The Atlas Tack Site: Enhanced Wetland Mitigation as Part of a Superfund Remedy

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Site Background

- Atlas Tack Corporation operated from 1901 to 1985
- Site is comprised of approx. 48 acres
- Manufactured wire tacks, steel nails, rivets, bolts, and similar items
- The facility's operations included electroplating, acid-washing, enameling and painting

Site Background (con’t)

- From 1940 to 1980, wastewater was discharged into floor drains, on-site lagoon and adjacent wetland
- Solid and liquid wastes were disposed of on-site and also filled in a portion of the wetland
Contaminants of Concern

- **Metals**: cadmium, chromium, copper, nickel, lead and zinc
- **Cyanide**
- **PCBs (in soils)**
- **sVOCs – mainly PAHs (in groundwater)**
- **VOCs – mainly toluene (in groundwater)**
- **Pesticides (low concentrations)**
Phase I: Specific Buildings

Phase II: Solid Waste and Disposal Area — 9 acres

- Excavation and off-site disposal of approx. 38,000 cubic yards of contaminated soil and debris in the Solid Waste and Disposal Area

- Contaminated soil and debris disposed off-site

- Cost $14,000,000

- Completed April 2007
Phase III: Marsh Area – 5.4 acres

- Excavation of 36,400 cy contaminated marsh soil and creek bed sediment
- Restoration of the marsh
- Cost $5,300,000
Environmental Risks

- Movement of contamination to groundwater, surface water and creek sediment from Commercial Area, Solid Waste & Disposal Area, and marsh surface soil.

- Exposure of biota to contaminated surface soil & sediment in Solid Waste & Disposal Area and Marsh Area and to contaminated Boys Creek surface water & sediment.
ERM-Q = \frac{1}{n} \sum_{i=1}^{n} COC_{ERM}
### Toxic Data Set (mg/kg)

<table>
<thead>
<tr>
<th>Chemical = Station</th>
<th>Cadmium</th>
<th>Chromium</th>
<th>Copper</th>
<th>Lead</th>
<th>Nickel</th>
<th>Zinc</th>
<th>ER-M Quotient</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER-M =</td>
<td>9.6</td>
<td>370</td>
<td>270</td>
<td>218</td>
<td>52</td>
<td>410</td>
<td></td>
</tr>
<tr>
<td>N-24 (a)</td>
<td>1.94</td>
<td>384</td>
<td>1800</td>
<td>465</td>
<td>104</td>
<td>2340</td>
<td>17.8/6 = 3.0</td>
</tr>
<tr>
<td>L-34 (a)</td>
<td>4.88</td>
<td>138</td>
<td>903</td>
<td>303</td>
<td>72</td>
<td>1150</td>
<td>9.8/6 = 1.6</td>
</tr>
<tr>
<td>P-22 (b)</td>
<td>0.5</td>
<td>627</td>
<td>2450</td>
<td>640</td>
<td>75</td>
<td>1670</td>
<td>18/6 = 3.0</td>
</tr>
<tr>
<td>L-18 (b)</td>
<td>0.3</td>
<td>80</td>
<td>730</td>
<td>173</td>
<td>30</td>
<td>405</td>
<td>5.4/6 = 0.9</td>
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<tr>
<td>P-18 (b)</td>
<td>0.4</td>
<td>158</td>
<td>611</td>
<td>179</td>
<td>37</td>
<td>509</td>
<td>5.5/6 = 0.9</td>
</tr>
<tr>
<td>Q-29 (c)</td>
<td>4.79</td>
<td>156</td>
<td>944</td>
<td>221</td>
<td>94</td>
<td>1300</td>
<td>10.4/6 = 1.7</td>
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<tr>
<td>L-31 (c)</td>
<td>6.71</td>
<td>64</td>
<td>364</td>
<td>117</td>
<td>88</td>
<td>872</td>
<td>6.6/6 = 1.1</td>
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<tr>
<td>M-31 (c)</td>
<td>13.50</td>
<td>127</td>
<td>1040</td>
<td>215</td>
<td>109</td>
<td>1220</td>
<td>11.8/6 = 2.0</td>
</tr>
</tbody>
</table>

### Non-Toxic Data Set (mg/kg)

<table>
<thead>
<tr>
<th>Chemical = Station</th>
<th>Cadmium</th>
<th>Chromium</th>
<th>Copper</th>
<th>Lead</th>
<th>Nickel</th>
<th>Zinc</th>
<th>ER-M Quotient</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER-M =</td>
<td>9.6</td>
<td>370</td>
<td>270</td>
<td>218</td>
<td>52</td>
<td>410</td>
<td></td>
</tr>
<tr>
<td>S-25 (d)</td>
<td>1.5</td>
<td>27.1</td>
<td>291</td>
<td>216</td>
<td>21.8</td>
<td>228</td>
<td>3.2/6 = 0.5</td>
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<tr>
<td>R-24 (c)</td>
<td>0.32</td>
<td>277</td>
<td>458</td>
<td>349</td>
<td>42</td>
<td>627</td>
<td>6.4/6 = 1.1</td>
</tr>
<tr>
<td>S-09*</td>
<td>0.87</td>
<td>2.7</td>
<td>3.6</td>
<td>27</td>
<td>2.1</td>
<td>26.9</td>
<td>0.35/6 = 0.06</td>
</tr>
<tr>
<td>S-05*</td>
<td>1.46</td>
<td>6.6</td>
<td>8.2</td>
<td>9.8</td>
<td>5.7</td>
<td>17.3</td>
<td>0.45/6 = 0.08</td>
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<tr>
<td>S-04*</td>
<td>1.43</td>
<td>15.7</td>
<td>76.8</td>
<td>118</td>
<td>10.8</td>
<td>54.1</td>
<td>1.32/6 = 0.22</td>
</tr>
</tbody>
</table>
ERM Mean Quotients:
Delineated Areas
ERM > 1

Area North of Hurricane Barrier: 4.78 Acres

Area South of Hurricane Barrier: 1.46 Acres
Restoration Plan

- Fresh water wetland
- Salt water wetland
- Phragmites control
- Islands
- Man-made berm
- Spillways