0.000001 | 0.0000037 : 0.00093 | 0.00025 | 0.00000015 U | 0.0000037 |
| Inorganics (mg/kg) | | | | | | |
| Arsenic | 6 / 9 | 0.3 - 3 | 11.4 : 57 | 18.0 | 0.3 U | 3 U |
| Barium | 2 / 2 | | 10.2 : 33.1 | 22 | 10.2 | 33.1 |
| Beryllium | 8 / 9 | 0.07 - 0.07 | 0.14 : 0.72 | 0.47 | 0.07 U | 0.31 |
| Cadmium | 2 / 9 | 0.35 - 2.05 | 0.96 : 1.41 | 0.69 | 0.65 U | 1.19 U |
| Chromium | 9 / 9 | | 3 : 70.4 | 27 | 3 | 7 |
| Copper | 9 / 9 | | 4.1 : 211 | 60 | 4.1 | 12.5 |
| Lead | 7 / 9 | 6.5 - 20.4 | 4.1 : 419 | 130 | 6.5 U | 20.7 |
| Mercury | 4 / 9 | 0.021 - 0.11 | 0.66 : 1.35 | 0.42 | 0.035 U | 0.068 U |
| Nickel | 8 / 9 | 5.9 - 5.9 | 3.6 : 36.1 | 14.6 | 3.6 | 5.9 U |
| Silver | 4 / 9 | 0.35 - 2.05 | 2 : 7.49 | 2.7 | 0.65 U | 1.19 U |
| Zinc | 8 / 9 | 10.2 - 10.2 | 16.1 : 308 | 114 | 28.1 | 34.7 |
| Total Organic Carbon (TOC) | 8 / 9 | 1000 - 1000 | 780 : 140000 | 69953 | 780 | 2300 |
| AVS/SEM (umol/kg) | | | | | | |
| Arsenic | 5 / 7 | 36.4 - 87.1 | 96.1 : 532 | 217 | | |
| Beryllium | 6 / 7 | 6.05 - 6.05 | 32 : 55.5 | 40 | | |
| Cadmium | 4 / 7 | 2.43 - 13.8 | 6.83 : 15.5 | 8.0 | | |
| Chromium | 5 / 7 | 107 - 120 | 30.1 : 753 | 291 | | |
| Copper | 7 / 7 | | 34.7 : 2370 | 809 | | |
| Lead | 6 / 7 | 30 - 30 | 16.9 : 2210 | 902 | | |
| Nickel | 3 / 7 | 46.5 - 265 | 114 : 404 | 143 | | |
| Silver | 1 / 7 | 5.06 - 28.8 | 24 : 24 | 10.6 | | |
| Zinc | 5 / 7 | 212 - 238 | 141 : 4810 | 2177 | | |
| AVS | 6 / 7 | 1.71 - 1.71 | 718 : 6250 | 2418 | | |

Notes:

- [1] Average calculated using one-half the reporting limit for non-detects
- AVS/SEM - Acid Volatile Sulfide/Simultaneously Extracted Metals
- mg/kg - milligram per kilogram
- umol/kg - micromole per kilogram
- U - not detected, value is the reporting limit
- J - value is estimated
- B - analyte detected in sample and the associated blank
- E - exceeds calibration range
- A - detection limit based on signal-to-noise measurement
- D - value is from a diluted analyses

Table 4.6
Summary of Analytical Results Detected in Shallow Sediment (0-1 ft) - Remainder of the Pond
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | SED-52-01 12/16/2011 0 - 1 ft | SED-53-01 12/16/2011 0 - 1 ft | SED-54-01 12/16/2011 0 - 1 ft | SED-55-01 12/16/2011 0 - 1 ft | SED-56-01 12/16/2011 0 - 1 ft | SED-57-01 12/16/2011 0 - 1 ft | SED-58-01 12/16/2011 0 - 1 ft |
|--|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Volatile Organic Compound (mg/kg) | | | | | | | |
| Acetone | | | | | | | |
| Semivolatile Organic Compound (mg/kg) | | | | | | | |
| Acenaphthene | | | | | | | |
| Anthracene | | | | | | | |
| Benzo(a)anthracene | | | | | | | |
| Benzo(a)pyrene | | | | | | | |
| Benzo(b)fluoranthene | | | | | | | |
| Benzo(g,h,i)perylene | | | | | | | |
| Benzo(k)fluoranthene | | | | | | | |
| Chrysene | | | | | | | |
| Dibenzo(a,h)anthracene | | | | | | | |
| Fluoranthene | | | | | | | |
| Fluorene | | | | | | | |
| Indeno(1,2,3-cd)pyrene | | | | | | | |
| Phenanthrene | | | | | | | |
| Pyrene | | | | | | | |
| Pesticides (mg/kg) | | | | | | | |
| 4,4'-DDD | | | | | | | |
| Dioxins/Furans (mg/kg) | | | | | | | |
| 1,2,3,4,6,7,8-HpCDD | 0.00011 | 0.000062 | 0.00023 | 0.000012 | 0.0000076 | 0.000095 | 0.000005 U |
| 1,2,3,4,6,7,8-HpCDF | 0.00007 | 0.00004 | 0.00012 | 0.0000052 | 0.000005 U | 0.000042 | 0.000005 U |
| 1,2,3,4,7,8,9-HpCDF | 0.0000067 | 0.000005 U | 0.0000093 | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U |
| 1,2,3,4,7,8-HxCDD | 0.000005 U | 0.000005 U | 0.0000063 | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U |
| 1,2,3,4,7,8-HxCDF | 0.000028 | 0.000015 | 0.00003 | 0.000005 U | 0.000005 U | 0.00001 | 0.000005 U |
| 1,2,3,6,7,8-HxCDD | 0.000011 | 0.0000065 | 0.000019 | 0.000005 U | 0.000005 U | 0.0000073 | 0.000005 U |
| 1,2,3,6,7,8-HxCDF | 0.000049 | 0.000028 | 0.000049 | 0.000005 U | 0.000005 U | 0.000022 | 0.000005 U |
| 1,2,3,7,8,9-HxCDD | 0.0000082 | 0.000005 U | 0.000014 | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U |
| 1,2,3,7,8,9-HxCDF | 0.000012 | 0.0000078 | 0.000011 | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U |
| 1,2,3,7,8-PeCDD | 0.0000066 | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U | 0.000005 U |
| 1,2,3,7,8-PeCDF | 0.000011 | 0.0000075 | 0.000012 | 0.000005 U | 0.000005 U | 0.0000087 | 0.000005 U |
| 2,3,4,6,7,8-HxCDF | 0.000034 | 0.000033 | 0.000038 | 0.000005 U | 0.000005 U | 0.000036 | 0.000005 U |
| 2,3,4,7,8-PeCDF | 0.00025 | 0.00015 | 0.00018 | 0.000005 U | 0.000005 U | 0.00007 | 0.000005 U |
| 2,3,7,8-TCDD | 0.0000018 | 0.0000014 | 0.0000024 | 0.000001 U | 0.000001 U | 0.000001 U | 0.000001 U |
| 2,3,7,8-TCDF | 0.000019 | 0.000014 | 0.000038 | 0.0000012 | 0.000001 U | 0.000012 | 0.000001 U |
| OCDD | 0.00073 | 0.00046 | 0.0018 | 0.000099 | 0.000061 | 0.00067 | 0.00001 U |
| OCDF | 0.000042 | 0.000035 | 0.0001 | 0.00001 U | 0.00001 U | 0.000031 | 0.00001 U |
| Dioxin Toxicity Equivalent (USEPA, 2010) | 0.0001 | 0.000061 | 0.000084 | 0.0000059 | 0.0000058 U | 0.000035 | 0.0000057 |

Table 4.6
Summary of Analytical Results Detected in Shallow Sediment (0-1 ft) - Remainder of the Pond
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | SED-52-01 12/16/2011 0 - 1 ft | SED-53-01 12/16/2011 0 - 1 ft | SED-54-01 12/16/2011 0 - 1 ft | SED-55-01 12/16/2011 0 - 1 ft | SED-56-01 12/16/2011 0 - 1 ft | SED-57-01 12/16/2011 0 - 1 ft | SED-58-01 12/16/2011 0 - 1 ft |
|----------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Total HpCDD | 0.00027 | 0.00014 | 0.00055 | 0.00002 | 0.000013 | 0.00024 | 0.000005 U |
| Total HpCDF | 0.000082 | 0.000074 | 0.00014 | 0.000052 | 0.000005 U | 0.000075 | 0.000005 U |
| Total HxCDD | 0.00015 | 0.000076 | 0.00024 | 0.000005 U | 0.000005 U | 0.000088 | 0.000005 U |
| Total HxCDF | 0.0014 | 0.00052 | 0.0012 | 0.000017 | 0.0000057 | 0.00035 | 0.000005 U |
| Total PeCDD | 0.00006 | 0.000034 | 0.00005 | 0.000005 U | 0.000005 U | 0.0000069 | 0.000005 U |
| Total PeCDF | 0.002 | 0.0019 | 0.0016 | 0.000024 | 0.000014 | 0.00081 | 0.000005 U |
| Total TCDD | 0.000044 | 0.000027 | 0.000053 | 0.000001 U | 0.000001 U | 0.000021 | 0.000001 U |
| Total TCDF | 0.00093 | 0.00059 | 0.00093 | 0.000016 | 0.0000081 | 0.00028 | 0.000001 U |
| Inorganics (mg/kg) | | | | | | | |
| Arsenic | 13.2 | 11.4 | 17.3 | 57 | 43.7 | 17.1 | 1.7 U |
| Barium | | | | | | | |
| Beryllium | 0.56 | 0.49 | 0.7 | 0.72 | 0.69 | 0.6 | 0.14 |
| Cadmium | 0.96 | 0.78 U | 1.41 | 2.05 U | 1.64 U | 0.96 U | 0.35 U |
| Chromium | 52 | 39.4 | 70.4 | 11.9 | 13.7 | 45.9 | 3.6 |
| Copper | 115 | 88.6 | 211 | 14.9 | 19.7 | 71.8 | 4.5 |
| Lead | 287 | 229 | 419 | 20.4 U | 24.2 | 177 | 4.1 |
| Mercury | 0.871 E | 0.66 | 0.737 | 0.11 U | 0.088 U | 1.35 D | 0.021 U |
| Nickel | 21.3 | 19.2 | 36.1 | 12.5 | 13.6 | 18.6 | 3.6 |
| Silver | 7.25 | 5.06 | 7.49 | 2.05 U | 1.64 U | 2 | 0.35 U |
| Zinc | 232 | 175 | 308 | 10.2 U | 31.7 | 196 | 16.1 |
| Total Organic Carbon (TOC) | 84000 | 99000 | 110000 | 140000 | 130000 | 63000 | 1000 U |
| AVS/SEM (umol/kg) | | | | | | | |
| Arsenic | 96.1 | 87.1 U | 161 | 520 | 532 | 148 | 36.4 U |
| Beryllium | 40.7 | 32 | 44.7 | 55.5 | 54.9 | 47.9 | 6.05 U |
| Cadmium | 10.2 | 6.83 | 15.5 | 13.8 U | 12.3 U | 9.43 | 2.43 U |
| Chromium | 459 | 257 | 753 | 120 U | 107 U | 427 | 30.1 |
| Copper | 1210 | 797 | 2370 | 99.8 | 157 | 995 | 34.7 |
| Lead | 1650 | 1210 | 2210 | 30 U | 82.3 | 1130 | 16.9 |
| Nickel | 137 | 114 | 404 | 265 U | 236 U | 150 U | 46.5 U |
| Silver | 13.1 U | 12.1 U | 24 | 28.8 U | 25.7 U | 16.3 U | 5.06 U |
| Zinc | 3680 | 2700 | 4810 | 238 U | 212 U | 3680 | 141 |
| AVS | 3230 D | 4160 D | 1850 D | 718 | 720 | 6250 D | 1.71 U |

Notes:

[1] Average calculated using one-half the reporting limit for non-detects
 AVS/SEM - Acid Volatile Sulfide/Simultaneously Extracted Metals
 mg/kg - milligram per kilogram
 umol/kg - micromole per kilogram
 U - not detected, value is the reporting limit
 J - value is estimated
 B - analyte detected in sample and the associated blank
 E - exceeds calibration range
 A - detection limit based on signal-to-noise measurement

D - value is from a diluted analyses

Prepared By: EYM 12/6/12

Checked By: KJC 12/6/12

Table 4.7
Summary of Analytical Results Detected in Sediment 1-8 ft - Inner Cove
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | Frequency of Detection | Range of Reporting Limits for Non Detects | Range of Detected Concentrations | Average [1] | SED1603 | SED1704 | SED1804 | SED1903 | SED2003 | SED2103 | SED2203 | SED2303 |
|--|------------------------|---|----------------------------------|-------------|-------------------------|-------------------------|-------------------------|-----------------------|-------------------------|-------------------------|-----------------------|-----------------------|
| | | | | | 6/22/2006 2_5 - 3 ft | 6/22/2006 3 - 3_8 ft | 6/22/2006 3_5 - 4 ft | 6/22/2006 2 - 3 ft | 6/22/2006 2_5 - 3 ft | 6/22/2006 2_5 - 3 ft | 6/22/2006 2 - 3 ft | 6/22/2006 2 - 3 ft |
| Volatile Organic Compounds (mg/kg) | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 3 / 18 | 0.0041 - 0.49 | 0.384 : 6.65 | 0.44 | 0.0045 U | 0.555 E | 0.0313 U | 6.65 | 0.0209 U | 0.0043 U | 0.0357 U | 0.0041 U |
| 1,1-Dichloroethane | 6 / 18 | 0.0041 - 0.49 | 0.0054 : 0.299 | 0.047 | 0.0045 U | 0.031 | 0.0313 U | 0.299 | 0.0209 U | 0.0043 U | 0.0357 U | 0.0041 U |
| 1,1-Dichloroethene | 3 / 18 | 0.0041 - 0.49 | 0.0144 : 0.8 | 0.070 | 0.0045 U | 0.0358 | 0.0313 U | 0.8 | 0.0209 U | 0.0043 U | 0.0357 U | 0.0041 U |
| 2-Butanone | 2 / 18 | 0.0406 - 12.2 | 0.442 : 0.936 | 0.50 | 0.0453 U | 0.0454 U | 0.313 U | 0.936 | 0.209 U | 0.0428 U | 0.357 U | 0.0406 U |
| Acetone | 10 / 18 | 0.0406 - 12.2 | 0.0608 : 1.94 | 0.88 | 0.0453 U | 0.0454 U | 0.796 | 1.94 | 0.57 | 0.0608 | 1.08 | 0.0406 U |
| Carbon disulfide | 3 / 18 | 0.0041 - 0.49 | 0.0068 : 0.212 | 0.037 | 0.0045 U | 0.0045 U | 0.0313 U | 0.212 | 0.0209 U | 0.0043 U | 0.0357 U | 0.0041 U |
| cis-1,2-Dichloroethene | 7 / 18 | 0.0045 - 0.49 | 0.0046 : 5.78 | 0.38 | 0.0045 U | 0.0045 U | 0.0313 U | 5.78 | 0.0209 U | 0.0267 | 0.0357 U | 0.0046 |
| Isopropylbenzene | 3 / 18 | 0.0041 - 0.49 | 0.0688 : 0.332 | 0.046 | 0.0045 U | 0.0045 U | 0.0313 U | 0.0688 | 0.0209 U | 0.0043 U | 0.0357 U | 0.0041 U |
| n-Propyl Benzene | 1 / 18 | 0.0041 - 0.49 | 0.0955 : 0.0955 | 0.028 | 0.0045 U | 0.0045 U | 0.0313 U | 0.0579 U | 0.0209 U | 0.0043 U | 0.0357 U | 0.0041 U |
| sec-Butylbenzene | 3 / 18 | 0.0041 - 0.49 | 0.0563 : 0.173 | 0.038 | 0.0045 U | 0.0045 U | 0.0313 U | 0.0977 | 0.0209 U | 0.0043 U | 0.0357 U | 0.0041 U |
| Tetrachloroethene | 3 / 18 | 0.0043 - 0.49 | 0.0154 : 27 | 1.5 | 0.0045 U | 0.0045 U | 0.0313 U | 27 | 0.0209 U | 0.0043 U | 0.0357 U | 0.0636 |
| trans-1,2-Dichloroethene | 1 / 18 | 0.0041 - 0.49 | 0.153 : 0.153 | 0.031 | 0.0045 U | 0.0045 U | 0.0313 U | 0.153 | 0.0209 U | 0.0043 U | 0.0357 U | 0.0041 U |
| Trichloroethene | 6 / 18 | 0.0043 - 0.49 | 0.0073 : 88 | 5.0 | 0.0045 U | 0.407 E | 0.0313 U | 88 | 0.0209 U | 0.0043 U | 0.0357 U | 0.0255 |
| Vinyl chloride | 5 / 18 | 0.0081 - 0.49 | 0.107 : 0.91 | 0.14 | 0.0091 U | 0.0091 U | 0.107 | 0.116 U | 0.0418 U | 0.0086 U | 0.0714 U | 0.0081 U |
| Semi-Volatile Organic Compounds (mg/kg) | | | | | | | | | | | | |
| 1-Methylnaphthalene | 1 / 19 | 0.0301 - 0.232 | 0.266 : 0.266 | 0.059 | 0.0306 U | 0.0306 U | 0.148 U | 0.266 | 0.104 U | 0.0301 U | 0.119 U | 0.0311 U |
| Benzo(b)fluoranthene | 1 / 19 | 0.0301 - 0.232 | 0.0527 : 0.0527 | 0.052 | 0.0306 U | 0.0306 U | 0.148 U | 0.198 U | 0.104 U | 0.0301 U | 0.119 U | 0.0311 U |
| Fluoranthene | 2 / 19 | 0.0301 - 0.232 | 0.0821 : 0.211 | 0.061 | 0.0306 U | 0.0306 U | 0.148 U | 0.198 U | 0.104 U | 0.0301 U | 0.119 U | 0.0311 U |
| Phenanthrene | 1 / 19 | 0.0301 - 0.232 | 0.135 : 0.135 | 0.054 | 0.0306 U | 0.0306 U | 0.148 U | 0.198 U | 0.104 U | 0.0301 U | 0.119 U | 0.0311 U |
| Pyrene | 1 / 19 | 0.0301 - 0.232 | 0.0659 : 0.0659 | 0.052 | 0.0306 U | 0.0306 U | 0.148 U | 0.198 U | 0.104 U | 0.0301 U | 0.119 U | 0.0311 U |
| Inorganics (mg/kg) | | | | | | | | | | | | |
| Arsenic | 12 / 19 | 0.3 - 7.2 | 2.2 : 244 | 34 | 6.4 | 0.3 U | 18.2 | 244 | 2.2 | 1.7 U | 6.9 U | 1.7 U |
| Barium | 17 / 19 | 12.2 - 23.1 | 5.4 : 2430 | 161 | 18.6 | 11.1 | 18.7 | 89.2 | 12.2 U | 5.4 | 33.6 | 7.8 |
| Beryllium | 7 / 19 | 0.06 - 0.47 | 0.2 : 1.75 | 0.33 | 0.07 U | 0.06 U | 0.32 U | 0.52 | 0.25 U | 0.07 U | 1.17 | 0.07 U |
| Cadmium | 2 / 19 | 0.63 - 5.08 | 2.06 : 6.35 | 1.4 | 0.71 U | 0.63 U | 3.23 U | 6.35 | 2.44 U | 0.68 U | 2.76 U | 0.66 U |
| Chromium | 19 / 19 | | 3 : 73.5 | 15.5 | 3.9 | 3.5 | 10.3 | 14.2 | 11.8 | 3 | 16.2 | 73.5 |
| Copper | 19 / 19 | | 2.3 : 454 | 60 | 3.7 | 3.2 | 13 | 33 | 5.9 | 2.3 | 46 | 4.7 |
| Lead | 4 / 19 | 6.3 - 47.4 | 23 : 182 | 29 | 7.1 U | 6.3 U | 32.3 U | 47.4 U | 24.4 U | 6.8 U | 27.6 U | 6.6 U |
| Mercury | 2 / 19 | 0.037 - 0.284 | 0.171 : 0.477 | 0.093 | 0.039 U | 0.041 U | 0.196 U | 0.269 U | 0.14 U | 0.039 U | 0.156 U | 0.04 U |
| Nickel | 12 / 19 | 3.3 - 25.4 | 3.5 : 458 | 38 | 3.5 | 5.1 | 17.7 | 458 | 12.2 U | 3.4 U | 13.8 U | 3.3 U |
| Selenium | 1 / 19 | 6.3 - 50.8 | 38.7 : 38.7 | 12.9 | 7.1 U | 6.3 U | 32.3 U | 47.4 U | 24.4 U | 6.8 U | 27.6 U | 6.6 U |
| Silver | 4 / 19 | 0.63 - 5.08 | 3.34 : 31.9 | 3.7 | 0.71 U | 0.63 U | 3.23 U | 4.87 | 2.44 U | 0.68 U | 2.76 U | 0.66 U |
| Thallium | 1 / 19 | 1.6 - 12.7 | 3.2 : 3.2 | 2.9 | 1.8 U | 1.6 U | 8.1 U | 11.8 U | 6.1 U | 1.7 U | 6.9 U | 1.7 U |
| Zinc | 18 / 19 | 12.2 - 12.2 | 5.8 : 588 | 74 | 10.8 | 13.8 | 27.9 | 588 | 12.2 U | 9.6 | 37.3 | 7.9 |
| Total Organic Carbon (TOC) | 3 / 3 | | 14000 : 110000 | 48667 | | | | | | | | |

Notes:
[1] Average calculated using 1/2 the reporting limit for non-detects
mg/kg - milligram per kilogram
U - not detected, value is reporting limit
E - exceeds calibration range

Table 4.7
Summary of Analytical Results Detected in Sediment 1-8 ft - Inner Cove
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | SED2403 6/22/2006 2 - 3 ft | SED2503 6/22/2006 2.5 - 3 ft | SED2507 6/23/2006 6 - 7 ft | SED2602 6/22/2006 1.5 - 2 ft | SED2605 6/22/2006 4 - 5 ft | SED2703 6/22/2006 2.5 - 3 ft | SED2803 6/21/2006 2.5 - 3 ft | SED2904 6/21/2006 3 - 4 ft | SED3004 6/21/2006 3.6 - 4 ft | SED3104 6/21/2006 3 - 3.6 ft | SED3204 6/21/2006 3.5 - 4 ft | SED-49-08 12/13/2011 0 - 8 ft | SED-50-08 12/13/2011 0 - 8 ft | SED-51-08 12/13/2011 0 - 8 ft |
|--|----------------------------------|------------------------------------|----------------------------------|------------------------------------|----------------------------------|------------------------------------|------------------------------------|----------------------------------|------------------------------------|------------------------------------|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Volatile Organic Compounds (mg/kg) | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 0.0253 U | 0.0311 U | 0.0521 U | 0.0118 U | | 0.384 | 0.0758 U | 0.49 U | 0.0111 U | 0.0051 U | 0.0061 U | | | |
| 1,1-Dichloroethane | 0.0544 | 0.051 | 0.0521 U | 0.0118 U | | 0.0054 | 0.0758 U | 0.49 U | 0.0285 | 0.0051 U | 0.0061 U | | | |
| 1,1-Dichloroethene | 0.0253 U | 0.0311 U | 0.0521 U | 0.0118 U | | 0.0144 | 0.0758 U | 0.49 U | 0.0111 U | 0.0051 U | 0.0061 U | | | |
| 2-Butanone | 0.253 U | 0.442 | 0.521 U | 0.118 U | | 0.0459 U | 0.758 U | 12.2 U | 0.111 U | 0.0505 U | 0.0613 U | | | |
| Acetone | 0.834 | 1.68 | 0.892 | 0.118 U | | 0.0459 U | 1.57 | 12.2 U | 0.147 | 0.0505 U | 0.0613 U | | | |
| Carbon disulfide | 0.0253 U | 0.0311 U | 0.0729 | 0.0118 U | | 0.0068 | 0.0758 U | 0.49 U | 0.0111 U | 0.0051 U | 0.0061 U | | | |
| cis-1,2-Dichloroethene | 0.0253 U | 0.0822 | 0.56 | 0.0118 U | | 0.0386 | 0.0758 U | 0.49 U | 0.0111 U | 0.0051 U | 0.0137 | | | |
| Isopropylbenzene | 0.0253 U | 0.0738 | 0.0521 U | 0.0118 U | | 0.0046 U | 0.332 | 0.49 U | 0.0111 U | 0.0051 U | 0.0061 U | | | |
| n-Propyl Benzene | 0.0253 U | 0.0311 U | 0.0521 U | 0.0118 U | | 0.0046 U | 0.0955 | 0.49 U | 0.0111 U | 0.0051 U | 0.0061 U | | | |
| sec-Butylbenzene | 0.0253 U | 0.0563 | 0.0521 U | 0.0118 U | | 0.0046 U | 0.173 | 0.49 U | 0.0111 U | 0.0051 U | 0.0061 U | | | |
| Tetrachloroethene | 0.0253 U | 0.0311 U | 0.0521 U | 0.0118 U | | 0.0154 | 0.0758 U | 0.49 U | 0.0111 U | 0.0051 U | 0.0061 U | | | |
| trans-1,2-Dichloroethene | 0.0253 U | 0.0311 U | 0.0521 U | 0.0118 U | | 0.0046 U | 0.0758 U | 0.49 U | 0.0111 U | 0.0051 U | 0.0061 U | | | |
| Trichloroethene | 0.0253 U | 0.0313 | 0.0521 U | 0.0118 U | | 0.691 | 0.0758 U | 0.49 U | 0.0111 U | 0.0051 U | 0.0073 | | | |
| Vinyl chloride | 0.191 | 0.91 | 0.591 | 0.0236 U | | 0.0092 U | 0.152 U | 0.49 U | 0.224 | 0.0101 U | 0.0123 U | | | |
| Semi-Volatile Organic Compounds (mg/kg) | | | | | | | | | | | | | | |
| 1-Methylnaphthalene | 0.125 U | 0.215 U | 0.209 U | 0.0518 U | 0.137 U | 0.031 U | 0.232 U | 0.0957 U | 0.0507 U | 0.0335 U | 0.0309 U | | | |
| Benzo(b)fluoranthene | 0.125 U | 0.215 U | 0.209 U | 0.0518 U | 0.137 U | 0.031 U | 0.232 U | 0.0957 U | 0.0527 | 0.0335 U | 0.0309 U | | | |
| Fluoranthene | 0.211 | 0.215 U | 0.209 U | 0.0518 U | 0.137 U | 0.031 U | 0.232 U | 0.0957 U | 0.0821 | 0.0335 U | 0.0309 U | | | |
| Phenanthrene | 0.135 | 0.215 U | 0.209 U | 0.0518 U | 0.137 U | 0.031 U | 0.232 U | 0.0957 U | 0.0507 U | 0.0335 U | 0.0309 U | | | |
| Pyrene | 0.125 U | 0.215 U | 0.209 U | 0.0518 U | 0.137 U | 0.031 U | 0.232 U | 0.0957 U | 0.0659 | 0.0335 U | 0.0309 U | | | |
| Inorganics (mg/kg) | | | | | | | | | | | | | | |
| Arsenic | 20.7 | 115 | 78.6 | 55.2 | 7.2 U | 4.1 | 51.4 | 24.7 | 3 U | 1.8 U | 5.6 | | | |
| Barium | 73.8 | 85.7 | 23.1 U | 2430 | 93.2 | 14.2 | 115 | 13.5 | 10.2 | 6.1 | 11.1 | | | |
| Beryllium | 0.41 | 0.47 U | 0.47 U | 1.75 | 0.29 | 0.07 U | 0.81 | 0.22 U | 0.12 U | 0.07 U | 0.2 | | | |
| Cadmium | 2.53 U | 4.63 U | 4.63 U | 2.06 | 2.89 U | 0.72 U | 5.08 U | 2.17 U | 1.18 U | 0.72 U | 0.71 U | | | |
| Chromium | 34.3 | 19.6 | 10.4 | 25.3 | 8.4 | 4.6 | 19.6 | 14.7 | 10.3 | 3.2 | 7.1 | | | |
| Copper | 200 | 51.8 | 10.7 | 144 | 19.7 | 454 | 48.4 | 57.9 | 33.6 | 2.8 | 8.5 | | | |
| Lead | 76.4 | 46.3 U | 46.3 U | 182 | 28.9 U | 7.2 U | 101 | 21.7 U | 23 | 7.2 U | 7.1 U | | | |
| Mercury | 0.171 | 0.278 U | 0.269 U | 0.477 | 0.17 U | 0.042 U | 0.284 U | 0.115 U | 0.07 U | 0.044 U | 0.037 U | | | |
| Nickel | 16.3 | 46.4 | 43.8 | 33.1 | 14.4 U | 18.6 | 25.4 U | 35.1 | 7.2 | 3.6 U | 4.3 | | | |
| Selenium | 25.3 U | 46.3 U | 46.3 U | 38.7 | 28.9 U | 7.2 U | 50.8 U | 21.7 U | 11.8 U | 7.2 U | 7.1 U | | | |
| Silver | 31.9 | 4.63 U | 4.63 U | 14.1 | 2.89 U | 0.72 U | 5.08 U | 2.17 U | 3.34 | 0.72 U | 0.71 U | | | |
| Thallium | 6.3 U | 11.6 U | 11.6 U | 3.2 | 7.2 U | 1.8 U | 12.7 U | 5.4 U | 3 U | 1.8 U | 1.8 U | | | |
| Zinc | 157 | 77.6 | 84.8 | 166 | 19.8 | 24.3 | 45.5 | 54.8 | 43.3 | 5.8 | 19.5 | | | |
| Total Organic Carbon (TOC) | | | | | | | | | | | | 110000 | 22000 | 14000 |

Notes:
[1] Average calculated using 1/2 the reporting limit for non-detects
mg/kg - milligram per kilogram
U - not detected, value is reporting limit
E - exceeds calibration range

Prepared By: EYM 12/6/12
Checked By: KMW 12/6/12

Table 4.8
Comparison of Analytical Results Detected in Surficial (0-1ft) and Deep (1-8 ft) Sediment - Inner Cove
Phase II Area - Mashapaug Pond and Cove
Former Gorham Manufacturing Facility
333 Adelaide Avenue
Providence, Rhode Island

| Parameter | Inner Cove Surficial Sediment (0-1 ft) | | | | | Inner Cove Deep Sediment (1-8 ft) | | | | | | | | |
|--|--|---|---|----------------------------------|------------|-----------------------------------|------------------------|---|---------|----------------------------------|-------------|----|--------|-------|
| | Frequency of Detection | Range of Reporting Limits for Non Detects | | Range of Detected Concentrations | | Average [1] | Frequency of Detection | Range of Reporting Limits for Non Detects | | Range of Detected Concentrations | Average [1] | | | |
| 1,2,3,6,7,8-HxCDF | 20 / 22 | 0.00000068 | - | 0.0000014 | 0.0000073 | : | 0.0013 | 0.00025 | | | | NA | | |
| 1,2,3,7,8,9-HxCDD | 18 / 22 | 0.00000068 | - | 0.000018 | 0.0000017 | : | 0.000097 | 0.000025 | | | | NA | | |
| 1,2,3,7,8,9-HxCDF | 16 / 22 | 0.00000068 | - | 0.0000071 | 0.0000024 | : | 0.00042 | 0.000091 | | | | NA | | |
| 1,2,3,7,8-PeCDD | 19 / 22 | 0.00000068 | - | 0.000003 | 0.00000095 | : | 0.00012 | 0.000032 | | | | NA | | |
| 1,2,3,7,8-PeCDF | 11 / 22 | 0.00000068 | - | 0.000018 | 0.0000023 | : | 0.00023 | 0.000023 | | | | NA | | |
| 2,3,4,6,7,8-HxCDF | 20 / 22 | 0.00000068 | - | 0.0000014 | 0.000012 | : | 0.00091 | 0.00021 | | | | NA | | |
| 2,3,4,7,8-PeCDF | 21 / 22 | 0.00000068 | - | 0.00000068 | 0.0000017 | : | 0.0062 | 0.0010 | | | | NA | | |
| 2,3,7,8-TCDD | 19 / 22 | 0.00000014 | - | 0.00000028 | 0.00000052 | : | 0.000033 | 0.0000093 | | | | NA | | |
| 2,3,7,8-TCDF | 17 / 22 | 0.00000014 | - | 0.0000042 | 0.0000016 | : | 0.00012 | 0.000030 | | | | NA | | |
| OCDD | 22 / 22 | | | | 0.0000035 | : | 0.0029 | 0.00083 | | | | NA | | |
| OCDF | 21 / 22 | 0.0000014 | - | 0.0000014 | 0.0000022 | : | 0.0003 | 0.00011 | | | | NA | | |
| Dioxin Toxicity Equivalent (USEPA, 2010) | 22 / 22 | | | | 0.00000078 | : | 0.0024 | 0.00044 | | | | NA | | |
| Total HpCDD | 21 / 22 | 0.00000068 | - | 0.00000068 | 0.0000088 | : | 0.0013 | 0.00036 | | | | NA | | |
| Total HpCDF | 21 / 22 | 0.00000068 | - | 0.00000068 | 0.0000059 | : | 0.0028 | 0.00067 | | | | NA | | |
| Total HxCDD | 21 / 22 | 0.00000068 | - | 0.00000068 | 0.000013 | : | 0.0026 | 0.00063 | | | | NA | | |
| Total HxCDF | 22 / 22 | | | | 0.0000017 | : | 0.025 | 0.0062 | | | | NA | | |
| Total PeCDD | 21 / 22 | 0.00000068 | - | 0.00000068 | 0.0000081 | : | 0.002 | 0.00046 | | | | NA | | |
| Total PeCDF | 22 / 22 | | | | 0.0000044 | : | 0.04 | 0.0075 | | | | NA | | |
| Total TCDD | 21 / 22 | 0.00000014 | - | 0.00000014 | 0.0000036 | : | 0.0008 | 0.00020 | | | | NA | | |
| Total TCDF | 22 / 22 | | | | 0.0000012 | : | 0.015 | 0.0033 | | | | NA | | |
| Inorganics (mg/kg) | | | | | | | | | | | | | | |
| Antimony | 2 / 22 | 0.54 | - | 25.7 | 1.6 | : | 2.7 | 6.0 | 0 / 19 | 6.3 - 50.8 | | | NA | |
| Arsenic | 18 / 22 | 0.4 | - | 1.8 | 2.1 | : | 45 | 17.9 | 12 / 19 | 0.3 - 7.2 | 2.2 | : | 244 | 34 |
| Barium | 22 / 22 | | | | 12.4 | : | 466 | 141 | 17 / 19 | 12.2 - 23.1 | 5.4 | : | 2430 | 161 |
| Beryllium | 19 / 22 | 0.07 | - | 0.13 | 0.075 | : | 3.5 | 0.64 | 7 / 19 | 0.06 - 0.47 | 0.2 | : | 1.75 | 0.33 |
| Cadmium | 18 / 22 | 0.74 | - | 1.31 | 0.14 | : | 7.11 | 2.9 | 2 / 19 | 0.63 - 5.08 | 2.06 | : | 6.35 | 1.4 |
| Chromium | 22 / 22 | | | | 4.8 | : | 640 | 231 | 19 / 19 | | 3 | : | 73.5 | 15.5 |
| Copper | 22 / 22 | | | | 8.6 | : | 2670 | 1185 | 19 / 19 | | 2.3 | : | 454 | 60 |
| Lead | 21 / 22 | 7.4 | - | 7.4 | 12.2 | : | 1120 | 423 | 4 / 19 | 6.3 - 47.4 | 23 | : | 182 | 29 |
| Mercury | 17 / 22 | 0.043 | - | 0.12 | 0.031 | : | 2.52 | 0.50 | 2 / 19 | 0.037 - 0.284 | 0.171 | : | 0.477 | 0.093 |
| Nickel | 20 / 22 | 3.7 | - | 6.6 | 5.7 | : | 853 | 161 | 12 / 19 | 3.3 - 25.4 | 3.5 | : | 458 | 38 |
| Selenium | 3 / 22 | 0.54 | - | 25.7 | 1.8 | : | 17.9 | 6.6 | 1 / 19 | 6.3 - 50.8 | 38.7 | : | 38.7 | 12.9 |
| Silver | 20 / 22 | 0.74 | - | 1.31 | 2.77 | : | 227 | 83 | 4 / 19 | 0.63 - 5.08 | 3.34 | : | 31.9 | 3.7 |
| Thallium | 0 / 22 | 0.27 | - | 6.4 | | | | NA | 1 / 19 | 1.6 - 12.7 | 3.2 | : | 3.2 | 2.9 |
| Zinc | 22 / 22 | | | | 9.5 | : | 1940 | 947 | 18 / 19 | 12.2 - 12.2 | 5.8 | : | 588 | 74 |
| Total Organic Carbon (TOC) | 17 / 17 | | | | 2800 | : | 115000 | 35994 | 3 / 3 | | 14000 | : | 110000 | 48667 |
| Total Petroleum Hydrocarbon (mg/kg) | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbon | 19 / 22 | 50.1 | - | 291 | 57.8 | : | 2600 | 677 | NA | | | | | NA |

Notes:

[1] Average calculated using 1/2 the reporting limit for non-detects in surficial or deep sediment analytical data respectively
mg/kg - milligram per kilogram
NA - not analyzed / applicable

Prepared By: EYM 12/6/12
Checked By: KMW 12/7/12

Table 4.9
Calculation of Human Dioxin Toxic Equivalents (TEQ) for Surface Water Samples
Supplemental Site Investigation Report
Former Gorham Manufacturing Site
333 Adelaide Avenue
Providence, Rhode Island

| chemical_name | TEF Humans-Mammals | SW11 6/21/2006 | SW11 6/21/2006 | Sample*TEF | SW19 SW19 6/21/2006 | Sample*TEF | SW27 SW27 6/22/2006 | Sample*TEF |
|---------------------|--------------------|-------------------|-------------------|------------|---------------------------|-------------|---------------------------|-------------|
| 1,2,3,4,6,7,8-HpCDD | 0.01 | | 2.4E-08 | 2.4E-10 | 0.000000043 | 4.3E-10 | 4.3E-08 | 4.3E-10 |
| 1,2,3,4,6,7,8-HpCDF | 0.01 | < | 0.00000001 | 0 | < | 0.00000001 | < | 0.00000001 |
| 1,2,3,4,7,8,9-HpCDF | 0.01 | < | 0.00000001 | 0 | < | 0.00000001 | < | 0.00000001 |
| 1,2,3,4,7,8-HxCDD | 0.1 | < | 0.00000001 | 0 | < | 0.00000001 | < | 0.00000001 |
| 1,2,3,4,7,8-HxCDF | 0.1 | < | 0.00000001 | 0 | < | 0.00000001 | < | 0.00000001 |
| 1,2,3,6,7,8-HxCDD | 0.1 | < | 0.00000001 | 0 | < | 0.00000001 | 0 | 1.3E-08 |
| 1,2,3,6,7,8-HxCDF | 0.1 | < | 0.00000001 | 0 | < | 0.00000001 | < | 0.00000001 |
| 1,2,3,7,8,9-HxCDD | 0.1 | < | 0.00000001 | 0 | < | 0.00000001 | 0 | 5.1E-09 |
| 1,2,3,7,8,9-HxCDF | 0.1 | < | 0.00000001 | 0 | < | 0.00000001 | < | 0.00000001 |
| 1,2,3,7,8-PeCDD | 1 | < | 0.00000001 | 0 | < | 0.00000001 | 0 | 4.6E-08 |
| 1,2,3,7,8-PeCDF | 0.03 | < | 0.00000001 | 0 | < | 0.00000001 | < | 0.00000001 |
| 2,3,4,6,7,8-HxCDF | 0.1 | < | 0.00000001 | 0 | < | 0.00000001 | < | 0.00000001 |
| 2,3,4,7,8-PeCDF | 0.3 | < | 0.00000001 | 0 | < | 0.00000001 | < | 0.00000001 |
| 2,3,7,8-TCDD | 1 | < | 2.1E-09 | 0 | < | 0.000000002 | 0 | 3.1E-09 |
| 2,3,7,8-TCDF | 0.1 | < | 2.1E-09 | 0 | < | 0.000000002 | 0 | 8.9E-09 |
| OCDD | 0.0003 | | 0.00000018 | 5.4E-11 | 0.000000032 | 9.6E-11 | 0.000000035 | 1.05E-10 |
| OCDF | 0.0003 | < | 2.1E-08 | 0 | < | 0.000000002 | < | 0.000000002 |
| TEQ-Mammal (1) | | | | 2.94E-10 | | 5.26E-10 | | 5.69E-08 |

(1) - TEQ-Mammal is calculated by multiplying each congener by its corresponding TEF then summing all of the results.

Bolded and Shaded values indicate the TEQ-Mammal is greater than the surface water screening value standard.

< - Compound was not detected and a concentration of zero was used to calculate the TEQ.

Recommended Toxicity Equivalence Factors (TEFs) for Human Health Risk Assessments of 2,3,7,8-Tetrachlorodibenzo-p-dioxin and Dioxin-Like Compounds, EPA/100/R 10/005 (2010).

Results reported in mg/L

Prepared by: MJM
Checked by: LCG

Table 4.10
Comparison of Inner Cove Surface Sediment and Upland Soil Analytical Data
Former Gorham Manufacturing Site
Providence, Rhode Island

| chemical_name | SEDIMENT | | | | SOIL | | | |
|--------------------------------------|------------------------|---|----------------------------------|--------------------|------------------------|---|----------------------------------|--------------------|
| | Frequency of Detection | Range of Reporting Limits for Non-Detects | Range of Detected Concentrations | Average of Samples | Frequency of Detection | Range of Reporting Limits for Non-Detects | Range of Detected Concentrations | Average of Samples |
| Inorganics (mg/kg) | | | | | | | | |
| Antimony | 2 / 28 | 0.54 : 25.7 | 1.6 - 2.7 | 6.0 | 4 / 65 | 6 : 12.3 | 2.4 - 32.1 | 4.5 |
| Arsenic | 22 / 28 | 0.3 : 3 | 2.1 - 47.6 | 16.8 | 63 / 78 | 1 : 5 | 1.5 - 67.8 | 8.4 |
| Barium | 28 / 28 | | 9.7 - 466 | 123 | 32 / 34 | 13.6 : 13.7 | 11.5 - 510 | 80 |
| Beryllium | 22 / 28 | 0.07 : 0.13 | 0.075 - 3.5 | 0.55 | 38 / 65 | 0.06 : 1 | 0.13 - 3 | 0.31 |
| Cadmium | 20 / 28 | 0.65 : 1.31 | 0.14 - 7.11 | 2.6 | 17 / 65 | 0.6 : 1.23 | 1 - 21.7 | 1.2 |
| Chromium | 28 / 28 | | 2.9 - 640 | 192 | 63 / 65 | 3 : 4 | 3.5 - 1330 | 69 |
| Copper | 28 / 28 | | 4.1 - 2670 | 955 | 79 / 79 | | 3 - 15800 | 1168 |
| Lead | 24 / 28 | 6.5 : 7.4 | 12.2 - 1120 | 364 | 73 / 78 | 6 : 7 | 6.8 - 4670 | 364 |
| Mercury | 17 / 28 | 0.035 : 0.208 | 0.031 - 2.52 | 0.40 | 38 / 65 | 0.032 : 0.5 | 0.055 - 4.67 | 0.44 |
| Nickel | 25 / 28 | 3.7 : 6.6 | 3.6 - 853 | 132 | 65 / 65 | | 3 - 390 | 25 |
| Selenium | 3 / 28 | 0.54 : 25.7 | 1.8 - 17.9 | 6.5 | 1 / 65 | 0.52 : 12.3 | 5 - 5 | 3.1 |
| Silver | 22 / 28 | 0.65 : 1.31 | 2.77 - 227 | 67.4 | 54 / 65 | 0.6 : 1 | 0.81 - 385 | 40 |
| Thallium | 0 / 28 | 0.27 : 6.4 | | 1.5 | 0 / 65 | 0.26 : 9 | | 1.9 |
| Zinc | 28 / 28 | | 9.5 - 1940 | 783 | 65 / 65 | | 8 - 4760 | 355 |
| Semivolatile Organics (mg/kg) | | | | | | | | |
| 1-Methylnaphthalene | 0 / 23 | 0.0305 : 0.183 | | 0.039 | 1 / 32 | 0.0261 : 1.13 | 4.03 - 4.03 | 0.31 |
| 2-Methylnaphthalene | 0 / 28 | 0.0305 : 0.99 | | 0.081 | 3 / 77 | 0.0261 : 3.57 | 0.345 - 5.9 | 0.42 |
| Acenaphthene | 6 / 28 | 0.03 : 0.183 | 0.024 - 0.26 | 0.062 | 5 / 77 | 0.0261 : 3.57 | 0.819 - 9.94 | 0.55 |
| Acenaphthylene | 3 / 28 | 0.0079 : 0.183 | 0.026 - 0.781 | 0.064 | 4 / 77 | 0.0261 : 3.57 | 0.13 - 2.97 | 0.37 |
| Aniline | 0 / 5 | 0.39 : 2 | | 0.54 | 0 / 2 | 3.3 : 3.9 | | 1.8 |
| Anthracene | 13 / 28 | 0.0305 : 0.183 | 0.04 - 3.09 | 0.24 | 23 / 77 | 0.0261 : 3.57 | 0.0572 - 10.8 | 0.83 |
| Benzo(a)anthracene | 18 / 28 | 0.0305 : 0.183 | 0.0896 - 15.1 | 0.87 | 45 / 77 | 0.0261 : 3.57 | 0.0332 - 46.3 | 2.1 |
| Benzo(a)pyrene | 17 / 28 | 0.0305 : 0.183 | 0.0707 - 7.87 | 0.57 | 46 / 77 | 0.0261 : 3.57 | 0.0273 - 41.6 | 1.9 |
| Benzo(b)fluoranthene | 21 / 28 | 0.0305 : 0.183 | 0.0378 - 14.8 | 1.0 | 46 / 77 | 0.0261 : 3.57 | 0.0867 - 39.4 | 2.1 |
| Benzo(g,h,i)perylene | 14 / 28 | 0.0305 : 0.183 | 0.046 - 2.54 | 0.21 | 37 / 77 | 0.0261 : 3.57 | 0.0283 - 28.3 | 1.15 |
| Benzo(k)fluoranthene | 12 / 28 | 0.0305 : 0.183 | 0.065 - 5.1 | 0.35 | 40 / 77 | 0.0261 : 3.57 | 0.0638 - 39.5 | 1.5 |
| bis(2-Ethylhexyl)phthalate | 0 / 5 | 0.2 : 0.99 | | 0.27 | 2 / 18 | 0.33 : 3.3 | 0.379 - 0.81 | 0.74 |
| Chrysene | 17 / 28 | 0.0305 : 0.183 | 0.0896 - 8.94 | 0.66 | 48 / 77 | 0.0261 : 3.3 | 0.0284 - 54.2 | 2.2 |
| Dibenzo(a,h)anthracene | 6 / 28 | 0.0079 : 0.183 | 0.0404 - 1.45 | 0.099 | 8 / 77 | 0.0261 : 3.57 | 0.0277 - 2.06 | 0.35 |
| Dibenzofuran | 0 / 5 | 0.39 : 2 | | 0.54 | 1 / 18 | 0.33 : 3.9 | 0.824 - 0.824 | 0.83 |
| Di-n-butylphthalate | 2 / 5 | 0.2 : 0.74 | 0.48 - 1.1 | 0.44 | 0 / 9 | 0.34 : 3.9 | | 0.69 |
| Fluoranthene | 23 / 28 | 0.0305 : 0.035 | 0.0833 - 28.8 | 1.8 | 49 / 77 | 0.0261 : 3.57 | 0.0626 - 116 | 4.2 |
| Fluorene | 9 / 28 | 0.018 : 0.183 | 0.022 - 0.863 | 0.082 | 7 / 77 | 0.0261 : 3.57 | 0.0438 - 9.52 | 0.54 |
| Indeno(1,2,3-cd)pyrene | 13 / 28 | 0.03 : 0.183 | 0.046 - 2.47 | 0.21 | 38 / 77 | 0.0261 : 3.57 | 0.0293 - 27.9 | 1.1 |
| Naphthalene | 5 / 28 | 0.03 : 0.183 | 0.0342 - 0.28 | 0.054 | 6 / 77 | 0.0261 : 3.57 | 0.398 - 17.5 | 0.67 |
| Phenanthrene | 19 / 28 | 0.0305 : 0.183 | 0.0333 - 11.8 | 1.0 | 47 / 77 | 0.0261 : 3.57 | 0.0364 - 122 | 4.2 |
| Pyrene | 22 / 28 | 0.0305 : 0.0794 | 0.0513 - 15.2 | 1.2 | 54 / 77 | 0.0261 : 1.65 | 0.0375 - 142 | 5.3 |

mg/Kg - milligram per kilogram

Prepared by: MJM
Checked by: LCG

Table 4.11
Calculation of "Fish Dioxin Toxic Equivalence" (TEQ) for Surface Water Samples
Supplemental Site Investigation Report
Former Gorham Manufacturing Site
333 Adelaide Avenue
Providence, Rhode Island

| chemical_name | TEF Fish | SW11 SW11 6/21/2006 | Sample*TEF | SW19 SW19 6/21/2006 | Sample*TEF | SW27 SW27 6/22/2006 | Sample*TEF |
|---------------------|----------|---------------------------|------------|---------------------------|------------|---------------------------|-------------|
| 1,2,3,4,6,7,8-HpCDD | 0.001 | 2.4E-08 | 2.4E-11 | 4.3E-08 | 4.3E-11 | 4.3E-08 | 4.3E-11 |
| 1,2,3,4,6,7,8-HpCDF | 0.01 | < 0.00000001 | 0 | < 0.00000001 | 0 | < 0.00000001 | 0 |
| 1,2,3,4,7,8,9-HpCDF | 0.01 | < 0.00000001 | 0 | < 0.00000001 | 0 | < 0.00000001 | 0 |
| 1,2,3,4,7,8-HxCDD | 0.5 | < 0.00000001 | 0 | < 0.00000001 | 0 | < 0.00000001 | 0 |
| 1,2,3,4,7,8-HxCDF | 0.1 | < 0.00000001 | 0 | < 0.00000001 | 0 | < 0.00000001 | 0 |
| 1,2,3,6,7,8-HxCDD | 0.01 | < 0.00000001 | 0 | < 0.00000001 | 0 | 1.3E-08 | 1.3E-10 |
| 1,2,3,6,7,8-HxCDF | 0.1 | < 0.00000001 | 0 | < 0.00000001 | 0 | < 0.00000001 | 0 |
| 1,2,3,7,8,9-HxCDD | 0.01 | < 0.00000001 | 0 | < 0.00000001 | 0 | 5.1E-08 | 5.1E-10 |
| 1,2,3,7,8,9-HxCDF | 0.1 | < 0.00000001 | 0 | < 0.00000001 | 0 | < 0.00000001 | 0 |
| 1,2,3,7,8-PeCDD | 1 | < 0.00000001 | 0 | < 0.00000001 | 0 | 4.6E-08 | 0.000000046 |
| 1,2,3,7,8-PeCDF | 0.05 | < 0.00000001 | 0 | < 0.00000001 | 0 | < 0.00000001 | 0 |
| 2,3,4,6,7,8-HxCDF | 0.1 | < 0.00000001 | 0 | < 0.00000001 | 0 | < 0.00000001 | 0 |
| 2,3,4,7,8-PeCDF | 0.5 | < 0.00000001 | 0 | < 0.00000001 | 0 | < 0.00000001 | 0 |
| 2,3,7,8-TCDD | 1 | < 2.1E-09 | 0 | < 2E-09 | 0 | 3.1E-09 | 3.1E-09 |
| 2,3,7,8-TCDF | 0.05 | < 2.1E-09 | 0 | < 2E-09 | 0 | 8.9E-09 | 4.45E-10 |
| OCDD | 0.0001 | 0.00000018 | 1.8E-11 | 0.00000032 | 3.2E-11 | 0.00000035 | 3.5E-11 |
| OCDF | 0.0001 | < 2.1E-08 | 0 | < 0.00000002 | 0 | < 0.00000002 | 0 |
| Total HpCDD | | 4.3E-08 | | 7.2E-08 | | 6.1E-08 | |
| Total HpCDF | | 1.2E-08 | | 2.1E-08 | | 1.3E-08 | |
| Total HxCDD | | < 0.00000001 | | < 0.00000001 | | 6.4E-08 | |
| Total HxCDF | | < 0.00000001 | | < 0.00000001 | | < 0.00000001 | |
| Total PeCDD | | < 0.00000001 | | < 0.00000001 | | 4.6E-08 | |
| Total PeCDF | | < 0.00000001 | | < 0.00000001 | | 2.9E-08 | |
| Total TCDD | | < 2.1E-09 | | < 2E-09 | | 3.1E-09 | |
| Total TCDF | | < 2.1E-09 | | 3.4E-09 | | 3.2E-08 | |
| TEQ-Fish | | | 4.20E-11 | | 7.50E-11 | | 5.03E-08 |

(1) TEQ-Fish is calculated by multiplying each congener by its corresponding TEF then summing all of the results.

< - Compound was not detected and a concentration of zero was used to calculate the TEQ.

Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife, Environmental Health Perspectives, Vol. 106, No. 12, December 1998. Van den Berg et. al.

Prepared by: mjm

Checked By: eym

**Table 5.1
Exposure Point Concentration and Risk Summary - Outer Cove Sediment
Supplemental Site Investigation Report
Former Gorham Manufacturing Site
333 Adelaide Avenue
Providence, Rhode Island**

| Chemical of Potential Concern (1) | 2006 Dataset | | | | | | | 2012 Dataset | | | | | | | |
|-----------------------------------|-----------------|---------------------------|--------------------------------|------------------------------|-------|-----------------|------------------|-----------------|---------------------------|--------------------------------|------------------------------|------------------------|-----------------|------------------|---------|
| | Arithmetic Mean | 95% UCL (2) (calculation) | Maximum Detected Concentration | Exposure Point Concentration | | Cancer Risk (4) | Hazard Index (5) | Arithmetic Mean | 95% UCL (2) (calculation) | Maximum Detected Concentration | Exposure Point Concentration | | Cancer Risk (4) | Hazard Index (5) | |
| | | | | Reasonable Maximum (3) | Value | | | | | | Statistic | Reasonable Maximum (3) | | | Value |
| Inorganics (mg/kg) | | | | | | | | | | | | | | | |
| Arsenic | 4.4 | NA | 11.5 | 11.5 | Max | 2E-06 | 1.3E-02 | 4.4 | 9.1 | NP [a] | 12 | 9.1 | UCL | 1E-06 | 1.0E-02 |
| Chromium | 4.9 | NA | 7.0 | 7.0 | Max | NC | 7.2E-04 | 4.7 | 6.1 | N [d] | 7.0 | 6.1 | UCL | NC | 6.3E-04 |
| Copper (6) | 7.3 | NA | 12.5 | 13 | Max | NC | 9.7E-05 | 50 | 324 | G [f] | 210 | 210 | Max | NC | 1.6E-03 |
| Nickel | 9.7 | NA | 22.5 | 23 | Max | NC | 3.5E-04 | 15 | 30 | NP [b] | 41 | 30 | UCL | NC | 4.6E-04 |
| Silver (7) | ND | NA | ND | 0.4 | Max | NC | 2.6E-05 | 1.7 | 18 | NP [c] | 6.8 | 6.8 | Max | NC | 4.2E-04 |

Notes:

- (1) Chemicals of Potential Concern (COPCs) are identified in the COPC selection tables.
- (2) 95 % UCL is calculated using ProUCL software (V. 4.1); calculations presented in Appendix C.
 - NP - Non-Parametric distribution
 - [a] - KM (t) UCL
 - [b] - 95% KM (Percentile Bootstrap) UCL
 - [c] - 99% Chebyshev (Mean, Sd) UCL
 - N - Normal distribution
 - [d] - Student's-t UCL
 - LN - Log-normal distribution
 - [e] - 95% Chebyshev (MVUE) UCL
 - G - Gamma Distribution
 - [f] - Approximate Gamma UCL
- (3) Reasonable Maximum Exposure (RME) concentration is the lesser of the maximum or 95% UCL. If analyte is not detected and UCL not calculated then RME is the mean.
- (4) Represents the sum of cancer risks for adolescent and adult trespassers. Results from 2012 dataset are estimated by multiplying the ratio of EPCs between the two datasets by the 2006 cancer risk results.
- (5) Represents the hazard index for adolescent trespassers. Results from 2012 dataset are estimated by multiplying the ratio of EPCs between the two datasets by the 2006 noncancer risk results.
- (6) Copper HI not previous calculated due to absence of toxicity factors
- (7) Silver not detected in 2006 dataset. EPC represents 1/2 the reporting limit.

UCL - Upper Confidence Level
 NA - Not calculated due to small sample size
 ND - Not Detected
 NC - Not carcinogenic
 mg/kg - milligrams per kilogram

Table 5.2
Summary of Comparison of Detections to RDEC in Soil to be Capped – Phase III Area
Former Gorham Manufacturing Facility
Providence, Rhode Island

| parameter.name | Residential Direct Exposure Criteria (ppm) | BK-4D 3/12/2001 1.5-2 ft | BK4XX020-1 8/6/2002 0-1 ft | BK4XX021-1.5 8/6/2002 1-1.5 ft | BK5D 3/1/2001 1.5-2 ft | BK5S 3/1/2001 0-0.5 ft | GMSS100X01 LDXX 5/27/1998 0-1 ft | GMSS101X01 LDXX 5/27/1998 0-1 ft | GMSS201X01 RAXX 12/11/1998 0-1 ft | GMSS202X01 RAXX 12/11/1998 0-1 ft | GMSS203X01 RAXX 12/11/1998 0-1 ft | GMSS204X01 RAXX 12/11/1998 0-1 ft | GMSSBK4001 01XX 10/12/1994 0-1 ft | GMSSBK5001 01XX 10/12/1994 0-1 ft | SS-100D 3/12/2001 1.5-2 ft | SS-203D 3/12/2001 1.5-2 ft | SS203XX020-1 8/6/2002 0-1 ft | |
|--|--|--------------------------|----------------------------|--------------------------------|------------------------|------------------------|----------------------------------|----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------------|----------------------------|------------------------------|--------|
| Semivolatile Organics (mg/Kg) | | | | | | | | | | | | | | | | | | |
| Acenaphthylene | 23 | | | | 0.366 U | 0.45 U | 0.348 U | | | | | | | | | | | |
| Anthracene | 35 | | | | 0.366 U | 0.45 U | 0.348 U | | | | | | | | | | | |
| Benzo(a)anthracene | 0.9 | | | | 0.366 U | 0.808 | 0.348 U | | | | | | | | | | | |
| Benzo(a)pyrene | 0.4 | | | | 0.366 U | 1.11 | 0.348 U | | | | | | | | | | | |
| Benzo(b)fluoranthene | 0.9 | | | | 0.366 U | 1.24 | 0.348 U | | | | | | | | | | | |
| Benzo(g,h,i)perylene | 0.8 | | | | 0.366 U | 0.508 | 0.348 U | | | | | | | | | | | |
| Benzo(k)fluoranthene | 0.9 | | | | 0.366 U | 1.1 | 0.348 U | | | | | | | | | | | |
| Chrysene | 0.4 | | | | 0.366 U | 0.904 | 0.348 U | | | | | | | | | | | |
| Dibenzo(a,h)anthracene | 0.4 | | | | 0.366 U | 0.45 U | 0.348 U | | | | | | | | | | | |
| Fluoranthene | 20 | | | | 0.368 | 2.3 | 0.348 U | | | | | | | | | | | |
| Fluorene | 28 | | | | 0.366 U | 0.45 U | 0.348 U | | | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | 0.9 | | | | 0.366 U | 0.514 | 0.348 U | | | | | | | | | | | |
| Naphthalene | 54 | | | | 0.366 U | 0.45 U | 0.348 U | | | | | | | | | | | |
| Phenanthrene | 40 | | | | 0.366 U | 0.928 | 0.348 U | | | | | | | | | | | |
| Pyrene | 13 | | | | 0.366 U | 1.74 | 0.348 U | | | | | | | | | | | |
| Polyaromatic Hydrocarbons (mg/Kg) | | | | | | | | | | | | | | | | | | |
| Anthracene | 35 | | 0.337 U | 0.337 U | | | | | | | | | | | | | | 0.34 U |
| Benzo(a)anthracene | 0.9 | | 0.337 U | 0.337 U | | | | | | | | | | | | | | 0.34 U |
| Benzo(a)pyrene | 0.4 | | 0.337 U | 0.337 U | | | | | | | | | | | | | | 0.34 U |
| Benzo(b)fluoranthene | 0.9 | | 0.337 U | 0.337 U | | | | | | | | | | | | | | 0.34 U |
| Benzo(g,h,i)perylene | 0.8 | | 0.337 U | 0.337 U | | | | | | | | | | | | | | 0.34 U |
| Benzo(k)fluoranthene | 0.9 | | 0.337 U | 0.337 U | | | | | | | | | | | | | | 0.34 U |
| Chrysene | 0.4 | | 0.337 U | 0.337 U | | | | | | | | | | | | | | 0.34 U |
| Dibenzo(a,h)anthracene | 0.4 | | 0.337 U | 0.337 U | | | | | | | | | | | | | | 0.34 U |
| Fluoranthene | 20 | | 0.337 U | 0.337 U | | | | | | | | | | | | | | 0.568 |
| Indeno(1,2,3-cd)pyrene | 0.9 | | 0.337 U | 0.337 U | | | | | | | | | | | | | | 0.34 U |
| Phenanthrene | 40 | | 0.337 U | 0.337 U | | | | | | | | | | | | | | 0.34 U |
| Pyrene | 13 | | 0.337 U | 0.337 U | | | | | | | | | | | | | | 0.461 |
| Pesticides/PCBs (mg/Kg) | | | | | | | | | | | | | | | | | | |
| 4,4'-DDD | 2.7 | | | | | | | | | | | | | | | | | |
| 4,4'-DDE | 1.9 | | | | | | | | | | | | | | | | | |
| 4,4'-DDT | 1.9 | | | | | | | | | | | | | | | | | |
| alpha-Chlordane | 1.8 | | | | | | | | | | | | | | | | | |
| beta-BHC | 0.4 | | | | | | | | | | | | | | | | | |
| Chlordane | 0.5 | | | | | | | | | | | | | | | | | |
| gamma-Chlordane | 1.8 | | | | | | | | | | | | | | | | | |
| Heptachlor epoxide | 0.07 | | | | | | | | | | | | | | | | | |
| Hexachlorobenzene | 0.4 | | | | | | | | | | | | | | | | | |
| Aroclor-1242 | 10 | | | | | | | | | | | | | | | | | |
| Aroclor-1254 | 10 | | | | | | | | | | | | | | | | | |
| Dioxins/Furans (mg/Kg) | | | | | | | | | | | | | | | | | | |
| 1,2,3,4,6,7,8-HpCDD | | | | | | | | | | | | | | | | | | |
| 1,2,3,4,6,7,8-HpCDF | | | | | | | | | | | | | | | | | | |
| 1,2,3,4,7,8,9-HpCDF | | | | | | | | | | | | | | | | | | |
| 1,2,3,4,7,8-HxCDD | | | | | | | | | | | | | | | | | | |
| 1,2,3,4,7,8-HxCDF | | | | | | | | | | | | | | | | | | |
| 1,2,3,6,7,8-HxCDD | | | | | | | | | | | | | | | | | | |
| 1,2,3,6,7,8-HxCDF | | | | | | | | | | | | | | | | | | |
| 1,2,3,7,8,9-HxCDD | | | | | | | | | | | | | | | | | | |
| 1,2,3,7,8,9-HxCDF | | | | | | | | | | | | | | | | | | |
| 1,2,3,7,8-PeCDD | | | | | | | | | | | | | | | | | | |
| 1,2,3,7,8-PeCDF | | | | | | | | | | | | | | | | | | |
| 2,3,4,6,7,8-HxCDF | | | | | | | | | | | | | | | | | | |
| 2,3,4,7,8-PeCDF | | | | | | | | | | | | | | | | | | |
| 2,3,7,8-TCDD | | | | | | | | | | | | | | | | | | |
| 2,3,7,8-TCDF | | | | | | | | | | | | | | | | | | |
| OCDD | | | | | | | | | | | | | | | | | | |
| OCDF | | | | | | | | | | | | | | | | | | |
| Total HpCDD | | | | | | | | | | | | | | | | | | |

Table 5.2
Summary of Comparison of Detections to RDEC in Soil to be Capped – Phase III Area
Former Gorham Manufacturing Facility
Providence, Rhode Island

| parameter.name | Residential Direct Exposure Criteria (ppm) | BK-4D 3/12/2001 1.5-2 ft | BK4XX020-1 8/6/2002 0-1 ft | BK4XX021-1.5 8/6/2002 1-1.5 ft | BK5D 3/1/2001 1.5-2 ft | BK5S 3/1/2001 0-0.5 ft | GMSS100X01 LDXX 5/27/1998 0-1 ft | GMSS101X01 LDXX 5/27/1998 0-1 ft | GMSS201X01 RAXX 12/11/1998 0-1 ft | GMSS202X01 RAXX 12/11/1998 0-1 ft | GMSS203X01 RAXX 12/11/1998 0-1 ft | GMSS204X01 RAXX 12/11/1998 0-1 ft | GMSSBK4001 01XX 10/12/1994 0-1 ft | GMSSBK5001 01XX 10/12/1994 0-1 ft | SS-100D 3/12/2001 1.5-2 ft | SS-203D 3/12/2001 1.5-2 ft | SS203XX020-1 8/6/2002 0-1 ft | |
|---------------------------------------|--|--------------------------------|----------------------------------|--------------------------------------|------------------------------|------------------------------|---|---|--|--|--|--|--|--|----------------------------------|----------------------------------|------------------------------------|--|
| Total HpCDF | | | | | | | | | | | | | | | | | | |
| Total HxCDD | | | | | | | | | | | | | | | | | | |
| Total HxCDF | | | | | | | | | | | | | | | | | | |
| Total PeCDD | | | | | | | | | | | | | | | | | | |
| Total PeCDF | | | | | | | | | | | | | | | | | | |
| Total TCDD | | | | | | | | | | | | | | | | | | |
| Total TCDF | | | | | | | | | | | | | | | | | | |
| TEQ Mammal | 0.000043 | | | | | | | | | | | | | | | | | |
| Inorganics (mg/Kg) | | | | | | | | | | | | | | | | | | |
| Arsenic | 7 | 1.4 U | | 4.1 | 20.6 | 67.8 | 11 | 4 | 15 | 2.9 | 23 | 19 | 11 | 60 | 6.21 | 2.35 | | |
| Barium | 5500 | | | 14.5 | 20.9 | 37 | | | | | | | | | | | | |
| Beryllium | 0.4 | | | 0.302 | 0.271 | 0.323 | 0.2 U | 0.2 U | 0.3 | 0.2 | 0.2 | 0.3 | 1 U | 1 U | | | | |
| Cadmium | 39 | | | 0.642 U | 0.73 U | 0.87 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | 1 U | | | | |
| Chromium | 390 | | | 4.45 | 4.41 | 35.8 | 6 | 7 | 9 | 5 | 6 | 7 | 10 | 70 | | | | |
| Copper | 3100 | | | 21.9 | 14.7 | 40.8 | 19 | 12 | 52 | 31 | 43 | 91 | 66 | 49 | | | | |
| Lead | 150 | 7 U | | 28 | 30.7 | 280 | 61 | 23 | 160 | 61 | 119 | 274 | 279 | 591 | 23.2 | 6.8 U | | |
| Mercury | 23 | | | 0.0648 U | 0.108 | 0.375 | 0.1 | 0.1 U | 0.53 | 0.07 U | 0.45 | 0.34 | 0.5 U | 0.5 | | | | |
| Nickel | 1000 | | | 5.85 | 4.54 | 8.67 | 6 | 5 | 7 | 8 | 6 | 9 | 17 | 11 | | | | |
| Selenium | 390 | | | 6.4 U | 7.3 U | 8.7 U | 7 U | 7 U | 7 U | 6 U | 7 U | 8 U | 1 U | 5 | | | | |
| Silver | 200 | | | 14.2 | 4.81 | 21.2 | 3 | 2 | 10 | 5 | 16 | 18 | 52 | 1 U | | | | |
| Zinc | 6000 | | | 24.5 | 19.3 | 51.4 | 15 | 11 | 27 | 143 | 13 | 35 | 74 | 77 | | | | |
| Total Cyanide | 200 | | | | | | | | | | | | 0.5 U | 0.5 | | | | |
| Petroleum Hydrocarbons (mg/Kg) | | | | | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbon | | | | | | | 56 | 42 | | | | | 21 U | 3600 | | | | |

Bold value and shaded cell indicates exceedance of RDEC
mg/Kg = milligram per kilogram
U = not detected, value is the reporting limit
J = value is estimated
P = Percent difference between primary and confirmation results exceeds 40%
A = Detection limit based on signal-to-noise measurement
B = Less than 10 times higher than method blank level
E = PCDE Interference
I = Interference

Table 5.2
Summary of Comparison of Detections to RDEC in Soil to be Capped – Phase III Area
Former Gorham Manufacturing Facility
Providence, Rhode Island

| parameter.name | Residential Direct Exposure Criteria (ppm) | SS204XX020-1 8/6/2002 0-1 ft | SS-300D 3/12/2001 1.5-2 ft | SS-300S 3/12/2001 0-0.5 ft | SS300XX020-1 8/6/2002 0-1 ft | SS304XX010-1 8/6/2002 0-1 ft | SS400S 3/1/2001 0-0.5 ft | SS401D 3/1/2001 1.5-2 ft | SS401S 3/1/2001 0-0.5 ft | SS402S 3/1/2001 0-0.5 ft | SS-SI002 6/7/2006 0-0.5 ft | SS-SI012 6/8/2006 0-0.5 ft | SS-SI013 6/8/2006 0-0.5 ft | SS-SI014 6/8/2006 0-0.5 ft | SS-SI015 6/8/2006 0-0.5 ft | SS-SI016 6/8/2006 0-0.5 ft |
|---------------------------------------|--|------------------------------------|----------------------------------|----------------------------------|------------------------------------|------------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Total HpCDF | | | | | | | | | | | 0.000022 | 1.2E-06 J | 8.2E-07 U | 8.1E-07 U | 0.000023 | 9.7E-06 |
| Total HxCDD | | | | | | | | | | | 0.000039 | 8.1E-07 U | 8.2E-07 U | 8.1E-07 U | 0.00002 | 6.1E-06 |
| Total HxCDF | | | | | | | | | | | 0.00016 | 6.3E-06 | 8.2E-07 U | 8.1E-07 U | 0.000072 | 0.000051 |
| Total PeCDD | | | | | | | | | | | 0.000037 | 8.1E-07 U | 8.2E-07 U | 8.1E-07 U | 5.6E-06 | 8.1E-07 U |
| Total PeCDF | | | | | | | | | | | 0.000025 | 0.000013 | 8.2E-07 U | 0.000015 J | 0.000064 | 0.00011 |
| Total TCDD | | | | | | | | | | | 0.00002 | 1.6E-07 U | 1.6E-07 U | 1.6E-07 U | 2.4E-06 | 1.1E-06 |
| Total TCDF | | | | | | | | | | | 0.000081 | 4.1E-06 | 1.6E-07 U | 3.5E-07 BJ | 0.000029 | 0.000027 |
| TEQ Mammal | 0.000043 | | | | | | | | | | 0.000027 | 0.0000012 | 0.00000094 | 0.00000093 | 0.0000034 | 0.0000032 |
| Inorganics (mg/Kg) | | | | | | | | | | | | | | | | |
| Arsenic | 7 | | 2.23 | 6.02 | | 11 | 29.2 | 20 | 19.8 | 44.6 | 3.1 U | 1.9 | 1.5 U | 1.5 | 3 | 1.5 U |
| Barium | 5500 | | | | | 27.7 | 42.2 | 356 | 45.6 | 58.5 | 38.8 | 12.7 | 54.9 | 36.1 | 41.4 | 27.3 |
| Beryllium | 0.4 | | | | | 0.347 | 0.346 | 0.281 | 0.265 | 0.372 | 0.12 U | 0.06 U | 0.31 U | 0.06 U | 0.17 | 0.06 U |
| Cadmium | 39 | | | | | 0.694 U | 0.79 U | 0.74 U | 0.85 U | 0.87 U | 1.23 U | 0.61 U | 0.61 U | 0.6 U | 0.61 U | 0.61 U |
| Chromium | 390 | | | | | 8 | 34.4 | 12.5 | 21.7 | 70 | 10.6 | 7.4 | 10.8 | 9.8 | 11.3 | 9.3 |
| Copper | 3100 | | | | | 118 | 86.8 | 66.1 | 81.9 | 76.4 | 127 | 8.4 | 26.3 | 22.8 | 37.9 | 26.3 |
| Lead | 150 | | 95.2 | 332 | | 157 | 213 | 402 | 350 | 453 | 138 | 15.4 | 8.5 | 9.3 | 54.4 | 10.2 |
| Mercury | 23 | | | | | 0.373 | 0.357 | 0.253 | 0.283 | 1.21 | 0.143 | 0.055 | 0.034 U | 0.032 U | 0.571 | 0.035 U |
| Nickel | 1000 | | | | | 13.7 | 9.02 | 9.53 | 9.86 | 12.6 | 13.9 | 3.3 | 11.1 | 9.3 | 10 | 9.1 |
| Selenium | 390 | | | | | 6.9 U | 7.9 U | 7.4 U | 8.5 U | 8.7 U | 12.3 U | 6.1 U | 6.1 U | 6 U | 6.1 U | 6.1 U |
| Silver | 200 | | | | | 30 | 19 | 35.6 | 63.9 | 53.5 | 10.7 | 0.81 | 0.61 U | 0.6 U | 12 | 0.61 U |
| Zinc | 6000 | | | | | 49.6 | 64.4 | 88 | 139 | 83.4 | 120 | 16.2 | 29.4 | 27.3 | 67.3 | 24.2 |
| Total Cyanide | 200 | | | | | | | | | | | | | | | |
| Petroleum Hydrocarbons (mg/Kg) | | | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbon | | | | | | | | | | | | | | | | |

Bold value and shaded cell indicates exceedance of RDEC
mg/Kg = milligram per kilogram
U = not detected, value is the reporting limit
J = value is estimated
P = Percent difference between primary and confirmation results exceeds 40%
A = Detection limit based on signal-to-noise measurement
B = Less than 10 times higher than method blank level
E = PCDE Interference
I = Interference

Table 5.2
Summary of Comparison of Detections to RDEC in Soil to be Capped – Phase III Area
Former Gorham Manufacturing Facility
Providence, Rhode Island

| parameter.name | Residential Direct Exposure Criteria (ppm) | SS-SI017 6/8/2006 0-0.5 ft | SS-SI018 6/8/2006 0-0.5 ft | SS-SI019 6/8/2006 0-0.5 ft | SS-SI020 6/8/2006 0-0.5 ft | SS-SI021 6/8/2006 0-0.5 ft | SS-SI022 6/8/2006 0-0.5 ft | SS-SI023 6/7/2006 0-0.5 ft | SS-SI024 6/7/2006 0-0.5 ft | SS-SI101 6/8/2006 0-0.5 ft | SS-SI202 6/7/2006 0-0.5 ft |
|---------------------------------------|--|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Total HpCDF | | 0.000022 | 0.0000081 U | 0.000001 J | 0.000031 | 0.000014 | 0.0000043 | 0.000014 | 0.000031 U | 5.1E-06 | 0.000007 |
| Total HxCDD | | 0.000023 | 0.0000081 U | 0.0000081 U | 0.000041 | 0.000011 | 0.0000029 J | 0.0000027 J | 0.000031 U | 1.4E-06 J | 4.8E-06 |
| Total HxCDF | | 0.000047 | 0.0000081 U | 0.0000081 U | 0.0001 | 0.000034 | 0.0000072 | 0.00001 | 0.000031 U | 8.2E-06 | 0.000014 |
| Total PeCDD | | 0.000012 | 0.0000081 U | 0.0000081 U | 0.000019 | 0.0000038 J | 0.00000083 U | 0.00000097 U | 0.000031 U | 8.9E-07 U | 1.4E-06 J |
| Total PeCDF | | 0.000039 | 0.0000011 J | 0.0000081 U | 0.000065 | 0.000053 | 0.000026 | 0.000011 | 0.000036 | 0.000017 | 0.000023 |
| Total TCDD | | 4.6E-06 | 0.0000016 U | 0.0000016 U | 0.000049 | 0.0000079 | 0.00000031 J | 0.0000022 | 0.0000063 U | 0.000002 | 2.7E-06 |
| Total TCDF | | 0.000022 | 0.0000018 BJ | 0.0000016 U | 0.000021 | 0.000039 | 0.0000083 | 0.000012 | 0.000014 | 0.000019 | 0.000017 |
| TEQ Mammal | 0.0000043 | 0.0000047 | 0.00000094 | 0.00000093 | 0.0000059 | 0.0000036 | 0.0000017 | 0.0000017 | 0.000035 | 0.0000016 | 0.0000020 |
| Inorganics (mg/Kg) | | | | | | | | | | | |
| Arsenic | 7 | 3.5 | 1.5 U | 1.5 U | 3 | 1.8 U | 1.6 U | 37.3 | 4.5 | | |
| Barium | 5500 | 44.1 | 29.4 | 22.8 | 47.4 | 15.6 | 28.4 | 31.3 | 75.8 | | |
| Beryllium | 0.4 | 0.13 | 0.06 U | 0.06 U | 0.15 | 0.14 | 0.06 U | 0.13 | 0.21 | | |
| Cadmium | 39 | 0.6 U | 0.6 U | 0.61 U | 0.63 U | 0.71 U | 0.62 U | 1.15 | 0.74 U | | |
| Chromium | 390 | 12.1 | 11.8 | 11.4 | 13.9 | 5 | 13.5 | 21 | 11.4 | | |
| Copper | 3100 | 60.4 | 28.1 | 23.7 | 50.3 | 15.7 | 27.5 | 36 | 153 | | |
| Lead | 150 | 99.4 | 6.8 | 6.1 U | 67.7 | 43 | 14.5 | 113 | 231 | | |
| Mercury | 23 | 0.789 | 0.034 U | 0.032 U | 0.539 | 0.07 | 0.098 | 0.284 | 0.228 | | |
| Nickel | 1000 | 11 | 10.4 | 9.3 | 11.5 | 5 | 10.4 | 6.7 | 13.8 | | |
| Selenium | 390 | 6 U | 6 U | 6.1 U | 6.3 U | 7.1 U | 6.2 U | 7.3 U | 7.4 U | | |
| Silver | 200 | 13.4 | 0.6 U | 0.61 U | 10.8 | 2.81 | 1.98 | 7.94 | 28.7 | | |
| Zinc | 6000 | 97.1 | 26.2 | 23.6 | 82.3 | 49.1 | 31.8 | 32.6 | 125 | | |
| Total Cyanide | 200 | | | | | | | | | | |
| Petroleum Hydrocarbons (mg/Kg) | | | | | | | | | | | |
| Total Petroleum Hydrocarbon | | | | | | | | | | | |

Bold value and shaded cell indicates exceedance of RDEC

mg/Kg = milligram per kilogram

U = not detected, value is the reporting limit

J = value is estimated

P = Percent difference between primary and confirmation results exceeds 40%

A = Detection limit based on signal-to-noise measurement

B = Less than 10 times higher than method blank level

E = PCDE Interference

I = Interference

Prepared by / Date: KJC 04/22/13

Checked by / Date: ARM 05/29/13

Table 5.3
Summary of Comparison of Detections in June 2013 Phase III Area Pre-Design Soil Samples to RDEC in Soil to be Capped – Phase III Area
Former Gorham Manufacturing Facility
Providence, Rhode Island

| parameter_name | Residential (ppm) | SS-500-01 6/21/2013 | SS-500-02 6/21/2013 | SS-501-01 6/21/2013 | SS-501-02 6/21/2013 | SS-502-01 6/21/2013 | SS-502-02 6/21/2013 | SS-503-01 6/21/2013 |
|--------------------------------------|----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Semivolatile Organics (mg/Kg) | | | | | | | | |
| 1,1-Biphenyl | 0.8 | 0.093 DU | 0.184 DU | 0.095 DU | 0.093 DU | 0.019 U | 0.017 U | 0.019 U |
| 2-Methylnaphthalene | 123 | 0.093 DU | 0.184 DU | 0.131 D | 0.093 DU | 0.019 U | 0.017 U | 0.034 |
| Acenaphthene | 43 | 0.093 DU | 0.184 DU | 0.095 DU | 0.093 DU | 0.019 U | 0.017 U | 0.019 U |
| Acenaphthylene | 23 | 0.682 D | 1.55 D | 0.224 D | 0.436 D | 0.019 U | 0.017 U | 0.125 |
| Anthracene | 35 | 0.724 D | 1.52 D | 0.278 D | 0.579 D | 0.019 U | 0.017 U | 0.117 |
| Benzo(a)anthracene | 0.9 | 1.55 D | 3.02 D | 0.643 D | 1.33 D | 0.038 | 0.017 U | 0.362 |
| Benzo(a)pyrene | 0.4 | 1.51 D | 2.88 D | 0.632 D | 1.27 D | 0.048 | 0.017 U | 0.432 |
| Benzo(b)fluoranthene | 0.9 | 2.42 D | 4.76 D | 1.01 D | 1.74 D | 0.073 | 0.017 U | 0.62 |
| Benzo(g,h,i)perylene | 0.8 | 0.807 D | 1.33 D | 0.321 D | 0.527 D | 0.04 | 0.017 U | 0.3 |
| Benzo(k)fluoranthene | 0.9 | 0.644 D | 1.87 D | 0.336 D | 0.597 D | 0.022 | 0.017 U | 0.219 |
| Chrysene | 0.4 | 1.58 D | 3.62 D | 0.765 D | 1.34 D | 0.053 | 0.017 U | 0.458 |
| Dibenzo(a,h)anthracene | 0.4 | 0.291 D | 0.491 D | 0.116 D | 0.174 D | 0.019 U | 0.017 U | 0.088 |
| Fluoranthene | 20 | 2.22 D | 6.05 D | 1.15 D | 2.59 D | 0.094 | 0.017 U | 0.637 |
| Fluorene | 28 | 0.093 DU | 0.184 DU | 0.095 DU | 0.115 D | 0.019 U | 0.017 U | 0.019 U |
| Indeno(1,2,3-cd)pyrene | 0.9 | 1.1 D | 1.84 D | 0.403 D | 0.683 D | 0.044 | 0.017 U | 0.351 |
| Naphthalene | 54 | 0.093 DU | 0.184 DU | 0.095 D | 0.093 DU | 0.019 U | 0.017 U | 0.029 |
| Phenanthrene | 40 | 0.68 D | 2.32 D | 0.502 D | 1.86 D | 0.042 | 0.017 U | 0.243 |
| Pyrene | 13 | 1.96 D | 4.71 D | 0.975 D | 2.31 D | 0.073 | 0.017 U | 0.6 |
| Inorganics (mg/Kg) | | | | | | | | |
| Arsenic | 7 | 10 | 12.9 | 5.1 | 4.7 | 4 | 2.6 | 4.1 |
| Lead | 150 | 116 | 242 | 170 | 270 | 34.3 | 4.8 | 59.8 |

Bold value and shaded cell indicates
exceedance of RDEC
U = not detected, value is the reporting
limit
J = value is estimated
D = value is from a diluted analysis

Table 5.3
Summary of Comparison of Detections in June 2013 Phase III Area Pre-Design Soil Samples to RDEC in Soil to be Capped – Phase III Area
Former Gorham Manufacturing Facility
Providence, Rhode Island

| parameter_name | Residential (ppm) | SS-503-02 6/21/2013 | SS-504-01 6/21/2013 | SS-504-02 6/21/2013 | SS-505-01 6/21/2013 | SS-505-02 6/21/2013 | SS-506-01 6/21/2013 | SS-506-02 6/21/2013 |
|--------------------------------------|-------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Semivolatile Organics (mg/Kg) | | | | | | | | |
| 1,1-Biphenyl | 0.8 | 0.018 U | 0.018 U | 0.019 U | 0.358 DU | 0.089 DU | 0.019 U | 0.018 U |
| 2-Methylnaphthalene | 123 | 0.024 | 0.022 | 0.019 U | 0.8 D | 0.089 DU | 0.019 U | 0.018 U |
| Acenaphthene | 43 | 0.035 | 0.025 | 0.019 U | 1.21 D | 0.089 DU | 0.03 | 0.018 U |
| Acenaphthylene | 23 | 0.324 | 0.175 | 0.099 | 13.7 D | 0.805 D | 0.124 | 0.037 |
| Anthracene | 35 | 0.358 | 0.199 | 0.073 | 12 D | 0.453 D | 0.137 | 0.068 |
| Benzo(a)anthracene | 0.9 | 1.15 | 0.573 | 0.369 | 32 D | 1.06 D | 0.466 | 0.222 |
| Benzo(a)pyrene | 0.4 | 1.09 | 0.616 | 0.445 | 27.6 D | 1.73 D | 0.512 | 0.26 |
| Benzo(b)fluoranthene | 0.9 | 1.42 | 0.94 | 0.652 | 52.7 D | 2.59 D | 0.629 | 0.292 |
| Benzo(g,h,i)perylene | 0.8 | 0.57 | 0.233 | 0.167 | 11.5 D | 1.12 D | 0.309 | 0.161 |
| Benzo(k)fluoranthene | 0.9 | 0.467 | 0.32 | 0.203 | 55.7 D | 0.746 D | 0.253 | 0.105 |
| Chrysene | 0.4 | 1.11 | 0.563 | 0.395 | 29.5 D | 1.35 D | 0.486 | 0.241 |
| Dibenzo(a,h)anthracene | 0.4 | 0.173 | 0.066 | 0.045 | 4.88 D | 0.392 D | 0.09 | 0.042 |
| Fluoranthene | 20 | 2.68 D | 1.03 | 0.733 | 68.8 D | 1.8 D | 0.939 | 0.448 |
| Fluorene | 28 | 0.056 | 0.033 | 0.019 U | 3.35 D | 0.089 DU | 0.03 | 0.018 U |
| Indeno(1,2,3-cd)pyrene | 0.9 | 0.69 | 0.293 | 0.217 | 15.1 D | 1.43 D | 0.366 | 0.18 |
| Naphthalene | 54 | 0.033 | 0.035 | 0.021 | 0.912 D | 0.089 DU | 0.023 | 0.018 U |
| Phenanthrene | 40 | 0.982 | 0.55 | 0.275 | 24.2 D | 0.539 D | 0.516 | 0.266 |
| Pyrene | 13 | 2.62 D | 1.1 | 0.738 | 56.6 D | 1.71 D | 0.794 | 0.426 |
| Inorganics (mg/Kg) | | | | | | | | |
| Arsenic | 7 | 5 | 3.7 | 5.1 | 14.4 | 6.2 | 35.5 | 6.3 |
| Lead | 150 | 71.9 | 45.6 | 78 | 166 | 24.4 | 87.8 | 29.7 |

Bold value and shaded cell indicates exceedance of RDEC

U = not detected, value is the reporting limit

J = value is estimated

D = value is from a diluted analysis

Table 5.3
Summary of Comparison of Detections in June 2013 Phase III Area Pre-Design Soil Samples to RDEC in Soil to be Capped – Phase III Area
Former Gorham Manufacturing Facility
Providence, Rhode Island

| parameter_name | Residential (ppm) | SS-507-01 6/21/2013 | | SS-507-02 6/21/2013 | |
|--------------------------------------|----------------------|------------------------|----|------------------------|---|
| Semivolatile Organics (mg/Kg) | | | | | |
| 1,1-Biphenyl | 0.8 | 0.093 | DU | 0.019 | U |
| 2-Methylnaphthalene | 123 | 0.093 | DU | 0.019 | U |
| Acenaphthene | 43 | 0.239 | D | 0.019 | U |
| Acenaphthylene | 23 | 0.126 | D | 0.019 | U |
| Anthracene | 35 | 0.349 | D | 0.02 | |
| Benzo(a)anthracene | 0.9 | 0.866 | D | 0.085 | |
| Benzo(a)pyrene | 0.4 | 0.955 | D | 0.106 | |
| Benzo(b)fluoranthene | 0.9 | 1.22 | D | 0.131 | |
| Benzo(g,h,i)perylene | 0.8 | 0.491 | D | 0.07 | |
| Benzo(k)fluoranthene | 0.9 | 0.371 | D | 0.041 | |
| Chrysene | 0.4 | 0.992 | D | 0.096 | |
| Dibenzo(a,h)anthracene | 0.4 | 0.133 | D | 0.019 | U |
| Fluoranthene | 20 | 2.26 | D | 0.196 | |
| Fluorene | 28 | 0.19 | D | 0.019 | U |
| Indeno(1,2,3-cd)pyrene | 0.9 | 0.614 | D | 0.08 | |
| Naphthalene | 54 | 0.239 | D | 0.019 | U |
| Phenanthrene | 40 | 2 | D | 0.093 | |
| Pyrene | 13 | 1.9 | D | 0.172 | |
| Inorganics (mg/Kg) | | | | | |
| Arsenic | 7 | 26.7 | | 4 | |
| Lead | 150 | 77 | | 19.8 | |

Bold value and shaded cell indicates
exceedance of RDEC

U = not detected, value is the reporting
limit

J = value is estimated

D = value is from a diluted analysis

Prepared by / Date: KJC 08/06/13

Checked by / Date: ARM 10/14/13

**TABLE 6.1
PRELIMINARY COST ESTIMATE FOR PHASE II:
MASHAPAUG POND INNER COVE REMEDIATION
FORMER GORHAM SITE
PROVIDENCE, RHODE ISLAND**

| Description | Unit | Quantity | Unit Cost | Cost | Alternative 1: Monitored Natural Attenuation | Alternative 2: Capping in Place | Alternative 3/Option A: Dredging of Impacted Sediment and Capping | Alternative 3/Option B: Damming Cove, Excavating Impacted Sediment, and Capping | |
|---|------|----------|-----------|-----------|--|------------------------------------|---|---|--------------------|
| Construction Costs | | | | | | | | | |
| Mob/Demob | LS | 1 | \$50,000 | \$50,000 | | \$50,000 | \$50,000 | \$50,000 | |
| Construct Access Road | LS | 1 | \$20,000 | \$20,000 | | \$20,000 | \$20,000 | \$20,000 | |
| | | | | | | \$70,000 | \$70,000 | \$70,000 | |
| Capping of Cove (12" plus 33% for material loss) | | | | | | | | | |
| Materials and Placement (in wet - Alt 3A), includes silt curtain & 33% material | CY | 5,474 | \$75 | \$410,542 | | \$410,542 | \$410,542 | | |
| Material and Placement (in dry - Alt 3B), assumed 20% bulking for compaction | CY | 4,939 | \$40 | \$197,554 | | | | \$197,554 | |
| Finish Grading w/ Grader (Alt 3B) | SY | 12,347 | \$1.68 | \$20,743 | | | | \$20,743 | |
| | | | | | | \$410,542 | \$410,542 | \$218,297 | |
| Sediment Dredging (2 feet) | | | | | | | | | |
| Hydraulic dredging | CY | 8,231 | \$15 | \$123,471 | | | \$123,471 | | |
| | | | | | | | \$123,471 | | |
| Sediment Excavation (2 feet) | | | | | | | | | |
| Excavation, Bulk, Scrappers, Common Earth, 3000' haul, Crew 1 | CY | 4,116 | \$15.90 | \$65,440 | | | | \$65,440 | |
| Excavation, Bulk, Scrappers, Common Earth, 3000' haul, Crew 2 | CY | 4,116 | \$15.90 | \$65,440 | | | | \$65,440 | |
| Construction Mats | LS | 1 | \$25,000 | \$25,000 | | | | \$25,000 | |
| Odor Control | LS | 1 | \$25,000 | \$25,000 | | | | \$25,000 | |
| | | | | | | | | \$180,879 | |
| Spreading Dewatered Sediment at Former Carriage House Area | | | | | | | | | |
| Handling of Sediment Transport to Phase III Area | LCY | 8,231 | \$1.81 | \$14,899 | | | \$14,899 | \$14,899 | |
| Bulking Sediment with Clean Fill | CY | 4,038 | \$0 | \$0 | | | | | |
| Mixing Sediment with Site Soil | TON | 7,576 | \$10 | \$75,761 | | | \$75,761 | \$75,761 | |
| Finish Grading w/ Grader | SY | 12,347 | \$1.68 | \$20,743 | | | \$20,743 | \$20,743 | |
| | | | | | | | \$111,403 | \$111,403 | |
| Construct Dam | | | | | | | | | |
| Placement and 2 month rental of PortaDam 10' high | LS | 1 | \$130,000 | \$130,000 | | | | \$130,000 | |
| Removal and Restoration (50% Cost of Installation) | LS | 1 | \$65,000 | \$65,000 | | | | \$65,000 | |
| | | | | | | | | \$195,000 | |
| Draining Cove & Dewatering Dredged/Excavated Sediment | | | | | | | | | |
| 60 HP, 1500 GPM Centrifugal Pump | EA | 1 | \$9,368 | \$9,368 | | | | \$9,368 | |
| Pumping, 4 " Trash Pumps 8 Hrs day (10 pumps) | DAY | 40 | \$2,060 | \$82,400 | | | | \$82,400 | |
| Sump Hole Construction, 18" corrugate Pipe, Gravel | EA | 10 | \$51.50 | \$515 | | | | \$515 | |
| Mob/Demob filter press | EA | 1 | \$200,000 | \$200,000 | | | \$200,000 | | |
| Dewatering using recessed chamber filter press of Dredged Sediment | CY | 8,231 | \$50 | \$411,570 | | | \$411,570 | | |
| Dewatering using recessed chamber filter press of Excavated Sediment | CY | 6,174 | \$50 | \$308,678 | | | | | |
| Dewatering liquid treatment system | LS | 1 | \$180,000 | \$180,000 | | | \$180,000 | \$180,000 | |
| | | | | | | | \$791,570 | \$272,283 | |
| Wetland Restoration | | | | | | | | | |
| Wetland Restoration at Phase I and Phase III | LS | 1 | \$104,348 | \$104,348 | | | \$104,348 | \$104,348 | |
| | | | | | | | \$104,348 | \$104,348 | |
| SUBTOTAL CONSTRUCTION COSTS | | | | | \$0 | \$480,542 | \$1,611,334 | \$1,152,210 | |
| 15% Contingency | | | | | \$0 | \$72,081 | \$241,700 | \$172,832 | |
| TOTAL CONSTRUCTION COSTS | | | | | \$0 | \$552,623 | \$1,853,034 | \$1,325,042 | |
| Engineering Costs | | | | | | | | | |
| Project/Construction Management | % | 8% | | | \$10,000 | \$44,210 | \$148,243 | \$106,003 | |
| Permits | % | 2% | | | \$0 | \$11,052 | \$37,061 | \$26,501 | |
| Performance Bond & Insurance | % | 1.6% | | | \$0 | \$8,731 | \$29,278 | \$20,936 | |
| Monitoring & Sampling | LS | 1 | \$50,000 | \$50,000 | \$50,000 | \$50,000 | \$50,000 | \$50,000 | |
| Risk Assessment Post Excavation | LS | 1 | \$35,000 | \$35,000 | \$35,000 | \$35,000 | \$35,000 | \$35,000 | |
| Pilot Test | LS | 1 | \$30,000 | \$30,000 | \$30,000 | \$30,000 | \$30,000 | \$30,000 | |
| TOTAL ENGINEERING COSTS | | | | | \$125,000 | \$178,994 | \$329,581 | \$268,440 | |
| Notes: | | | | | TOTAL | \$130,000 | \$740,000 | \$2,190,000 | \$1,600,000 |

Notes:
CY = cubic yard
SF = square foot
SY = square yards
LS = lump sum
LF = linear foot
SY = square yard

Prepared By: PJM 10-18-13
Checked By: DEH 10-21-13

**TABLE 6.2
PRELIMINARY COST ESTIMATE FOR PHASE III:
MASHAPAUG POND UPLAND AREA REMEDIATION
FORMER GORHAM SITE
PROVIDENCE, RHODE ISLAND**

| Description | Unit | Quantity | Unit Cost | Cost | Alternative 1: No Action | Alternative 2: Capping in Place | Alternative 3: Soil Stabilization | |
|--|------|----------|-----------|-----------|--------------------------|---------------------------------|-----------------------------------|--------------------|
| Construction Costs | | | | | | | | |
| Mob/Demob | LS | 1 | \$50,000 | \$50,000 | | \$0 | \$50,000 | |
| | | | | | | \$0 | \$50,000 | |
| Capping of Phase III Upland Area (12 inches) | | | | | | | | |
| 12" Soil Cap and Marker Fabric, includes mob/demob, clearing/grubbing, excavation/filling, and restoration | ACRE | 3.2 | \$259,723 | \$843,478 | | \$843,478 | | |
| 12" Soil Cap and Marker Fabric at Former Carriage House Area, includes mob/demob and restoration | ACRE | 0.7 | \$234,109 | \$165,217 | | \$165,217 | \$165,217 | |
| | | | | | | \$1,008,696 | \$165,217 | |
| Soil Stabilization | | | | | | | | |
| Pavement removal, stockpiling and off-site reuse (front end loader) | CY | 1,171 | \$25 | \$29,282 | | | \$29,282 | |
| Soil Removal (dozer) and Filling (front end loader) | CY | 11,358 | \$40 | \$454,315 | | | \$454,315 | |
| Soil Screening (front loader w/ screen), stockpiling debris | DAY | 38 | \$1,400 | \$53,003 | | | \$53,003 | |
| Spread and compact construction debris on-site | CY | 887 | \$40 | \$35,493 | | | \$35,493 | |
| Bulking with Lime Kiln Dust | TON | 393 | \$60 | \$23,579 | | | \$23,579 | |
| Mixing Bulking Material | TON | 7,860 | \$10 | \$78,596 | | | \$78,596 | |
| Finish Grading w/ Grader | SY | 15,719 | \$1.68 | \$26,408 | | | \$26,408 | |
| 4 inches Cover Soil for final grade | CY | 4,543 | \$20.00 | \$90,863 | | | \$90,863 | |
| 6 inches Loam & Seed | CY | 5,679 | \$42 | \$238,515 | | | \$238,515 | |
| | | | | | | | \$1,030,054 | |
| Wetland Restoration | | | | | | | | |
| Wetland Restoration at Phase I and Phase III | LS | 1 | \$120,000 | \$120,000 | | | \$120,000 | |
| | | | | | | | \$120,000 | |
| SUBTOTAL CONSTRUCTION COSTS | | | | | \$0 | \$1,008,696 | \$1,365,271 | |
| 15% Contingency | | | | | \$0 | \$151,304 | \$204,791 | |
| TOTAL CONSTRUCTION COSTS | | | | | \$0 | \$1,160,000 | \$1,570,062 | |
| Engineering Costs | | | | | | | | |
| Project/Construction Management | % | 8% | | | \$10,000 | \$92,800 | \$125,605 | |
| Permits | % | 2% | | | \$0 | \$23,200 | \$31,401 | |
| Performance Bond & Insurance | % | 1.6% | | | \$0 | \$18,328 | \$24,807 | |
| Monitoring & Sampling | LS | 1 | \$15,000 | \$15,000 | \$0 | \$15,000 | \$15,000 | |
| Risk Assessment Post Excavation | LS | 1 | \$10,000 | \$10,000 | \$0 | \$10,000 | \$10,000 | |
| Pilot Test | LS | 1 | \$10,000 | \$10,000 | \$0 | \$0 | \$10,000 | |
| TOTAL ENGINEERING COSTS | | | | | \$10,000 | \$159,328 | \$216,813 | |
| Notes: | | | | | TOTAL | \$10,000 | \$1,320,000 | \$1,790,000 |

1. No Action Project Management costs include ELUR for Phase III Area as part of Parcel C-1.

CY = cubic yard
SF = square foot
SY = square yards
LS = lump sum
LF = linear foot
SY = square yard

Prepared By: PJM 10-18-13
Checked By: DEH 10-21-13