Orchard Lands OU is defined by pre-Hanford orchards in River Corridor

5000 Acres of potential orchard land
Remedial Investigation Sampling Strategy

• 5000 acres broken up into 69 decision units
  – Evidence of trees from historical photos
  – Evidence of soil disturbance
  – Range from an acre to almost 300 acres
• 69 Decision units X 29 samples per unit = 2001 samples
• Integrated sample of one inch diameter core to one foot depth
• Analyze for lead and arsenic
• Work Plan transmitted to EPA/Ecology in April, 2013
Orchard Decision Units in 100D/H Area
Example of random sampling design of decision unit

OL-HR1-1
Studies show that Lead and Arsenic migrate very little with depth
### Table 2.1. Surface Soil Concentrations of Arsenic and Lead Measured on Former Orchards on the Hanford Site, and Other Orchard Locations

<table>
<thead>
<tr>
<th>Source</th>
<th>Arsenic (in mg/kg)</th>
<th>Lead (in mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean</td>
</tr>
<tr>
<td>Yokel and Delistraty 2003</td>
<td>31</td>
<td>30</td>
</tr>
<tr>
<td>Delistraty and Yokel 2011</td>
<td>11</td>
<td>39.5</td>
</tr>
<tr>
<td>HEIS Data(a)</td>
<td>881</td>
<td>8.7</td>
</tr>
<tr>
<td>HEIS Data(b)</td>
<td>113</td>
<td>8.0</td>
</tr>
<tr>
<td>HEIS Data(c)</td>
<td>108</td>
<td>26</td>
</tr>
</tbody>
</table>

(a) All HEIS soil samples occurred within the boundaries of the orchards as shown in Figure 1.1. Data were removed if sampling records confirmed a result was not representative of orchard surface soils. For example, sludge collected from the bottom of a sump, or soil in an excavation collected more than 1.5 m below grade did not qualify as surface soil samples.

(b) HEIS data from one orchard were used to determine distribution of soil concentrations (Decision Unit OL-IU2-4).

(c) HEIS data from one orchard were used to determine distribution of soil concentrations (Decision Unit OL-10).

HEIS = Hanford Environmental Information System.

Max = Maximum number of samples.
n = Number of samples.
NR = Data not reported.
SD = Standard deviation.